FINAL REPORT

Asian Development Bank

National Capital Region Planning Board

Capacity Development of the
National Capital Region Planning Board
Package 2 Component B
TA No. 7055-IND

Volume I-B : Detailed Designs

Detailed Project Report for Water Supply System in Panipat

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NCR Planning Board
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Capacity Development of the National Capital Region Planning Board (NCRPB) – Component B (TA No. 7055-IND)

FINAL REPORT

Volume I-B: Detailed Project Report for Panipat Water Supply Detailed Designs

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Appendix D-1: Design Details of Raw Water Rising Main, Sump & RWPS

Appendix D-1: Design of Raw Water Pump Station

S.No.	Details	Value	Unit
1	Design Discharge	105.00	MLD
2	Pumping Hours	23.00	hours
3	FSL of RW Sump	236.50	m
4	Bed Level of RW Sump	233.50	m
5	FSL of Inlet Chamber	240.10	m
6	Size of DI Pipeline	800.00	mm
7	Length of Pipelene	50	m
8	C value adopted for design purpose	140	
9	Minimum Static Lift (240.10 - 236.5)	3.60	m
10	Maximum Static Lift (240.10 - 233.5)	6.60	m
11	Average Static Lift (240.10 - 235)	5.10	m
12	Total Frictional Losses (9.5*.536*0.05)	0.26	m
13	Other Frictional Losses on account of Tees, Bends, Valves etc. @10% of normal frictional losses	0.03	m
14	Total Frictional Losses	0.29	m
15	Station Losses & Terminal Pressure	1.00	m
16	Minimum Pumping Head	4.89	m
17	Maximum Pumping Head	7.89	m
18	Average Pumping Head	6.39	m
19	Average Pumping Head : Say	7.00	m

Appendix D-2: Pump Selection for RWPS

Appendix D-2: Pump Selection - Calculation of Specific Speed for Different Speeds & Number of Stages

Minimum Pumping Head		6.0	m
Maximum Pumping Head		8.0	m
Average Pumping Head		7.0	m
Design Discharge		105.0	MLD
Pumping Hours		23	hrs

Calculation of Specific Speed for Different Speeds & Number of Stages

Specific Speed N_s		=	$N \times (Q)^{0.5} / (H)^{0.75}$	
where	Q	=	Discharge in US gallon/min	
	H	=	Discharge head in feet per stage	
	N	=	Motor Speed in rpm	

As per American National Standard Institute Hydraulic Institute New Jersey, the specific speed for Centrifugal Pumps should be in the range of 2000 to 3000 for attaining optimum

Calculation of Specific Speed with different combinations

No of Working Pumps	No of Stages	Discharge per Pump (US GPM)	Pumping Head (ft)	Pumping Head per Stage (feet)	Motor Speed (RPM)	Specific Speed
Vertical Turbine pumps						
1	1	20102.17	22.97	22.97	1500	20272.18
2	1	10051.09	22.97	22.97	1500	14334.60
2	1	10051.09	22.97	22.97	1000	9556.40
2	1	10051.09	22.97	22.97	750	7167.30
2	1	10051.09	22.97	22.97	500	4778.20
3	1	6700.72	22.97	22.97	1000	7802.77
3	1	6700.72	22.97	22.97	750	5852.07
3	1	6700.72	22.97	22.97	500	3901.38
4	1	5025.54	22.97	22.97	750	5068.05
4	1	5025.54	22.97	22.97	500	3378.70
Double suction centrifugal pumps						
2	1	5025.54	22.97	22.97	1500	10136.09
3	1	3350.36	22.97	22.97	1500	8276.08
4	1	2512.77	22.97	22.97	1500	7167.30

From above options it is clear that four turbine pumps with single stage and 500 rpm gives specific speed nearest to desirable range of 2000-3000 and as such gives best efficiency. All other alternatives considered above have very high specific speeds and are thus not suitable for present application.

It would thus be prudent to go for a combination of 3 working with 2 standby pump. As it will be evident from above calculations, most suitable pump for present requirement is a pump with 1 stage with an operating speed of 500 RPM (syncronous). We should therfore go for 3W + 2S V.T. Pumps Single stage 500 RPM (syncronous).

Appendix D-3: Suction Specific Speed (RWPS)

Appendix D-3: Suction Specific Speed

As per American National Standard Institute Hydraulic Institute New Jersey, the Suction Specific Speed for V.T. Pumps should be in the vicinity of 8500 for attaining optimum

SuctionSpecific Speed (SS)		=	$N \times (Q)^{0.5} / (NPSHa)^{0.75}$				
where	Q	=	Discharge per in US gallon/min				
	H	=	Net Positive Suction Head Available in feet				
	N	=	Motor Speed in rpm				
For present case							
	Q	=	634.06	l/s	=	10051.1	US gallon/min
	N	=	500	rpm			

Net Positive Suction Head Available (NPSHa) Required 8500 Suction Specific Speed

Minimum Water Level in CWR	=	233.50	m
Minimum Submergence required as per HIS	=	1.55	m
Bottom level of wet well	=	232	m
Suction Bell mouth Diameter:			
Design Velocity	=	1.3	m/s
Suction Bell mouth Diameter:	=	788	mm
say		350	mm
Clearance Below suction Bell Mouth (C) as per HIS	=	0.45	mm
i) Minimum Level in wet well	=	233.50	m
ii) Level of suction Bell Mouth	=	Bottom Level + Clearance	
	=	232.4	m
iii) Elevation of eye of impeller	=	232.7	m
{assumed 0.3 m above (ii)}			
iv) Submergence above			
eye of impeller [(i) – (iii)]	=	0.8	m
v)Losses at inlet Bell mouth(assumed)	=	0.1	m
vi)Vapor pressure at 320C water temperature (Vp) =		0.49	m
vii)Atmosph. Pressure	=	10.33	m
NPSH available	=	(vii +iv - v - vi)	
	=	10.54	m
	=	34.57	ft
Specific Speed N_s	=	3515.93	
	=	4400.00	say
Net Positive Suction Head	=	10.7	feet
	=	3.25	m
Suction Lift permissible = Atmospheric Pressure in m - NPSHA	=	6.8	m

Thus for V.T. Pumps only minimum submergence is to be provided.

Appendix D-4: Attainable Efficiency & Power Loading (RWPS)

Appendix D-4: Attainable Efficiency & Power Loading

Specific Speed

Specific Speed N_s = $N \times (Q)^{0.5} / (H)^{0.75}$

where

Q = Discharge in US gallon/min per Pump

H = Discharge head in feet per stage

N = Motor speed in rpm

For present case

Q	=	422.71	l/s	=	6700.7	US gallon/min
H	=	7.00	m per stage	=	23.0	feets
N	=	500	rpm			
Q		0.422705314	cum/sec			

Specific Speed N_s = 3901.38

Specific speed as per formula 11.1 of Manual in metrik units, 3.65*N*Q^.5/H^.75= 275.714

As per American Standard for Vertical Turbine Pumps issued by Hydraulic Institute New Jersey, the specific speed for Vertical Turbine Pumps should be in the range of 2000 to 3000 for attaining optimum efficiency and in the present case the specific speed is close to the range specified above.

Generally Attainable Efficiency

As per American Standard for Centrifugal Pumps, generally attainable efficiency for Vertical Turbine Pumps having discharge Q = 6700.7 USg/min & Specific Speed N_s = 3901.38, is 85% (as per Fig 1.62A, page no. 85).

For discharge Q = 6700.7 usg/min, deviation from generally attainable efficiency is +3% of attainable efficiency (as per Fig 1.63 page no. 85) which gives efficiency range from 82% to 88%. The efficiency of pumps is greatly influenced by smoothness of impeller vanes, clearance of impeller ring, effectiveness of stuffing box / mechanical seal and suction arrangement. In view of these factors, the **Generally Attainable Efficiency may be taken as 82%**. Also refer CPHEEO Manual figure 11.1, which for specific speed 275.71 and discharge 422.7 LPS give efficiency of 85%. As such adopt efficiency of 82%

Proposed Loading for Lower Efficiency

No credit is proposed in the bid evaluation for efficiency offered beyond 88% (without negative tolerance). However we can levy compensation for offering pumps with efficiency less than 88% for each percentage efficiency point.

i) Calculation of Overall Efficiency of Pump Set

Motor Efficiency	=	94.0%	(Assuming energy efficient motors)
Pump Efficiency	=	82%	
Overall Efficiency	=	0.94 x 0.82	
	=	77.08%	
	=	77%	

ii) Motor Power Input Required

= 9.81QH / n

where Q = Discharge in LPS

H = Discharge head in m

n = Overall Efficiency of Pump Set

= (422.71 x 9.81 x 7) / (0.77 x 1000)

= 37.70 KW

= 38 KW say

iii) Calculation of Additional Power Charges

Additional Annual Power charges for lower efficiency = Differential KW x Annual Working hours x Power Tariff

Differential KW = (Prescribed Eff - Tendered Eff) x KW input of Motor / Tendered Eff

Capitalised Additional Power charges for lower efficiency = Additional Annual Power charges x Annuity Factor

1) Life of Pumpsets is 15 yrs as per CPHEEO mannual.

2) Pumping hours per day = 23 hrs.

Now as Initial Discharge = 59 MLD & Final Discharge = 80 MLD therefore Avg Discharge = 69.5 MLD Average pumping hours for each pump = 69.5x23/80=19.98 hours

However as 5 units of pumps are provided (3 working + 2 standby), therefore pumping hours for single pump will be 19.98 x 3 / 5= 11.99 hrs

Annual Hours of operation of each pump = 11.99 x 365.25 = 4379.35 hrs

3) Annuity Factor

Annuity Factor = $((1+R)^n - 1)/ (R \times (1+R)^n)$

where n = no of years =15 yrs R = discounting rate = 10%

Annuity Factor = 7.606

4) Power Tariff = Rs. 4.75 per unit

For 1% less effieciency

Differential KW = (77 -76) x 38 /77

= 0.4935 KW

Additional Annual Power charges for lower efficiency = .4935x4379.35x4.75

= 10266 (Rs.)

Capitalised Additional Power charges = 10266 x 7.606

= 78083 (Rs.) For each percentage point of less efficiency.

Appendix D-5: Motor Rating (RWPS)

Appendix D-5: Motor Rating

Pump Discharge		=	422.7	LPS
Design Head		=	7.0	m
Pump Efficiency		=	82%	
Motor Efficiency assuming energy efficient			94%	
Combined Efficiency			77%	
Motor Power Required				
		=	9.81QH / n	
where	Q	=	Discharge in LPS	
	H	=	Discharge head in m	
	n	=	Combined Efficiency	
		=	37.66 KW	
		say	38 KW	

Margin to decide drive rating, refer table 11.4 Manual 43.31

The motor rating shall be higher of the following:

1. 115% of Input Power requirement at duty point.
2. Maximum Power requirement in the entire working range of the pump.

The Motor rating required is 43.3 KW. Thus we go for next available rating of 45**KW.**

Appendix D-6: Column Pipe Thickness & Diameter (RWPS)

Appendix D-6: Column Pipe Diameter & Thickness

Column Pipe Diameter

Discharge of each pump	=	0.317	m^3/s
Design Velocity for Column Pipe	=	2.5	m/s
Diameter of Column Pipe	=	401.8	mm
	say	400	mm

Column Pipe Thickness:

As per formula in IS 3589/2001 for steel pipes for water

$$P = \frac{2\,s\,t}{D} \qquad or \qquad t = \frac{P\,D}{2\,S}$$

where

P	=	Hydraulic Test Pressure (MPa)
S	=	Safe Stress (MPa) = 0.6 x 235 Mpa
t	=	Pipe Wall Thickness (mm)
D	=	Pipe Dia (mm)

In this case P shall be equal to twice the design (working) pressure or 1.5 times shutoff pressure whichever is greater

Here Design Head	=	7.0	m
	=	0.069	M Pa
Test pressure	=	14.000	m
	=	0.137	M Pa …… (a)
Shutoff Head :			
	=	1.35 x Design Head	
	=	9.450	m
	=	0.093	M Pa
1.5 x Shutoff Head	=	0.139	M Pa ……(b)
P shall be higher of (a) and (b)			
P	=	0.139	M Pa
Safe stress for Steel Pipe (Fe:410)	=	141	M Pa
Hence with D =400 mm			
Thickness of Column Pipe (t)	=	0.2	mm
Adding 2 mm corrosion allowance as water is both inside and outside of column pipes			
Hence **t**	=	2.2	mm
	say	6	mm

As per standard thickness available

Appendix D-7: Crane Capacity (RWPS)

Appendix D-7: Crane Capacity

a) Static Load of Pump Motor Set

i) Weight of bowl assembly (from Kirloskar cataloge approx)	=	600	kg
ii) Discharge Head Weight (Assumed)	=	1000	kg
ii) Weight of 45 kW motor	=	400	kg

b) Crane Capacity

Maximum weight to be handled by crane	=	Greater of (i) & (ii)	
	=	600	Kg
Considering 25 % over loading	=	750	kg
Say	=	2000	kg

Provide crane of 2000 kg (2.0 T) safe working load.

Appendix D-8: Raw Water Sump Details

Appendix D-8: Raw Water Sump Design

Total Daily Flow	105	mld
sump Capacity(2 min)	146	cum
Depth of water in sump	2	m
Area of Sump reqd.	73	m^2
Adopt sump size	12x6	m
Free Board	0.5	m

Appendix D-9: Details of CWR & CWPS

Appendix D-9: Details of CWR & CWPS

S.No.	Details	Value	Units
1	Design Discharge	100	MLD
2	Pumping Hours	23	hours
3	FSL of CWR	236	m
4	Bed Level of CWR	232	m
5	Size of DI Pipeline	300 to 1000	mm
6	Length of Pipeline	33,000	m
7	C value adopted for design purpose	140	
8	Maximum Operating Head for pumps	50	m
9	Minimum Operating head for pumps	46	m
10	Average Operating Head for pumps	48	m

Appendix D-10: Pump Selection for CWPS

Appendix D-10: Pump Selection (CWPS)

Details						
Minimum Operating head for pumps					46.0	m
Maximum Operating Head for pumps					50.0	m
Average Operating Head for pumps					48.0	m
Design Discharge					100.0	MLD
Pumping Hours					23	hrs

Calculation of Specific Speed for Different Speeds & Number of Stages

Specific Speed N_s		=	$N \times (Q)^{0.5} / (H)^{0.75}$	
where	Q	=	Discharge in US gallon/min	
	H	=	Discharge head in feet per stage	
	N	=	Motor Speed in rpm	

As per American National Standard Institute Hydraulic Institute New Jersey, the specific speed for Centrifugal Pumps should be in the range of 2000 to 3000 for attaining optimum efficiency. Therefore in the present case the duty requirements are to be fixed in such a way so that the specific speed lies in the above range.

Calculation of Specific Speed with different combinations(Items 1 to 5 are VT pumps and items 6&7 are Double Suction HSC pumps)

No of Working Pumps	No of Stages	Discharge per Pump (US GPM)	Pumping Head (ft)	Pumping Head per Stage (feet)	Motor Speed (RPM)	Specific Speed
1	1	19144.93	157.48	157.48	1500	4668.73
2	1	9572.46	157.48	157.48	1500	3301.29
2	1	9572.46	157.48	157.48	1000	2200.86
3	1	6381.64	157.48	157.48	1500	2695.49
2	2	9572.46	157.48	78.74	1500	5552.08
2	1	4786.23	157.48	157.48	1500	2334.36
2	1	4786.23	157.48	157.48	1000	1556.24

Thus single stage VT pump with a speed of 1000 rpm and Double Suction Centrfugal pumps with 2 pumps working have the specific speed in the range of 2000-3000 rpm and are thus the ideal choice. A Single stage Vertical Turbine Pump having Motor Speed of 1500 RPM will have specific speed around 3300, which is slightly higher then upper limit of desired range 2000-3000 for attaining optimum efficiency.However,Pumps & Motors with 1000 RPM speed are more robust compared to 1500 rpm pumping sets. The CWR floor is 3m below GL and in case of Horizontal Split Casing pump, to provide positive suction, pumps have to be installed below this level. The maintenance and shut down time are less in HSC pumps. As such choice is either Single stage VT pumps 1000 rpm with 2W+1S configuration or single stage double suction HSC pump 1500 rpm with 2W+1S configuration. Other alternatives considered above are not suitable on account of very high or lower specific speeds. Morever using single pump with full discharge has 2 drawbacks:a. Starting current requirement is very high making transformer, cable, switchgear rating high.b. During initial years of operation, water demand will be less. Thus the pump shall h

Appendix D-11: Suction Speed (CWPS)

Appendix D-11: Suction Specific Speed

As per American National Standard Institute Hydraulic Institute New Jersey, the Suction Specific Speed for V.T. Pumps should be in the vicinity of 8500 for attaining optimum efficiency. Therefore in the present case the duty requirements are to be fixed in such a way so that the Suction Specific Speed be around 8500.

SuctionSpecific Speed (SS)		=	$N \times (Q)^{0.5} / (NPSHa)^{0.75}$				
where	Q	=	Discharge per in US gallon/min				
	H	=	Net Positive Suction Head Available in feet				
	N	=	Motor Speed in rpm				
For present case							
	Q	=	603.86	l/s	=	9572.5	US gallon/min
	N	=	1000	rpm			

Net Positive Suction Head Available (NPSHa) Required 8500 Suction Specific Speed

Net Positive Suction Head					=	26.0	feet
					=	7.92	m
Suction Lift permissible = Atmospheric Pressure in m - NPSHA					=	2.1	m

Thus provide minimum subermergence for Bowl of VT pump

Appendix D-12: Attainable Efficiency & Power Loading (CWPS)

Appendix D-12: Attainable Efficiency & Power Loading

Specific Speed								
Specific Speed N_s			=	N x $(Q)^{0.5}$/ $(H)^{0.75}$				
where		Q	=	Discharge in US gallon/min per Pump				
		H	=	Discharge head in feet per stage				
		N	=	Motor speed in rpm				
For present case of Double suction Pump		Q	=	603.86	l/s	=	9572.5	US gallon/min
		H	=	48.00	m per stage	=	157.5	feets
		N	=	1000	rpm			
Specific Speed N_s			=	2200.86				

As per American Standard for DS Centrifugal Pumps issued by Hydraulic Institute New Jersey, the specific speed for Pumps should be in the range of 2000 to 3000 for attaining optimum efficiency and in the present case the specific speed is within the range specified above.

Generally Attainable Efficiency

As per American Standard for Centrifugal Pumps, generally attainable efficiency for DS Centrifugal Pumps having discharge Q = 9572 g/min & Specific Speed N_s = 2200, is 90% (as per Fig 1.62A, page no. 85).

For discharge Q = 9572 g/min, deviation from generally attainable efficiency is ±2% of attainable efficiency (as per Fig 1.63 page no. 85) which gives efficiency range from 92% to 88%. The efficiency of pumps is greatly influenced by smoothness of impeller vanes, clearance of impeller ring, effectiveness of stuffing box / mechanical seal and suction arrangement. In view of these factors, the **Generally Attainable Efficiency may be taken as 88%**.

Proposed Loading for Lower Efficiency

No credit is proposed in the bid evaluation for efficiency offered beyond 88% (without negative tolerance). However we can levy compensation for offering pumps with efficiency less than 88% for each percentage efficiency point.

i) Calculation of Overall Efficiency of Pump Set

Motor Efficiency			=	94.0%	(Assuming energy efficient motors)			
Pump Efficiency			=	88%				
Overall Efficiency			=	0.94 x 0.88				
			=	82.72%				
			=	82.50%				

ii) Motor Power Input Required

			=	9.81QH / n		
where		Q	=	Discharge in LPS		
		H	=	Discharge head in m		
		n	=	Overall Efficiency of Pump Set		
			=	(603.86 x 9.81 x 48) / (0.825x 1000)		
			=	344.66	KW	
			=	345	KW	say

iii) Calculation of Additional Power Charges

Additional Annual Power charges for lower efficiency			=	Differential KW x Annual Working hours x Power Tariff				
Differential KW			=	(Prescribed Eff - Tendered Eff) x KW input of Motor / Tendered Eff				
Capitalised Additional Power charges for lower efficiency			=	Additional Annual Power charges x Annuity Factor				

1) Life of Pumpsets is 15 yrs as per CPHEEO mannual.

2) Pumping hours per day = 23 hrs.

Now as Initail Discharge = 59 MLD & Final Discharge = 80 MLD therefore Avg Discharge = 69.5 MLD Average pumping hours for each pump =69.5x23/80=19.98 hours

However as 3 units of pumps are provided (2 working + 1 standby), therefore pumping hours for single pump will be 19.98 x 2 / 3 = 13.33 hrs

Annual Hours of operation of each pump = 13.33 x 365.25 = 4868.78 hrs

3) Annuity Factor

Annuity Factor		=	$((1+R)^n - 1)/ (R x (1+R)^n)$				FALSE
where			n = no of years =15 yrs		R = discounting rate = 10%		
Annuity Factor		=	7.606				

4) Power Tariff = Rs. 4.75 per unit

For 1% less effieciency								
Differential KW			=	(82.5 -81.5) x 345 / 82.5				
			=	4.1818	KW			
Additional Annual Power charges for lower efficiency			=	4.1818x4868.78x4.75				
			=	96712	(Rs.)			
Capitalised Additional Power charges			=	96712 x 7.606				
			=	735597	(Rs.)	For each percentage point of less efficiency.		

Appendix D-13: Motor Rating (CWPS)

Appendix D-13: Motor Rating

Pump Discharge		=	603.86	LPS
Design Head		=	48.0	m
Motor Efficiency			94.0%	(Assuming energy efficient motors)
Pump Efficiency		=	88%	
Overall Efficiency		=	0.94 x 0.88	
		=	82.72%	
Motor Power Input Required				
		=	9.81QH / n	
where	Q	=	Discharge in LPS	
	H	=	Discharge head in m	
	n	=	Pump Efficiency	
		=	343.74 KW	
		=	344 KW	say

The motor rating shall be higher of the following:
1. 110% of Input Power requirement at duty point.
2. Maximum Power requirement in the entire working range of the pump.
The Motor rating required as per first alternative is 378.11 KW. Thus we go for next available rating of **380KW.**

Appendix D-14: Crane Capacity (CWPS)

Appendix D-14: Crane Capacity

a) Static Load of Pump Motor Set

i) Weight of pump assembly (from Kirloskar cataloge approx)	=	2550	kg
ii) Weight of 380 kW motor	=	2500	kg

b) Crane Capacity

Maximum weight to be handled by crane	=	Greater of (i) & (ii)	
	=	2550	Kg
Considering 25 % over loading	=	3187.5	kg
say	=	5000	kg

Provide crane of 5000 kg (5.0 T) safe working load.

Appendix D-15: Design of 100 MLD WTP with 4 Clariflucculators

Appendix D-15: Design of 100 MLD WTP with 4 Clariflucculators (Option 1)

Design flow (100 MLD)	4180 cum/hr
On the basis of 23 hour pumping, design flow	4350 cum/hour
Consider Inlet channel having flow section of 2000mm × 800mm deep	
Velocity of flow for 20% overload	(4350×1.2)/ (0.80×2×3600) = 0.91 m/sec
Length of channel	40m
Consider a head loss of 16mm across manual screen Consider supply level as 240.1m	
TWL downstream of screen	240.1 - 0.16 = 239.94 m
R = (0.8×2) / (0.8×2+2) = 0.444 0.91 = 66.6(0.4444)$^{2/3}$. S$^{1/2}$ Or S$^{1/2}$ = 0.91/66.6(0.4444)$^{2/3}$ S = 0.0005 Loss in 40 m length = 0.00055×40 =0.022 m	
Water Treatment Plant	
Design flow	4350 cum/hr
Inlet chamber Provide 3.5m×3.5m×4.5m Chamber Volume provided	 55.13m^3
Flash Mixers No. s Flow in each Flash Mixer Volume required for 45 sec pumping (Range allowed 30 to 60 sec) Volume provided For a 2.25 m dia shaft, Depth	 4 nos. 4350/4 = 1087.5 cum/hr (1087.5/3600)×45 = 13.59 m^3 13.59 m^3 3.5 m
Clariflocculators No.s Flow of each Volume reqd. in flocculation zone (Range allowed10 to 40 min storage but adopted 30 min) Provide 14m dia ×3.5 m SWD Flocculator (Range allowed for SWD from 3 to 4.5m) Volume provided Surface area reqd. (Surface loading allowed 35 to 50 but adopted 35) Provide 34 m dia Clariflocculator with launder out side Surface Area available Volume required in Clarifying zone (Range allowed - one to two hrs) Volume provided with 3m SWD Provide outlet launder of 600mm×600mm deep For 50% length flow	 4 no,. 1087.5 m^3/hour 1087.5×30/60 = 543.75 m^3 538.51 m^3 1087.5×24/35 = 745.71 m^2 Π/4×(34)^2 - Π/4(14)^2 = 753.6 m^2 1087.5 × 2 = 2175 m^3 753.6 × 3 = 2260.8 m^3

Velocity of flow or design flow	1087.5/2 = 543.75 m^3/hr
Total perimeter	543.75/3600×0.6×0.6 = 0.42 m^3/sec
Perimeter required (Weir loading allowed 300 m^3/d/m)	Π×34 = 106.76 m
Thus launder perimeter adopted is adequate	1087.5×24/300 = 87 m
<u>Filters</u>	
No,s	10 no,s
Total output	100 MLD in 23 hours = 4350 m^3/hr
Input to each of 10 filters	435 m^3/hr
Area required for each filter	435/6 = 72.5 sq.m
(Assuming filter rate as 6m/hr)	
Provide 2 sections each 3.50m×10.7m (10 filters)	
Inlet: Provide 350×350mm gate	Velocity = 0.986 m/sec.
Outlet: Provide 350 mm φ S. V.	Velocity = 1.256 m/sec
Wash – in : Water rate 500 lpm/m^2	
Wash water rate reqd	72.5×0.5 = 36.25 m^3/min = 0.604 m^3/sec
Provide 600 mm φ SV	Velocity = 2.14 m/sec
Wash out; Provide gate 500×600mm(deep)	Velocity = 2.013 m/sec
<u>Air – inlet</u>	
Air required	750 lpm/m^2
Air flow rate	72.5×0.75 = 54.375 m^3/min = 0.906 m^3/sec
Provide 250 mm φ SV for each bed	Velocity = 18.47 m/sec
<u>Wash water Pump</u>	
Capacity required	36.25x60 = 2175 m^3/hr
Provide 3 Submerssible pump sets (2W+1S) of 1090m^3/hr capacity with suitable head.	
<u>Air blower</u>	
Air capacity reqd.	54.375×60 = 3262.5 m^3/hr
Provide two blowers (1W + 1S) of 3300 m^3/hr capacity	
<u>Chemical House</u>	
Consider an average of 50 ppm dose of alum @ 10% strength solution	
Solution required for 8 hrs	4350×50×1×100×8/1000×1000×10 = 17.4 m^3
Provide 3 tanks each of 3.25m×2.8m×2.2m (Approx 20 m^3 each)	
Alum reqd for 90 days	4350×50×24×90/1000 = 469800 kg
Taking alum density 1300 kg/m^3	
Volume of alum	469800/1300 = 361.38 m^3
Taking stake height as 2 m,	
Area required for alum storage	= 361.38/2 =180.69 ~ 185 m^2
Taking provision for movement and putting weighing scale etc., Provide storage area = 250 m^2	

Appendix D-16: Design of 100 MLD WTP with 2 Clariflucculators

Appendix D-16: Design of 100 MLD WTP with 2 Clariflucculators (Option 2)

Design flow (100 MLD)	4180 cum/hr
On the basis of 23 hour pumping, design flow	4350 cum/hour
Consider Inlet channel having flow section of 2000mm × 800mm deep	
Velocity of flow for 20% overload	(4350×1.2)/ (0.80×2×3600) = 0.91 m/sec
Length of channel	40m
Consider a head loss of 16mm across manual screen Consider supply level as 240.1m	
TWL downstream of screen	240.1 - 0.16 = 239.94 m
R = (0.8×2) / (0.8×2+2) = 0.444 0.91 = 66.6(0.4444)$^{2/3}$. S$^{1/2}$ Or S$^{1/2}$ = 0.91/66.6(0.4444)$^{2/3}$ S = 0.0005 Loss in 40 m length = 0.00055×40 =0.022 m	
Water Treatment Plant	
Design flow	4350 cum/hr
Inlet chamber Provide 3.5m×3.5m×4.5m Chamber Volume provided	 55.13m^3
Flash Mixers No. s Flow in each Flash Mixer Volume required for 45 sec pumping (Range allowed 30 to 60 sec) Volume provided For a 3.15 m dia shaft, Depth	 2 nos. 4350/2 = 2176 cum/hr (2175/3600)×45= 27.19 m^3 27.19 m^3 3.5 m
Clariflocculators No.s Flow of each Volume reqd. in flocculation zone (Range allowed10 to 40 min storage but adopted 30 min) Provide 20m dia ×3.5 m SWD Flocculator (Range allowed for SWD from 3 to 4.5m) Volume provided Surface area reqd. (Surface loading allowed 35 to 50 but adopted 35) Provide 43.6 m dia Clariflocculator with launder out side Surface Area available Volume required in Clarifying zone (Range allowed - one to two hrs) Volume provided with 3m SWD Provide outlet launder of 800mm×800mm deep For 50% length flow	 2 no, s 2175 m^3/hour 2175×30/60 = 1087.5 m^3 1099 m^3 2175×24/35 = 1491.43 m^2 Π/4×(43.6)^2 - Π/4(20)^2 = 1178.25 m^2 1087.5 × 2 = 2175 m^3 2175 × 2 = 4350 m^3 1178.25 × 3 = 3534.75 m^3 2175/2 = 1087.5 m^3/hr

Velocity of flow or design flow Total perimeter Perimeter required (Weir loading allowed 300 m^3/d/m) Provide weir to have inlet from both sides Thus launder perimeter required is 87 m Provided is adequate	1087.5/3600×0.8×0.8= 0.47 m^3/sec Π×43.6 = 135 m 2175×24/300 = 174 m
<u>Filters</u> No,s Total output Input to each of 10 filters Area required for each filter (Assuming filter rate as 6m/hr) Provide 2 sections each 3.50m×10.7m (10 filters) Inlet: Provide 350×350mm gate Outlet: Provide 350 mm φ S. V. Wash – in : Water rate 500 lpm/m^2 Wash water rate reqd Provide 600 mm φ SV Wash out; Provide gate 500×600mm(deep) <u>Air – inlet</u> Air required Air flow rate Provide 250 mm φ SV for each bed <u>Wash water Pump</u> Capacity required Provide 3 Submerssible pump sets (2W+1S) of 1090m^3/hr capacity with suitable head. <u>Air blower</u> Air capacity reqd. Provide two blowers (1W + 1S) of 3300 m^3/hr capacity	 10 no,s 100 MLD in 23 hours = 4350 m^3/hr 435 m^3/hr 435/6 = 72.5 sq.m Velocity = 0.986 m/sec. Velocity = 1.256 m/sec 72.5×0.5 = 36.25 m^3/min = 0.604 m^3/sec Velocity = 2.14 m/sec Velocity = 2.013 m/sec 750 lpm/m^2 72.5×0.75 = 54.375 m^3/min = 0.906 m^3/sec Velocity = 18.47 m/sec 36.25x60 = 2175 m^3/hr 54.375×60 = 3262.5 m^3/hr
<u>Chemical House</u> Consider an average of 50 ppm dose of alum @ 10% strength solution Solution required for 8 hrs Provide 3 tanks each of 3.25m×2.8m×2.2m (Approx 20 m^3 each) Alum required for 90 days Taking alum density 1300 kg/m^3 Volume of alum Taking stake height as 2 m, Area required for alum storage Taking provision for movement and putting weighing scale etc., Provide storage area = 250 m^2	 4350×50×1×100×8/1000×1000×10 = 17.4 m^3 4350×50×24×90/1000 = 469800 kg 469800/1300 = 361.38 m^3 = 361.38/2 =180.69 ~ 185 m^2

Appendix D-17: Design of Tube Settler for 100 MLD WTP

Appendix D-17: Design of Tube Settler for 100 MLD WTP

Description	**Value**	**Units**
Number of Tube Settlers	1	
Design Flow	100.00	MLD
	4,347.83	m^3/hr.
Design Flow Each	4,350.00	m^3/hr.
Detention in Flocculation Zone	0.50	hr
Detention in Clarification Zone	0.40	hr
Volume in Flocculation Zone	2,175.00	m^3
Volume in Clarification Zone	1,740.00	m^3
OD of Central Shaft	1.10	m
C/S Area of Central Shaft	0.95	m^2
SLR in Clarification Zone	**156.00**	**m^3/m^2/day**
Area of Clarification zone	669.23	
SWD Clarification Zone - required	2,600.00	m
SWD Clarification Zone - provided	**3.00**	**m**
SWD Flocculation Zone - provided	**3.30**	**m**
Area Flocculation Zone	659.09	m^2
Total Area Flocculation Zone	660.04	m^2
Dia Flocculation Zone	29.00	m
	29.00	m
Flocculator wall thickness	0.15	m
OD Flocculation Zone	29.30	m
Outer Area Flocculation Zone	673.91	m^2
Total Area required in Clarification zone	1,343.15	m^2
Dia required	41.36	m
Considering wastage of space due to inclined tube settler, say	42.00	m
Launder width	0.60	m
Launder wall thickness	0.10	m
Approx Launder Area	107.51	m^2
Area incl launder required	1,492.25	m^2
Dia required	43.40	m
say	43.40	m
Free Board	0.30	m
Bottom Slope	1 in 12	
Velocity in Inlet Pipe	1.00	m/s
Area Required	1.21	m^2
Inlet Pipe Dia required	1.24	m
Provide Inlet Pipe	2 no.s of 700 mm	mm
Notes: Inner dia of clariflocculator is 42.00 m and the outer dia of flocculation zone is 29.3 m.So the effective available area for installing tube settler is	**710.83**	**Sq. m**

Appendix D-18 Design of Pumping Main using LOOP

Appendix D-18: Design of Pumping Main from WTP to OHSRs using LOOP Version 4.0

Echoing Input Design Variables

Title of the Project		: Panipat Water Supply Distribution
Name of the User		:
Number of Pipes		: 36
Number of Nodes		: 36
Type of Pipe Materials Used		: DI/
Number of Commercial Dia per Material		: 11/
Peak Design Factor		: 1
Newton-Raphson Stopping Criterion lps		: .001
Minimum Pressure	m	: 5
Maximum Pressure	m	: 50
Design Hydraulic Gradient m in km		: 1
Simulate or Design?	(S/D)	: D
No. of Res. Nodes with Fixed HGL		: 1
No. of Res. Nodes with Variable HGL		:
No. of Booster Pumps		:
No. of Pressure Reducing Valves		:
No. of Check Valves		:
Type of Formula		: Hazen's

Looped Water Distribution Network Design OutPut

BandWidth	=	1
Number of Loops	=	1
Newton Raphson Iterations	=	5

Pipe Details

Pipe No.	From Node	To Node	Flow (lps)	Dia (mm)	HL (m)	HL/1000m (m)	Length (m)	Velocity (m/s)
1	100	1	1316.240	900.0	3.77	3.15	1199.00	2.07
2	1	2	740.737	900.0	0.57	1.09	522.00	1.16
3	2	3	44.750	300.0	0.38	1.27	301.00	0.63
4	2	4	695.987	900.0	0.76	0.97	785.00	1.09
5	4	5	117.040	450.0	0.45	1.04	430.00	0.74
6	5	6	57.190	350.0	0.03	0.94	35.00	0.59
7	5	7	59.850	350.0	2.45	1.02	2394.00	0.62
8	4	8	578.947	800.0	0.91	1.22	744.00	1.15
9	9	8	-52.200	350.0	-0.17	-0.79	217.00	-0.54
10	8	10	526.747	800.0	1.49	1.02	1457.00	1.05

Pipe Details cont`d

Pipe	From	To	Flow	Dia	HL	HL/1000m	Length	Velocity

No.	Node	Node	(lps)	(mm)	(m)	(m)	(m)	(m/s)
11	10	11	225.800	600.0	0.85	0.87	978.00	0.80
12	11	12	107.130	450.0	0.10	0.88	110.00	0.67
13	11	13	118.670	450.0	2.19	1.07	2052.00	0.75
14	10	14	300.947	600.0	0.39	1.48	267.00	1.06
15	14	15	98.160	400.0	3.09	1.33	2316.00	0.78
16	14	16	202.787	500.0	1.41	1.73	818.00	1.03
17	17	16	-67.230	350.0	-0.34	-1.27	265.00	-0.70
18	16	18	135.557	450.0	0.73	1.37	532.00	0.85
19	18	19	79.720	400.0	1.56	0.91	1716.00	0.63
20	18	20	55.837	350.0	0.26	0.90	294.00	0.58
21	21	20	-73.220	400.0	-0.09	-0.78	110.00	-0.58
22	20	22	-17.383	250.0	-0.84	-0.53	1574.00	-0.35
23	22	23	64.540	350.0	0.64	1.18	548.00	0.67
24	22	24	-81.923	400.0	-0.57	-0.96	599.00	-0.65
25	25	24	-51.410	350.0	-0.15	-0.77	199.00	-0.53
26	24	26	247.320	600.0	0.56	1.03	545.00	0.87
27	27	26	-60.380	350.0	-0.89	-1.04	853.00	-0.63
28	28	26	-186.940	500.0	-0.73	-1.48	489.00	-0.95
29	29	28	-86.080	400.0	-1.27	-1.05	1210.00	-0.68
30	30	28	-100.860	450.0	-1.01	-0.79	1278.00	-0.63
31	24	31	-380.653	700.0	-1.37	-1.08	1278.00	-0.99
32	32	31	-57.490	350.0	-0.50	-0.95	523.00	-0.60
33	33	31	-137.360	500.0	-0.47	-0.84	560.00	-0.70
34	34	33	-66.320	350.0	-0.25	-1.24	200.00	-0.69
35	35	33	-71.040	350.0	-1.33	-1.41	945.00	-0.74
36	31	1	-575.503	800.0	-3.74	-1.21	3096.00	-1.14

Note: Negative value indicates the flow in reverse direction in that Pipe

Pipe Pressure Details

Pipe No.	From Node	To Node	Dia (mm)	Hazen's Const	Pipe Material	Max Press (m)	Allow Press (m)	Status (E/P)
1	100	1	900.0	140.00000	DI	50.00 HI	40.00	
2	1	2	900.0	140.00000	DI	46.23 HI	40.00	
3	2	3	300.0	140.00000	DI	45.66 HI	40.00	
4	2	4	900.0	140.00000	DI	45.66 HI	40.00	
5	4	5	450.0	140.00000	DI	44.90 HI	40.00	
6	5	6	350.0	140.00000	DI	44.45 HI	40.00	
7	5	7	350.0	140.00000	DI	44.45 HI	40.00	

Pipe Pressure Details cont`d

Pipe No.	From Node	To Node	Dia (mm)	Hazen's Const	Pipe Material	Max Press (m)	Allow Press (m)	Status (E/P)
8	4	8	800.0	140.00000	DI	44.90 HI	40.00	
9	9	8	350.0	140.00000	DI	43.99 HI	40.00	
10	8	10	800.0	140.00000	DI	43.99 HI	40.00	
11	10	11	600.0	140.00000	DI	42.50 HI	40.00	
12	11	12	450.0	140.00000	DI	41.65 HI	40.00	
13	11	13	450.0	140.00000	DI	41.65 HI	40.00	
14	10	14	600.0	140.00000	DI	42.50 HI	40.00	
15	14	15	400.0	140.00000	DI	42.11 HI	40.00	
16	14	16	500.0	140.00000	DI	42.11 HI	40.00	

17	17	16	350.0	140.00000	DI	40.69	HI	40.00
18	16	18	450.0	140.00000	DI	40.69	HI	40.00
19	18	19	400.0	140.00000	DI	39.97		40.00
20	18	20	350.0	140.00000	DI	39.97		40.00
21	21	20	400.0	140.00000	DI	39.70		40.00
22	20	22	250.0	140.00000	DI	40.54	HI	40.00
23	22	23	350.0	140.00000	DI	40.54	HI	40.00
24	22	24	400.0	140.00000	DI	41.11	HI	40.00
25	25	24	350.0	140.00000	DI	41.11	HI	40.00
26	24	26	600.0	140.00000	DI	41.11	HI	40.00
27	27	26	350.0	140.00000	DI	40.55	HI	40.00
28	28	26	500.0	140.00000	DI	40.55	HI	40.00
29	29	28	400.0	140.00000	DI	39.83		40.00
30	30	28	450.0	140.00000	DI	39.83		40.00
31	24	31	700.0	140.00000	DI	42.49	HI	40.00
32	32	31	350.0	140.00000	DI	42.49	HI	40.00
33	33	31	500.0	140.00000	DI	42.49	HI	40.00
34	34	33	350.0	140.00000	DI	42.02	HI	40.00
35	35	33	350.0	140.00000	DI	42.02	HI	40.00
36	31	1	800.0	140.00000	DI	46.23	HI	40.00

Node Details

Node No.	Flow (lps)	Elev. (m)	H G L (m)	Pressure (m)
100 S	1316.240	235.00	285.00	50.00
1	0.000	235.00	281.23	46.23
2	0.000	235.00	280.66	45.66
3	-44.750	261.00	280.28	19.28
4	0.000	235.00	279.90	44.90
5	0.000	235.00	279.45	44.45

Node Details cont`d

Node No.	Flow (lps)	Elev. (m)	H G L (m)	Pressure (m)
6	-57.190	261.00	279.42	18.42
7	-59.850	261.00	277.00	16.00
8	0.000	235.00	278.99	43.99
9	-52.200	261.00	278.82	17.82
10	0.000	235.00	277.50	42.50
11	0.000	235.00	276.65	41.65
12	-107.130	261.00	276.55	15.55
13	-118.670	261.00	274.46	13.46
14	0.000	235.00	277.11	42.11
15	-98.160	261.00	274.01	13.01
16	0.000	235.00	275.69	40.69
17	-67.230	261.00	275.36	14.36
18	0.000	235.00	274.97	39.97
19	-79.720	261.00	273.41	12.41
20	0.000	235.00	274.70	39.70
21	-73.220	261.00	274.62	13.62
22	0.000	235.00	275.54	40.54
23	-64.540	261.00	274.90	13.90
24	0.000	235.00	276.11	41.11
25	-51.410	261.00	275.96	14.96
26	0.000	235.00	275.55	40.55

27	-60.380	261.00	274.67	13.67
28	0.000	235.00	274.83	39.83
29	-86.080	261.00	273.56	12.56
30	-100.860	261.00	273.82	12.82
31	0.000	235.00	277.49	42.49
32	-57.490	261.00	276.99	15.99
33	0.000	235.00	277.02	42.02
34	-66.320	261.00	276.77	15.77
35	-71.040	261.00	275.69	14.69

Pipe Cost Summary

Diameter (mm)	Pipe Material	Length (m)	Cost (1000 Rs)	Cum. Cost (1000 Rs)
250.0	DI	1574.00	254.99	254.99
300.0	DI	301.00	61.71	316.69
350.0	DI	6473.00	1365.80	1682.50
400.0	DI	5951.00	1517.51	3200.00
450.0	DI	4402.00	1417.44	4617.44

Pipe Cost Summary cont`d

Diameter (mm)	Pipe Material	Length (m)	Cost (1000 Rs)	Cum. Cost (1000 Rs)
500.0	DI	1867.00	752.40	5369.85
600.0	DI	1790.00	877.10	6246.95
700.0	DI	1278.00	775.75	7022.69
800.0	DI	5297.00	3956.86	10979.55
900.0	DI	2506.00	2320.56	13300.11

Pipe-wise Cost Summary

Pipe No	Diameter (mm)	Pipe Material	Length (m)	Cost (1000 Rs)	Cum. Cost (1000 Rs)
1	900.0	DI	1199.00	1110.27	1110.27
2	900.0	DI	522.00	483.37	1593.65
3	300.0	DI	301.00	61.71	1655.35
4	900.0	DI	785.00	726.91	2382.26
5	450.0	DI	430.00	138.46	2520.72
6	350.0	DI	35.00	7.39	2528.11
7	350.0	DI	2394.00	505.13	3033.24
8	800.0	DI	744.00	555.77	3589.01
9	350.0	DI	217.00	45.79	3634.79
10	800.0	DI	1457.00	1088.38	4723.17
11	600.0	DI	978.00	479.22	5202.39
12	450.0	DI	110.00	35.42	5237.81
13	450.0	DI	2052.00	660.74	5898.56
14	600.0	DI	267.00	130.83	6029.39
15	400.0	DI	2316.00	590.58	6619.97
16	500.0	DI	818.00	329.65	6949.62
17	350.0	DI	265.00	55.92	7005.54
18	450.0	DI	532.00	171.30	7176.84
19	400.0	DI	1716.00	437.58	7614.42

20	350.0	DI	294.00	62.03	7676.46
21	400.0	DI	110.00	28.05	7704.50
22	250.0	DI	1574.00	254.99	7959.49
23	350.0	DI	548.00	115.63	8075.12
24	400.0	DI	599.00	152.74	8227.87
25	350.0	DI	199.00	41.99	8269.86
26	600.0	DI	545.00	267.05	8536.91
27	350.0	DI	853.00	179.98	8716.89
28	500.0	DI	489.00	197.07	8913.96
29	400.0	DI	1210.00	308.55	9222.50
30	450.0	DI	1278.00	411.52	9634.02

Pipe-wise Cost Summary cont`d

Pipe No	Diameter (mm)	Pipe Material	Length (m)	Cost (1000 Rs)	Cum. Cost (1000 Rs)
31	700.0	DI	1278.00	775.75	10409.77
32	350.0	DI	523.00	110.35	10520.12
33	500.0	DI	560.00	225.68	10745.80
34	350.0	DI	200.00	42.20	10788.00
35	350.0	DI	945.00	199.40	10987.39
36	800.0	DI	3096.00	2312.71	13300.11

Appendix D-19: Design of Pumping Main – Pipe Size based on Least Cost (Node to Node Analysis)

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J16** To: **J17(Zone9)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN — I N P U T — D A T A — PANIPAT

From : J16

To : J17(Zone9) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial	2011	5.02	mld		
B.	Intermediate	2026	5.38	mld		
C.	Ultimate	2041	5.81	mld		

2) Pumping main	LENGTH	265	M
3) Static head for pump	ST.HEAD	28.00	M
4) Design period	YEAR	30	yr.
5) Combined eff. of pump set	EFF. %	75	%
6) Cost of pumping unit	Rs./KW	25000	Rs
7) Interest rate	INTEREST	10.00	%
8) Life of electric motor & pump set	P.Yrs	15	yr.
9) Energy charges per kWh	P/KWH	475	paise
10) Pumping hours for discharge	PUMPING-	23	hrs
at the end of 15 years	HOURS		

P I P E D A T A

DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	5.02	mld	5.38	mld
2) Discharge at the end of 15 yrs	5.38	mld	5.81	mld
3) Average Flow	63	lps	68	lps
4) Average Discharge	5.20	mld	5.59	mld
5) Avg.pumping hours during the period	22.23	hrs	22.15	hrs
6) KW required at combined	0.86	* H1	0.92	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	33039	* KW1	35418	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.063	1.000	0.063	0.007	994.620	0.250	0.001	5.279
300mm	1000	0.063	1.000	0.063	0.007	994.620	0.300	0.003	2.196
350mm	1000	0.063	1.000	0.063	0.007	994.620	0.350	0.006	1.046
400mm	1000	0.063	1.000	0.063	0.007	994.620	0.400	0.012	0.551
450mm	1000	0.063	1.000	0.063	0.007	994.620	0.450	0.021	0.312
500mm	1000	0.063	1.000	0.063	0.007	994.620	0.500	0.036	0.188
600mm	1000	0.063	1.000	0.063	0.007	994.620	0.600	0.086	0.078
700mm	1000	0.063	1.000	0.063	0.007	994.620	0.700	0.180	0.037
800mm	1000	0.063	1.000	0.063	0.007	994.620	0.800	0.342	0.020
900mm	1000	0.063	1.000	0.063	0.007	994.620	0.900	0.602	0.011
1000mm	1000	0.063	1.000	0.063	0.007	994.620	1.000	1.000	0.007

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1.000	0.063	0.162	0.005	0.055	1.279
300	143.534	1.000	0.075	0.182	0.002	0.034	0.888
350	143.534	1.000	0.088	0.202	0.001	0.023	0.653
400	143.534	1.000	0.100	0.220	0.001	0.016	0.500
450	143.534	1.000	0.113	0.238	0.000	0.012	0.395
500	143.534	1.000	0.125	0.255	0.000	0.009	0.320
600	143.534	1.000	0.150	0.287	0.000	0.005	0.222
700	143.534	1.000	0.175	0.318	0.000	0.004	0.163
800	143.534	1.000	0.200	0.347	0.000	0.003	0.125
900	143.534	1.000	0.225	0.375	0.000	0.002	0.099
1000	143.534	1.000	0.250	0.402	0.000	0.001	0.080

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.068	1.000	0.068	0.008	994.620	0.250	0.001	6.026
300mm	1000	0.068	1.000	0.068	0.008	994.620	0.300	0.003	2.507
350mm	1000	0.068	1.000	0.068	0.008	994.620	0.350	0.006	1.195
400mm	1000	0.068	1.000	0.068	0.008	994.620	0.400	0.012	0.628
450mm	1000	0.068	1.000	0.068	0.008	994.620	0.450	0.021	0.357
500mm	1000	0.068	1.000	0.068	0.008	994.620	0.500	0.036	0.215
600mm	1000	0.068	1.000	0.068	0.008	994.620	0.600	0.086	0.089
700mm	1000	0.068	1.000	0.068	0.008	994.620	0.700	0.180	0.043
800mm	1000	0.068	1.000	0.068	0.008	994.620	0.800	0.342	0.022
900mm	1000	0.068	1.000	0.068	0.008	994.620	0.900	0.602	0.013
1000mm	1000	0.068	1.000	0.068	0.008	994.620	1.000	1.000	0.008

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1.000	0.063	0.162	0.006	0.059	1.376
300	143.534	1.000	0.075	0.182	0.003	0.037	0.956
350	143.534	1.000	0.088	0.202	0.001	0.024	0.702
400	143.534	1.000	0.100	0.220	0.001	0.017	0.538
450	143.534	1.000	0.113	0.238	0.000	0.012	0.425
500	143.534	1.000	0.125	0.255	0.000	0.009	0.344
600	143.534	1.000	0.150	0.287	0.000	0.006	0.239
700	143.534	1.000	0.175	0.318	0.000	0.004	0.176
800	143.534	1.000	0.200	0.347	0.000	0.003	0.134
900	143.534	1.000	0.225	0.375	0.000	0.002	0.106
1000	143.534	1.000	0.250	0.402	0.000	0.001	0.086

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		265.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
1	250	5.279	6.026	1.279	1.376	1.399	0.140	29.539	1.597	0.160	29.757
2	300	2.196	2.507	0.888	0.956	0.582	0.058	28.640	0.664	0.066	28.731
3	350	1.046	1.195	0.653	0.702	0.277	0.028	28.305	0.317	0.032	28.348
4	400	0.551	0.628	0.500	0.538	0.146	0.015	28.160	0.167	0.017	28.183
5	450	0.312	0.357	0.395	0.425	0.083	0.008	28.091	0.095	0.009	28.104
6	500	0.188	0.215	0.320	0.344	0.050	0.005	28.055	0.057	0.006	28.063
7	600	0.078	0.089	0.222	0.239	0.021	0.002	28.023	0.024	0.002	28.026
8	700	0.037	0.043	0.163	0.176	0.010	0.001	28.011	0.011	0.001	28.012
9	800	0.020	0.022	0.125	0.134	0.005	0.001	28.006	0.006	0.001	28.007
10	900	0.011	0.013	0.099	0.106	0.003	0.000	28.003	0.003	0.000	28.004
11	1000	0.007	0.008	0.080	0.086	0.002	0.000	28.002	0.002	0.000	28.002

>>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	5.20			million liters/day			5.59	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	265
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	29.54	38	949		29.76	41	1,028	2,005	531
2	300	K7	28.64	37	920		28.73	40	993	2,543	674
3	350	K7	28.31	36	909		28.35	39	980	3,197	847
4	400	K7	28.16	36	905		28.18	39	974	3,833	847
5	450	K7	28.09	36	902		28.10	39	971	4,547	1,205
6	500	K7	28.05	36	901		28.06	39	970	5,325	1,411
7	600	K7	28.02	36	900		28.03	39	969	7,015	1,859
8	700	K7	28.01	36	900		28.01	39	968	9,622	2,550
9	800	K7	28.01	36	900		28.01	39	968	12,550	3,326
10	900	K7	28.00	36	900		28.00	39	968	15,314	4,058
11	1000	K7	28.00	36	900		28.00	39	968	18,354	4,864

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		5.20	mld	2nd stage flow		5.59	mld			
											GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
1	949	976	7,423	8,372	1,028	1,054	8,016	9,045	2,165	250	11,069
2	920	946	7,197	8,117	993	1,018	7,740	8,733	2,091	300	11,802
3	909	935	7,113	8,022	980	1,004	7,637	8,616	2,063	350	11,841
4	905	930	7,077	7,981	974	998	7,592	8,566	2,051	400	11,784
5	902	928	7,059	7,962	971	995	7,571	8,542	2,045	450	12,114
6	901	927	7,050	7,951	970	994	7,560	8,530	2,042	500	12,306
7	900	926	7,042	7,942	969	993	7,550	8,519	2,039	600	12,741
8	900	925	7,039	7,939	968	992	7,546	8,514	2,038	700	13,427
9	900	925	7,038	7,937	968	992	7,545	8,513	2,038	800	14,201
10	900	925	7,037	7,937	968	992	7,544	8,512	2,038	900	14,932
11	900	925	7,037	7,936	968	992	7,544	8,511	2,038	1,000	15,737

*** TABLE 3 shows that the most economical size of MAIN **J16 - J17(Zone9)** is :

250 mm costing : CAPITALISED 11,069 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J16** To: **J18**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN — I N P U T D A T A — PANIPAT

From : J16

To : J18 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	3.37	mld		P I P E D A T A			
B.	Intermediate			2026	4.27	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	6.89	mld	MM.	IAL			Rs/M
2) Pumping main				LENGTH	532	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K7	140	12550
at the end of 15 years				HOURS			900	DI	K7	140	15314
							1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	3.37	mld	4.27	mld
2) Discharge at the end of 15 yrs	4.27	mld	6.89	mld
3) Average Flow	46	lps	67	lps
4) Average Discharge	3.82	mld	5.58	mld
5) Avg.pumping hours during the period	20.58	hrs	18.63	hrs
6) KW required at combined	0.63	* H1	0.92	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	22465	* KW1	29705	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.046	1.000	0.046	0.004	994.620	0.250	0.001	3.021
300mm	1000	0.046	1.000	0.046	0.004	994.620	0.300	0.003	1.257
350mm	1000	0.046	1.000	0.046	0.004	994.620	0.350	0.006	0.599
400mm	1000	0.046	1.000	0.046	0.004	994.620	0.400	0.012	0.315
450mm	1000	0.046	1.000	0.046	0.004	994.620	0.450	0.021	0.179
500mm	1000	0.046	1.000	0.046	0.004	994.620	0.500	0.036	0.108
600mm	1000	0.046	1.000	0.046	0.004	994.620	0.600	0.086	0.045
700mm	1000	0.046	1.000	0.046	0.004	994.620	0.700	0.180	0.021
800mm	1000	0.046	1.000	0.046	0.004	994.620	0.800	0.342	0.011
900mm	1000	0.046	1.000	0.046	0.004	994.620	0.900	0.602	0.006
1000mm	1000	0.046	1.000	0.046	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1.000	0.063	0.162	0.003	0.041	0.940
300	143.534	1.000	0.075	0.182	0.001	0.025	0.653
350	143.534	1.000	0.088	0.202	0.001	0.017	0.479
400	143.534	1.000	0.100	0.220	0.000	0.012	0.367
450	143.534	1.000	0.113	0.238	0.000	0.008	0.290
500	143.534	1.000	0.125	0.255	0.000	0.006	0.235
600	143.534	1.000	0.150	0.287	0.000	0.004	0.163
700	143.534	1.000	0.175	0.318	0.000	0.003	0.120
800	143.534	1.000	0.200	0.347	0.000	0.002	0.092
900	143.534	1.000	0.225	0.375	0.000	0.001	0.073
1000	143.534	1.000	0.250	0.402	0.000	0.001	0.059

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.067	1.000	0.067	0.008	994.620	0.250	0.001	5.996
300mm	1000	0.067	1.000	0.067	0.008	994.620	0.300	0.003	2.495
350mm	1000	0.067	1.000	0.067	0.008	994.620	0.350	0.006	1.189
400mm	1000	0.067	1.000	0.067	0.008	994.620	0.400	0.012	0.625
450mm	1000	0.067	1.000	0.067	0.008	994.620	0.450	0.021	0.355
500mm	1000	0.067	1.000	0.067	0.008	994.620	0.500	0.036	0.214
600mm	1000	0.067	1.000	0.067	0.008	994.620	0.600	0.086	0.089
700mm	1000	0.067	1.000	0.067	0.008	994.620	0.700	0.180	0.042
800mm	1000	0.067	1.000	0.067	0.008	994.620	0.800	0.342	0.022
900mm	1000	0.067	1.000	0.067	0.008	994.620	0.900	0.602	0.013
1000mm	1000	0.067	1.000	0.067	0.008	994.620	1.000	1.000	0.008

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1.000	0.063	0.162	0.006	0.059	1.373
300	143.534	1.000	0.075	0.182	0.002	0.036	0.953
350	143.534	1.000	0.088	0.202	0.001	0.024	0.700
400	143.534	1.000	0.100	0.220	0.001	0.017	0.536
450	143.534	1.000	0.113	0.238	0.000	0.012	0.424
500	143.534	1.000	0.125	0.255	0.000	0.009	0.343
600	143.534	1.000	0.150	0.287	0.000	0.006	0.238
700	143.534	1.000	0.175	0.318	0.000	0.004	0.175
800	143.534	1.000	0.200	0.347	0.000	0.003	0.134
900	143.534	1.000	0.225	0.375	0.000	0.002	0.106
1000	143.534	1.000	0.250	0.402	0.000	0.001	0.086

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

Sl. No.	Pipe Size in mm	Frictional Head loss per 1000 m 1st stage flow	Frictional Head loss per 1000 m 2nd stage flow	Velocity in m/s 1st stage flow	Velocity in m/s 2nd stage flow	Total head(m) for including 28.00 m static head 1st stage flow: Frictional loss	Total head(m) for including 28.00 m static head 1st stage flow: Other* losses	Total head(m) for including 28.00 m static head 1st stage flow: Total losses H1	532.00 m length 2nd stage flow: Frictional loss	532.00 m length 2nd stage flow: Other* losses	532.00 m length 2nd stage flow: Total losses H2
1	250	3.021	5.996	0.940	1.373	1.607	0.161	29.768	3.190	0.319	31.509
2	300	1.257	2.495	0.653	0.953	0.669	0.067	28.736	1.327	0.133	29.460
3	350	0.599	1.189	0.479	0.700	0.319	0.032	28.350	0.632	0.063	28.696
4	400	0.315	0.625	0.367	0.536	0.168	0.017	28.184	0.333	0.033	28.366
5	450	0.179	0.355	0.290	0.424	0.095	0.010	28.105	0.189	0.019	28.208
6	500	0.108	0.214	0.235	0.343	0.057	0.006	28.063	0.114	0.011	28.125
7	600	0.045	0.089	0.163	0.238	0.024	0.002	28.026	0.047	0.005	28.052
8	700	0.021	0.042	0.120	0.175	0.011	0.001	28.012	0.023	0.002	28.025
9	800	0.011	0.022	0.092	0.134	0.006	0.001	28.007	0.012	0.001	28.013
10	900	0.006	0.013	0.073	0.106	0.003	0.000	28.004	0.007	0.001	28.007
11	1000	0.004	0.008	0.059	0.086	0.002	0.000	28.002	0.004	0.000	28.004

>>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.82		million liters/day				5.58	million liters/day		of	of
			H1	Kw	Pump		H2	Kw	Pump	pipe	532
Sl.	PIPE	Class	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	per	meter
No.	Size	of	head		25000.00		head	plus %	25000.00	unit	pipe
	in	PIPE	in	plus 50%	per kw		in	50	per kw	length	line
	mm		meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	THS
											(Rs)
1	250	K7	29.77	28	702		31.51	43	1,086	2,005	1,067
2	300	K7	28.74	27	678		29.46	41	1,015	2,543	1,353
3	350	K7	28.35	27	669		28.70	40	989	3,197	1,701
4	400	K7	28.18	27	665		28.37	39	978	3,833	1,701
5	450	K7	28.10	27	663		28.21	39	972	4,547	2,419
6	500	K7	28.06	26	662		28.13	39	969	5,325	2,833
7	600	K7	28.03	26	661		28.05	39	967	7,015	3,732
8	700	K7	28.01	26	661		28.02	39	966	9,622	5,119
9	800	K7	28.01	26	661		28.01	39	965	12,550	6,677
10	900	K7	28.00	26	661		28.01	39	965	15,314	8,147
11	1000	K7	28.00	26	661		28.00	39	965	18,354	9,764

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.82	mld	2nd stage flow		5.58	mld			
											GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
1	702	669	5086	5789	1086	936	7119	8205	1964	250	8820
2	678	646	4910	5588	1015	875	6656	7671	1837	300	8778
3	669	637	4844	5513	989	852	6483	7472	1789	350	9003
4	665	633	4816	5481	978	843	6409	7386	1768	400	8950
5	663	631	4802	5465	972	838	6373	7345	1758	450	9643
6	662	630	4795	5457	969	835	6354	7324	1753	500	10044
7	661	630	4789	5450	967	833	6338	7305	1749	600	10931
8	661	629	4786	5447	966	832	6332	7298	1747	700	12313
9	661	629	4785	5446	965	832	6329	7295	1746	800	13869
10	661	629	4785	5446	965	832	6328	7293	1746	900	15339
11	661	629	4785	5445	965	832	6327	7292	1746	1000	16956

*** TABLE 3 shows that the most economical size of MAIN **J16 - J18** is :

300 mm costing : CAPITALISED Rs. 8,778 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J18** To: **J19 (Zone16)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN I N P U T D A T A PANIPAT

From : J18

To : J19 (Zone16) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	3.37	mld
B.	Intermediate			2026	4.27	mld
C.	Ultimate			2041	6.89	mld

2) Pumping main				LENGTH	1716	M
3) Static head for pump				ST.HEAD	28.00	M
4) Design period				YEAR	30	yr.
5) Combined eff. of pump set				EFF. %	75	%
6) Cost of pumping unit				Rs./KW	25000	Rs
7) Interest rate				INTEREST	10.00	%
8) Life of electric motor & pump set				P.Yrs	15	yr.
9) Energy charges per kWh				P/KWH	475	paise
10) Pumping hours for discharge				PUMPING-	23	hrs
	at the end of 15 years			HOURS		

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	3.37	mld	4.27	mld
2) Average flow	4.27	mld	6.89	mld
3) Discharge at the end of 15 yrs	46	lps	67	lps
4) Average Discharge	3.82	mld	5.58	mld
5) Ave.pumping hours during the period	20.58	hrs	18.63	hrs
6) KW required at combined	0.63	* H1	0.92	* H2
efficiency of pumping set				
7) Ave.annual charges for electrical				
energy Rs.	22465	* KW1	29705	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.046	1.000	0.046	0.004	994.620	0.250	0.001	3.021
300mm	1000	0.046	1.000	0.046	0.004	994.620	0.300	0.003	1.257
350mm	1000	0.046	1.000	0.046	0.004	994.620	0.350	0.006	0.599
400mm	1000	0.046	1.000	0.046	0.004	994.620	0.400	0.012	0.315
450mm	1000	0.046	1.000	0.046	0.004	994.620	0.450	0.021	0.179
500mm	1000	0.046	1.000	0.046	0.004	994.620	0.500	0.036	0.108
600mm	1000	0.046	1.000	0.046	0.004	994.620	0.600	0.086	0.045
700mm	1000	0.046	1.000	0.046	0.004	994.620	0.700	0.180	0.021
800mm	1000	0.046	1.000	0.046	0.004	994.620	0.800	0.342	0.011
900mm	1000	0.046	1.000	0.046	0.004	994.620	0.900	0.602	0.006
1000mm	1000	0.046	1.000	0.046	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.041	0.940
300	143.534	1	0.075	0.182	0.001	0.025	0.653
350	143.534	1	0.088	0.202	0.001	0.017	0.479
400	143.534	1	0.100	0.220	0.000	0.012	0.367
450	143.534	1	0.113	0.238	0.000	0.008	0.290
500	143.534	1	0.125	0.255	0.000	0.006	0.235
600	143.534	1	0.150	0.287	0.000	0.004	0.163
700	143.534	1	0.175	0.318	0.000	0.003	0.120
800	143.534	1	0.200	0.347	0.000	0.002	0.092
900	143.534	1	0.225	0.375	0.000	0.001	0.073
1000	143.534	1	0.250	0.402	0.000	0.001	0.059

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.067	1.000	0.067	0.008	994.620	0.250	0.001	5.996
300mm	1000	0.067	1.000	0.067	0.008	994.620	0.300	0.003	2.495
350mm	1000	0.067	1.000	0.067	0.008	994.620	0.350	0.006	1.189
400mm	1000	0.067	1.000	0.067	0.008	994.620	0.400	0.012	0.625
450mm	1000	0.067	1.000	0.067	0.008	994.620	0.450	0.021	0.355
500mm	1000	0.067	1.000	0.067	0.008	994.620	0.500	0.036	0.214
600mm	1000	0.067	1.000	0.067	0.008	994.620	0.600	0.086	0.089
700mm	1000	0.067	1.000	0.067	0.008	994.620	0.700	0.180	0.042
800mm	1000	0.067	1.000	0.067	0.008	994.620	0.800	0.342	0.022
900mm	1000	0.067	1.000	0.067	0.008	994.620	0.900	0.602	0.013
1000mm	1000	0.067	1.000	0.067	0.008	994.620	1.000	1.000	0.008

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.006	0.059	1.373
300	143.534	1	0.075	0.182	0.002	0.036	0.953
350	143.534	1	0.088	0.202	0.001	0.024	0.700
400	143.534	1	0.100	0.220	0.001	0.017	0.536
450	143.534	1	0.113	0.238	0.000	0.012	0.424
500	143.534	1	0.125	0.255	0.000	0.009	0.343
600	143.534	1	0.150	0.287	0.000	0.006	0.238
700	143.534	1	0.175	0.318	0.000	0.004	0.175
800	143.534	1	0.200	0.347	0.000	0.003	0.134
900	143.534	1	0.225	0.375	0.000	0.002	0.106
1000	143.534	1	0.25	0.401925495	7.6203E-06	0.001486932	0.085781075

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		1716.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
---	---	---	---	---	---	---	---	---	---	---	---
1	250	3.021	5.996	0.940	1.373	5.184	0.518	33.702	10.290	1.029	39.319
2	300	1.257	2.495	0.653	0.953	2.157	0.216	30.372	4.281	0.428	32.709
3	350	0.599	1.189	0.479	0.700	1.028	0.103	29.130	2.040	0.204	30.243
4	400	0.315	0.625	0.367	0.536	0.541	0.054	28.595	1.073	0.107	29.180
5	450	0.179	0.355	0.290	0.424	0.307	0.031	28.337	0.609	0.061	28.670
6	500	0.108	0.214	0.235	0.343	0.185	0.018	28.203	0.367	0.037	28.403
7	600	0.045	0.089	0.163	0.238	0.077	0.008	28.085	0.153	0.015	28.168
8	700	0.021	0.042	0.120	0.175	0.037	0.004	28.040	0.073	0.007	28.080
9	800	0.011	0.022	0.092	0.134	0.019	0.002	28.021	0.038	0.004	28.042
10	900	0.006	0.013	0.073	0.106	0.011	0.001	28.012	0.022	0.002	28.024
11	1000	0.004	0.008	0.059	0.086	0.007	0.001	28.007	0.013	0.001	28.014

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.82		million liters/day				5.58	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	1716
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	33.70	32	795		39.32	54	1355	2005	3441
2	300	K7	30.37	29	717		32.71	45	1127	2543	4364
3	350	K7	29.13	27	687		30.24	42	1042	3197	5486
4	400	K7	28.59	27	675		29.18	40	1006	3833	5486
5	450	K7	28.34	27	669		28.67	40	988	4547	7803
6	500	K7	28.20	27	666		28.40	39	979	5325	9138
7	600	K7	28.08	27	663		28.17	39	971	7015	12038
8	700	K7	28.04	26	662		28.08	39	968	9622	16511
9	800	K7	28.02	26	661		28.04	39	966	12550	21536
10	900	K7	28.01	26	661		28.02	39	966	15314	26279
11	1000	K7	28.01	26	661		28.01	39	966	18354	31495

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.82	mld	2nd stage flow		5.58	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	795	757	5759	6554	1355	1168	8883	10238	2451	250	12446
2	717	682	5190	5906	1127	972	7390	8517	2039	300	12309
3	687	654	4977	5665	1042	898	6833	7875	1885	350	13036
4	675	642	4886	5561	1006	867	6593	7598	1819	400	12866
5	669	637	4842	5511	988	852	6477	7466	1787	450	15101
6	666	634	4819	5485	979	844	6417	7396	1771	500	16393
7	663	631	4799	5461	971	837	6364	7335	1756	600	19255
8	662	630	4791	5453	968	834	6344	7312	1751	700	23715
9	661	629	4788	5449	966	833	6336	7302	1748	800	28733
10	661	629	4786	5447	966	832	6332	7297	1747	900	33473
11	661	629	4786	5446	966	832	6329	7295	1746	1000	38688

*** TABLE 3 shows that the most economical size of MAIN **J18 - J19(Z0ne16)** is :

300 mm costing **:CAPITALISED Rs.** 12,309 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J20** To: **J21(Zone10)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN I N P U T D A T A PANIPAT

From : J20

To : J21(Zone10) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	5.69	mld		P I P E D A T A			
B.	Intermediate			2026	6.00	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	6.33	mld	MM.	IAL			Rs/M
2) Pumping main				LENGTH	110	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K7	140	12550
at the end of 15 years				HOURS			900	DI	K7	140	15314
							1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	5.69	mld	6.00	mld
2) Average flow	6.00	mld	6.33	mld
3) Discharge at the end of 15 yrs	71	lps	74	lps
4) Average Discharge	5.85	mld	6.16	mld
5) Ave.pumping hours during the period	22.41	hrs	22.41	hrs
6) KW required at combined	0.96	* H1	1.02	* H2
efficiency of pumping set				
7) Ave.annual charges for electrical				
energy Rs.	37430	* KW1	39469	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.071	1.000	0.071	0.008	994.620	0.250	0.001	6.524
300mm	1000	0.071	1.000	0.071	0.008	994.620	0.300	0.003	2.714
350mm	1000	0.071	1.000	0.071	0.008	994.620	0.350	0.006	1.293
400mm	1000	0.071	1.000	0.071	0.008	994.620	0.400	0.012	0.680
450mm	1000	0.071	1.000	0.071	0.008	994.620	0.450	0.021	0.386
500mm	1000	0.071	1.000	0.071	0.008	994.620	0.500	0.036	0.233
600mm	1000	0.071	1.000	0.071	0.008	994.620	0.600	0.086	0.097
700mm	1000	0.071	1.000	0.071	0.008	994.620	0.700	0.180	0.046
800mm	1000	0.071	1.000	0.071	0.008	994.620	0.800	0.342	0.024
900mm	1000	0.071	1.000	0.071	0.008	994.620	0.900	0.602	0.014
1000mm	1000	0.071	1.000	0.071	0.008	994.620	1.000	1.000	0.008

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.007	0.062	1.438
300	143.534	1	0.075	0.182	0.003	0.038	0.999
350	143.534	1	0.088	0.202	0.001	0.025	0.734
400	143.534	1	0.100	0.220	0.001	0.018	0.562
450	143.534	1	0.113	0.238	0.000	0.013	0.444
500	143.534	1	0.125	0.255	0.000	0.010	0.359
600	143.534	1	0.150	0.287	0.000	0.006	0.250
700	143.534	1	0.175	0.318	0.000	0.004	0.183
800	143.534	1	0.200	0.347	0.000	0.003	0.140
900	143.534	1	0.225	0.375	0.000	0.002	0.111
1000	143.534	1	0.250	0.402	0.000	0.002	0.090

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.074	1.000	0.074	0.009	994.620	0.250	0.001	7.180
300mm	1000	0.074	1.000	0.074	0.009	994.620	0.300	0.003	2.987
350mm	1000	0.074	1.000	0.074	0.009	994.620	0.350	0.006	1.423
400mm	1000	0.074	1.000	0.074	0.009	994.620	0.400	0.012	0.749
450mm	1000	0.074	1.000	0.074	0.009	994.620	0.450	0.021	0.425
500mm	1000	0.074	1.000	0.074	0.009	994.620	0.500	0.036	0.256
600mm	1000	0.074	1.000	0.074	0.009	994.620	0.600	0.086	0.106
700mm	1000	0.074	1.000	0.074	0.009	994.620	0.700	0.180	0.051
800mm	1000	0.074	1.000	0.074	0.009	994.620	0.800	0.342	0.027
900mm	1000	0.074	1.000	0.074	0.009	994.620	0.900	0.602	0.015
1000mm	1000	0.074	1.000	0.074	0.009	994.620	1.000	1.000	0.009

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.007	0.065	1.516
300	143.534	1	0.075	0.182	0.003	0.040	1.053
350	143.534	1	0.088	0.202	0.001	0.027	0.774
400	143.534	1	0.100	0.220	0.001	0.019	0.592
450	143.534	1	0.113	0.238	0.000	0.014	0.468
500	143.534	1	0.125	0.255	0.000	0.010	0.379
600	143.534	1	0.150	0.287	0.000	0.006	0.263
700	143.534	1	0.175	0.318	0.000	0.004	0.193
800	143.534	1	0.200	0.347	0.000	0.003	0.148
900	143.534	1	0.225	0.375	0.000	0.002	0.117
1000	143.534	1	0.250	0.402	0.000	0.002	0.095

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		110.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	6.524	7.180	1.438	1.516	0.718	0.072	28.789	0.790	0.079	28.869
2	300	2.714	2.987	0.999	1.053	0.299	0.030	28.328	0.329	0.033	28.361
3	350	1.293	1.423	0.734	0.774	0.142	0.014	28.156	0.157	0.016	28.172
4	400	0.680	0.749	0.562	0.592	0.075	0.007	28.082	0.082	0.008	28.091
5	450	0.386	0.425	0.444	0.468	0.042	0.004	28.047	0.047	0.005	28.051
6	500	0.233	0.256	0.359	0.379	0.026	0.003	28.028	0.028	0.003	28.031
7	600	0.097	0.106	0.250	0.263	0.011	0.001	28.012	0.012	0.001	28.013
8	700	0.046	0.051	0.183	0.193	0.005	0.001	28.006	0.006	0.001	28.006
9	800	0.024	0.027	0.140	0.148	0.003	0.000	28.003	0.003	0.000	28.003
10	900	0.014	0.015	0.111	0.117	0.002	0.000	28.002	0.002	0.000	28.002
11	1000	0.008	0.009	0.090	0.095	0.001	0.000	28.001	0.001	0.000	28.001

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	5.85		million liters/day				6.16	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	110
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
---	---	---	---	---	---	---	---	---	---	---	---
1	250	K7	28.79	42	1040		28.87	44	1099	2005	221
2	300	K7	28.33	41	1023		28.36	43	1080	2543	280
3	350	K7	28.16	41	1017		28.17	43	1073	3197	352
4	400	K7	28.08	41	1014		28.09	43	1069	3833	352
5	450	K7	28.05	41	1013		28.05	43	1068	4547	500
6	500	K7	28.03	40	1012		28.03	43	1067	5325	586
7	600	K7	28.01	40	1011		28.01	43	1067	7015	772
8	700	K7	28.01	40	1011		28.01	43	1066	9622	1058
9	800	K7	28.00	40	1011		28.00	43	1066	12550	1381
10	900	K7	28.00	40	1011		28.00	43	1066	15314	1685
11	1000	K7	28.00	40	1011		28.00	43	1066	18354	2019

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		5.85	mld	2nd stage flow		6.16	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	1040	1078	8196	9236	1099	1139	8666	9766	2338	250	12834
2	1023	1060	8065	9088	1080	1119	8514	9594	2297	300	12687
3	1017	1054	8016	9033	1073	1112	8457	9530	2282	350	12683
4	1014	1051	7995	9009	1069	1109	8433	9502	2275	400	12649
5	1013	1050	7985	8997	1068	1107	8421	9489	2272	450	12782
6	1012	1049	7979	8991	1067	1106	8415	9482	2270	500	12859
7	1011	1048	7975	8986	1067	1106	8410	9476	2269	600	13038
8	1011	1048	7973	8984	1066	1105	8408	9474	2268	700	13322
9	1011	1048	7972	8983	1066	1105	8407	9473	2268	800	13643
10	1011	1048	7972	8983	1066	1105	8406	9472	2268	900	13946
11	1011	1048	7972	8983	1066	1105	8406	9472	2268	1000	14280

*** TABLE 3 shows that the most economical size of MAIN **J20 - J21(Zone10)** is :

400 mm costing **:CAPITALISED Rs.** 250 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J1** To: **J31**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J1

To : J31 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	29.75	mld		P I P E D A T A			
B.	Intermediate			2026	39.99	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	54.54	mld	MM.	IAL			Rs/M
2) Pumping main				LENGTH	3096	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K7	140	12550
at the end of 15 years				HOURS			900	DI	K7	140	15314
							1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	29.75	mld	39.99	mld
2) Average flow	39.99	mld	54.54	mld
3) Discharge at the end of 15 yrs	421	lps	571	lps
4) Average Discharge	34.87	mld	47.26	mld
5) Ave.pumping hours during the period	20.06	hrs	19.93	hrs
6) KW required at combined	5.74	* H1	7.79	* H2
efficiency of pumping set				
7) Ave.annual charges for electrical				
energy Rs.	199874	* KW1	269256	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.421	1.000	0.421	0.209	994.620	0.250	0.001	165.369
300mm	1000	0.421	1.000	0.421	0.209	994.620	0.300	0.003	68.801
350mm	1000	0.421	1.000	0.421	0.209	994.620	0.350	0.006	32.778
400mm	1000	0.421	1.000	0.421	0.209	994.620	0.400	0.012	17.244
450mm	1000	0.421	1.000	0.421	0.209	994.620	0.450	0.021	9.786
500mm	1000	0.421	1.000	0.421	0.209	994.620	0.500	0.036	5.895
600mm	1000	0.421	1.000	0.421	0.209	994.620	0.600	0.086	2.453
700mm	1000	0.421	1.000	0.421	0.209	994.620	0.700	0.180	1.168
800mm	1000	0.421	1.000	0.421	0.209	994.620	0.800	0.342	0.615
900mm	1000	0.421	1.000	0.421	0.209	994.620	0.900	0.602	0.349
1000mm	1000	0.421	1.000	0.421	0.209	994.620	1.000	1.000	0.210

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.165	0.370	8.579
300	143.534	1	0.075	0.182	0.069	0.228	5.958
350	143.534	1	0.088	0.202	0.033	0.151	4.377
400	143.534	1	0.100	0.220	0.017	0.106	3.351
450	143.534	1	0.113	0.238	0.010	0.078	2.648
500	143.534	1	0.125	0.255	0.006	0.059	2.145
600	143.534	1	0.150	0.287	0.002	0.036	1.489
700	143.534	1	0.175	0.318	0.001	0.024	1.094
800	143.534	1	0.200	0.347	0.001	0.017	0.838
900	143.534	1	0.225	0.375	0.000	0.012	0.662
1000	143.534	1	0.250	0.402	0.000	0.009	0.536

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.571	1.000	0.571	0.362	994.620	0.250	0.001	286.759
300mm	1000	0.571	1.000	0.571	0.362	994.620	0.300	0.003	119.304
350mm	1000	0.571	1.000	0.571	0.362	994.620	0.350	0.006	56.838
400mm	1000	0.571	1.000	0.571	0.362	994.620	0.400	0.012	29.902
450mm	1000	0.571	1.000	0.571	0.362	994.620	0.450	0.021	16.969
500mm	1000	0.571	1.000	0.571	0.362	994.620	0.500	0.036	10.223
600mm	1000	0.571	1.000	0.571	0.362	994.620	0.600	0.086	4.253
700mm	1000	0.571	1.000	0.571	0.362	994.620	0.700	0.180	2.026
800mm	1000	0.571	1.000	0.571	0.362	994.620	0.800	0.342	1.066
900mm	1000	0.571	1.000	0.571	0.362	994.620	0.900	0.602	0.605
1000mm	1000	0.571	1.000	0.571	0.362	994.620	1.000	1.000	0.364

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.287	0.502	11.629
300	143.534	1	0.075	0.182	0.119	0.309	8.075
350	143.534	1	0.088	0.202	0.057	0.205	5.933
400	143.534	1	0.100	0.220	0.030	0.144	4.542
450	143.534	1	0.113	0.238	0.017	0.105	3.589
500	143.534	1	0.125	0.255	0.010	0.079	2.907
600	143.534	1	0.150	0.287	0.004	0.049	2.019
700	143.534	1	0.175	0.318	0.002	0.033	1.483
800	143.534	1	0.200	0.347	0.001	0.023	1.136
900	143.534	1	0.225	0.375	0.001	0.017	0.897
1000	143.534	1	0.250	0.402	0.000	0.013	0.727

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		3096.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
1	250	165.37	286.76	8.579105384	11.6285036	511.98	51.20	591.18	887.80	88.78	1004.59
2	300	68.80	119.30	5.957684916	8.0753129	213.01	21.30	262.31	369.37	36.94	434.30
3	350	32.78	56.84	4.377057764	5.93286008	101.48	10.15	139.63	175.97	17.60	221.57
4	400	17.24	29.90	3.351173664	4.54233084	53.39	5.34	86.73	92.58	9.26	129.83
5	450	9.79	16.97	2.647833123	3.58899157	30.30	3.03	61.33	52.54	5.25	85.79
6	500	5.90	10.22	2.14473918	2.90707552	18.25	1.83	48.08	31.65	3.16	62.81
7	600	2.45	4.25	1.48939542	2.01879324	7.59	0.76	36.35	13.17	1.32	42.48
8	700	1.17	2.03	1.094245479	1.48318932	3.62	0.36	31.98	6.27	0.63	34.90
9	800	0.61	1.07	0.837778898	1.13556303	1.90	0.19	30.09	3.30	0.33	31.63
10	900	0.35	0.60	0.66194681	0.89723235	1.08	0.11	29.19	1.87	0.19	30.06
11	1000	0.21	0.36	0.536175504	0.72675629	0.65	0.07	28.72	1.13	0.11	29.24

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	34.87		million liters/day				47.26	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	3096
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	591.18	5094	127349		1004.59	11733	293319	2005	6207
2	300	K7	262.31	2260	56505		434.30	5072	126807	2543	7873
3	350	K7	139.63	1203	30078		221.57	2588	64694	3197	9898
4	400	K7	86.73	747	18682		129.83	1516	37909	3833	9898
5	450	K7	61.33	528	13211		85.79	1002	25049	4547	14078
6	500	K7	48.08	414	10356		62.81	734	18340	5325	16486
7	600	K7	36.35	313	7831		42.48	496	12405	7015	21718
8	700	K7	31.98	276	6889		34.90	408	10190	9622	29790
9	800	K7	30.09	259	6483		31.63	369	9235	12550	38855
10	900	K7	29.19	252	6288		30.06	351	8777	15314	47412
11	1000	K7	28.72	247	6186		29.24	342	8538	18354	56824

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		34.87	mld	2nd stage flow		47.26	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	127349	118162	898737	1026086	293319	270490	2057350	2350669	562765	250	1595059
2	56505	52428	398770	455275	126807	116938	889432	1016239	243294	300	706442
3	30078	27908	212268	242346	64694	59659	453763	518457	124122	350	376365
4	18682	17334	131844	150526	37909	34959	265895	303804	72733	400	233157
5	13211	12258	93231	106441	25049	23099	175694	200742	48059	450	168578
6	10356	9609	73088	83445	18340	16913	128641	146981	35188	500	135119
7	7831	7266	55265	63096	12405	11439	87006	99410	23799	600	108614
8	6889	6392	48616	55505	10190	9397	71475	81665	19551	700	104846
9	6483	6015	45749	52232	9235	8517	64778	74013	17719	800	108806
10	6288	5834	44373	50660	8777	8094	61562	70339	16840	900	114912
11	6186	5740	43655	49841	8538	7873	59885	68422	16381	1000	123045

*** TABLE 3 shows that the most economical size of MAIN **J1 - J31** is :

700 mm costing **:CAPITALISED Rs.** 104,846 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J31** To: **J32**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J31

To : J32 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	3.85	mld		P I P E D A T A			
B.	Intermediate			2026	4.37	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	4.97	mld	MM.	IAL			Rs/M
2) Pumping main				LENGTH	523	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K7	140	12550
at the end of 15 years				HOURS			900	DI	K7	140	15314
							1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	3.85	mld	4.37	mld
2) Average flow	4.37	mld	4.97	mld
3) Discharge at the end of 15 yrs	50	lps	56	lps
4) Average Discharge	4.11	mld	4.67	mld
5) Ave.pumping hours during the period	21.63	hrs	21.62	hrs
6) KW required at combined	0.68	* H1	0.77	* H2
efficiency of pumping set				
7) Ave.annual charges for electrical				
energy Rs.	25410	* KW1	28845	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.050	1.000	0.050	0.004	994.620	0.250	0.001	3.449
300mm	1000	0.050	1.000	0.050	0.004	994.620	0.300	0.003	1.435
350mm	1000	0.050	1.000	0.050	0.004	994.620	0.350	0.006	0.684
400mm	1000	0.050	1.000	0.050	0.004	994.620	0.400	0.012	0.360
450mm	1000	0.050	1.000	0.050	0.004	994.620	0.450	0.021	0.204
500mm	1000	0.050	1.000	0.050	0.004	994.620	0.500	0.036	0.123
600mm	1000	0.050	1.000	0.050	0.004	994.620	0.600	0.086	0.051
700mm	1000	0.050	1.000	0.050	0.004	994.620	0.700	0.180	0.024
800mm	1000	0.050	1.000	0.050	0.004	994.620	0.800	0.342	0.013
900mm	1000	0.050	1.000	0.050	0.004	994.620	0.900	0.602	0.007
1000mm	1000	0.050	1.000	0.050	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.044	1.011
300	143.534	1	0.075	0.182	0.001	0.027	0.702
350	143.534	1	0.088	0.202	0.001	0.018	0.516
400	143.534	1	0.100	0.220	0.000	0.013	0.395
450	143.534	1	0.113	0.238	0.000	0.009	0.312
500	143.534	1	0.125	0.255	0.000	0.007	0.253
600	143.534	1	0.150	0.287	0.000	0.004	0.176
700	143.534	1	0.175	0.318	0.000	0.003	0.129
800	143.534	1	0.200	0.347	0.000	0.002	0.099
900	143.534	1	0.225	0.375	0.000	0.001	0.078
1000	143.534	1	0.250	0.402	0.000	0.001	0.063

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.056	1.000	0.056	0.005	994.620	0.250	0.001	4.343
300mm	1000	0.056	1.000	0.056	0.005	994.620	0.300	0.003	1.807
350mm	1000	0.056	1.000	0.056	0.005	994.620	0.350	0.006	0.861
400mm	1000	0.056	1.000	0.056	0.005	994.620	0.400	0.012	0.453
450mm	1000	0.056	1.000	0.056	0.005	994.620	0.450	0.021	0.257
500mm	1000	0.056	1.000	0.056	0.005	994.620	0.500	0.036	0.155
600mm	1000	0.056	1.000	0.056	0.005	994.620	0.600	0.086	0.064
700mm	1000	0.056	1.000	0.056	0.005	994.620	0.700	0.180	0.031
800mm	1000	0.056	1.000	0.056	0.005	994.620	0.800	0.342	0.016
900mm	1000	0.056	1.000	0.056	0.005	994.620	0.900	0.602	0.009
1000mm	1000	0.056	1.000	0.056	0.005	994.620	1.000	1.000	0.006

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.004	0.050	1.149
300	143.534	1	0.075	0.182	0.002	0.031	0.798
350	143.534	1	0.088	0.202	0.001	0.020	0.586
400	143.534	1	0.100	0.220	0.000	0.014	0.449
450	143.534	1	0.113	0.238	0.000	0.010	0.354
500	143.534	1	0.125	0.255	0.000	0.008	0.287
600	143.534	1	0.150	0.287	0.000	0.005	0.199
700	143.534	1	0.175	0.318	0.000	0.003	0.146
800	143.534	1	0.200	0.347	0.000	0.002	0.112
900	143.534	1	0.225	0.375	0.000	0.002	0.089
1000	143.534	1	0.250	0.402	0.000	0.001	0.072

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		523.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	3.45	4.34	1.011133879	1.14853858	1.80	0.18	29.98	2.27	0.23	30.50
2	300	1.43	1.81	0.702173104	0.7975926	0.75	0.08	28.83	0.95	0.09	29.04
3	350	0.68	0.86	0.515880292	0.58598414	0.36	0.04	28.39	0.45	0.05	28.50
4	400	0.36	0.45	0.39496953	0.44864261	0.19	0.02	28.21	0.24	0.02	28.26
5	450	0.20	0.26	0.312073772	0.35448201	0.11	0.01	28.12	0.13	0.01	28.15
6	500	0.12	0.15	0.252779089	0.28712967	0.06	0.01	28.07	0.08	0.01	28.09
7	600	0.05	0.06	0.175540234	0.19939469	0.03	0.00	28.03	0.03	0.00	28.04
8	700	0.02	0.03	0.128967838	0.1464935	0.01	0.00	28.01	0.02	0.00	28.02
9	800	0.01	0.02	0.098740672	0.11215871	0.01	0.00	28.01	0.01	0.00	28.01
10	900	0.01	0.01	0.078017091	0.08861897	0.00	0.00	28.00	0.00	0.00	28.01
11	1000	0.00	0.01	0.063193677	0.07178117	0.00	0.00	28.00	0.00	0.00	28.00

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	4.11		million liters/day				4.67	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	523
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	29.98	30	761		30.50	35	880	2005	1049
2	300	K7	28.83	29	732		29.04	34	838	2543	1330
3	350	K7	28.39	29	721		28.50	33	822	3197	1672
4	400	K7	28.21	29	716		28.26	33	815	3833	1672
5	450	K7	28.12	29	714		28.15	32	812	4547	2378
6	500	K7	28.07	29	713		28.09	32	810	5325	2785
7	600	K7	28.03	28	712		28.04	32	809	7015	3669
8	700	K7	28.01	28	711		28.02	32	808	9622	5032
9	800	K7	28.01	28	711		28.01	32	808	12550	6564
10	900	K7	28.00	28	711		28.01	32	808	15314	8009
11	1000	K7	28.00	28	711		28.00	32	808	18354	9599

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		4.11	mld	2nd stage flow		4.67	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	761	762	5795	6556	880	880	6691	7571	1812	250	9417
2	732	732	5571	6303	838	838	6371	7209	1726	300	9359
3	721	721	5488	6208	822	822	6252	7073	1693	350	9574
4	716	717	5452	6168	815	815	6200	7015	1679	400	9519
5	714	714	5434	6148	812	812	6175	6987	1673	450	10199
6	713	713	5425	6138	810	810	6163	6973	1669	500	10592
7	712	712	5417	6129	809	809	6151	6960	1666	600	11464
8	711	712	5414	6126	808	808	6147	6955	1665	700	12823
9	711	712	5413	6124	808	808	6145	6953	1665	800	14352
10	711	712	5412	6123	808	808	6144	6952	1664	900	15797
11	711	712	5412	6123	808	808	6144	6951	1664	1000	17386

*** TABLE 3 shows that the most economical size of MAIN **J31 - J32(Zone5)** is :

300 mm costing **:CAPITALISED Rs.** 9,359 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J31** To: **J33**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J31

To : J33 PANIPAT

1) Water requirement : Year Peak Discharge

							P I P E D A T A				
A.	Initial			2011	5.54	mld	--------	---------	---------	---------	--------
B.	Intermediate			2026	8.11	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	11.87	mld	MM.	IAL			Rs/M
							--------	---------	---------	---------	--------
2) Pumping main				LENGTH	560	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K8	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K9	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K9	140	12550
	at the end of 15 years			HOURS			900	DI	K9	140	15314
							1000	DI	K9	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	5.54	MLD	8.11	MLD
2) Average flow	82	LPS	121	LPS
3) Discharge at the end of 15 yrs	8.11	mld	11.87	mld
4) Average Discharge	6.83	mld	9.99	mld
5) Ave.pumping hours during the period	19.36	hrs	19.36	hrs
6) KW required at combined	1.12	* H1	1.65	* H2
efficiency of pumping set				
7) Ave.annual charges for electrical				
energy Rs.	37756	* KW1	55267	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.082	1.000	0.082	0.011	994.620	0.250	0.001	8.637
300mm	1000	0.082	1.000	0.082	0.011	994.620	0.300	0.003	3.593
350mm	1000	0.082	1.000	0.082	0.011	994.620	0.350	0.006	1.712
400mm	1000	0.082	1.000	0.082	0.011	994.620	0.400	0.012	0.901
450mm	1000	0.082	1.000	0.082	0.011	994.620	0.450	0.021	0.511
500mm	1000	0.082	1.000	0.082	0.011	994.620	0.500	0.036	0.308
600mm	1000	0.082	1.000	0.082	0.011	994.620	0.600	0.086	0.128
700mm	1000	0.082	1.000	0.082	0.011	994.620	0.700	0.180	0.061
800mm	1000	0.082	1.000	0.082	0.011	994.620	0.800	0.342	0.032
900mm	1000	0.082	1.000	0.082	0.011	994.620	0.900	0.602	0.018
1000mm	1000	0.082	1.000	0.082	0.011	994.620	1.000	1.000	0.011

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.009	0.072	1.679
300	143.534	1	0.075	0.182	0.004	0.045	1.166
350	143.534	1	0.088	0.202	0.002	0.030	0.857
400	143.534	1	0.100	0.220	0.001	0.021	0.656
450	143.534	1	0.113	0.238	0.001	0.015	0.518
500	143.534	1	0.125	0.255	0.000	0.011	0.420
600	143.534	1	0.150	0.287	0.000	0.007	0.292
700	143.534	1	0.175	0.318	0.000	0.005	0.214
800	143.534	1	0.200	0.347	0.000	0.003	0.164
900	143.534	1	0.225	0.375	0.000	0.002	0.130
1000	143.534	1	0.250	0.402	0.000	0.002	0.105

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.121	1.000	0.121	0.022	994.620	0.250	0.001	17.209
300mm	1000	0.121	1.000	0.121	0.022	994.620	0.300	0.003	7.160
350mm	1000	0.121	1.000	0.121	0.022	994.620	0.350	0.006	3.411
400mm	1000	0.121	1.000	0.121	0.022	994.620	0.400	0.012	1.794
450mm	1000	0.121	1.000	0.121	0.022	994.620	0.450	0.021	1.018
500mm	1000	0.121	1.000	0.121	0.022	994.620	0.500	0.036	0.613
600mm	1000	0.121	1.000	0.121	0.022	994.620	0.600	0.086	0.255
700mm	1000	0.121	1.000	0.121	0.022	994.620	0.700	0.180	0.122
800mm	1000	0.121	1.000	0.121	0.022	994.620	0.800	0.342	0.064
900mm	1000	0.121	1.000	0.121	0.022	994.620	0.900	0.602	0.036
1000mm	1000	0.121	1.000	0.121	0.022	994.620	1.000	1.000	0.022

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.017	0.106	2.458
300	143.534	1	0.075	0.182	0.007	0.065	1.707
350	143.534	1	0.088	0.202	0.003	0.043	1.254
400	143.534	1	0.100	0.220	0.002	0.030	0.960
450	143.534	1	0.113	0.238	0.001	0.022	0.758
500	143.534	1	0.125	0.255	0.001	0.017	0.614
600	143.534	1	0.150	0.287	0.000	0.010	0.427
700	143.534	1	0.175	0.318	0.000	0.007	0.313
800	143.534	1	0.200	0.347	0.000	0.005	0.240
900	143.534	1	0.225	0.375	0.000	0.004	0.190
1000	143.534	1	0.250	0.402	0.000	0.003	0.154

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		560.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	8.637	17.209	1.679	2.458	4.836	0.484	33.320	9.637	0.964	38.601
2	300	3.593	7.160	1.166	1.707	2.012	0.201	30.213	4.009	0.401	32.410
3	350	1.712	3.411	0.857	1.254	0.959	0.096	29.055	1.910	0.191	30.101
4	400	0.901	1.794	0.656	0.960	0.504	0.050	28.555	1.005	0.100	29.105
5	450	0.511	1.018	0.518	0.758	0.286	0.029	28.315	0.570	0.057	28.627
6	500	0.308	0.613	0.420	0.614	0.172	0.017	28.190	0.344	0.034	28.378
7	600	0.128	0.255	0.292	0.427	0.072	0.007	28.079	0.143	0.014	28.157
8	700	0.061	0.122	0.214	0.313	0.034	0.003	28.038	0.068	0.007	28.075
9	800	0.032	0.064	0.164	0.240	0.018	0.002	28.020	0.036	0.004	28.039
10	900	0.018	0.036	0.130	0.190	0.010	0.001	28.011	0.020	0.002	28.022
11	1000	0.011	0.022	0.105	0.154	0.006	0.001	28.007	0.012	0.001	28.013

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	6.83			million liters/day			9.99	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	560
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
---	---	---	---	---	---	---	---	---	---	---	---
1	250	K7	33.32	56	1405		38.60	95	2382	2005	1123
2	300	K7	30.21	51	1274		32.41	80	2000	2543	1424
3	350	K7	29.05	49	1225		30.10	74	1857	3197	1790
4	400	K7	28.55	48	1204		29.11	72	1796	3833	1790
5	450	K7	28.31	48	1194		28.63	71	1767	4547	2546
6	500	K7	28.19	48	1189		28.38	70	1751	5325	2982
7	600	K7	28.08	47	1184		28.16	70	1738	7015	3928
8	700	K7	28.04	47	1182		28.07	69	1732	9622	5388
9	800	K7	28.02	47	1181		28.04	69	1730	12550	7028
10	900	K7	28.01	47	1181		28.02	69	1729	15314	8576
11	1000	K7	28.01	47	1181		28.01	69	1729	18354	10278

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		6.83	mld	2nd stage flow		9.99	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---------	----------	----------	----------	----------	----------	----------	----------	----------		---------	----------
1	1405	1258	9569	10974	2382	2133	16226	18608	4455	250	16551
2	1274	1141	8676	9950	2000	1791	13624	15624	3741	300	15115
3	1225	1097	8344	9569	1857	1664	12653	14511	3474	350	14833
4	1204	1078	8200	9404	1796	1609	12235	14031	3359	400	14554
5	1194	1069	8131	9325	1767	1582	12034	13800	3304	450	15175
6	1189	1064	8095	9284	1751	1568	11929	13680	3275	500	15541
7	1184	1060	8064	9247	1738	1556	11836	13574	3250	600	16425
8	1182	1059	8052	9234	1732	1552	11802	13534	3240	700	17862
9	1181	1058	8047	9228	1730	1550	11787	13517	3236	800	19492
10	1181	1058	8044	9225	1729	1549	11780	13509	3234	900	21035
11	1181	1057	8043	9224	1729	1548	11776	13505	3233	1000	22735

*** TABLE 3 shows that the most economical size of MAIN **J31 - J33** is :

400 mm costing **:CAPITALISED Rs.** 14,554 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J33** To: **J34(Zone2)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J33

To : J34(Zone2) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	2.82	mld		P I P E D A T A			
B.	Intermediate			2026	4.02	mld	DIAMETER		MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	5.73	mld	MM.		IAL			Rs/M
2) Pumping main				LENGTH	200	M	250		DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300		DI	K7	140	2543
4) Design period				YEAR	30	yr.	350		DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400		DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450		DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500		DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600		DI	K8	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700		DI	K9	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800		DI	K9	140	12550
	at the end of 15 years			HOURS			900		DI	K9	140	15314
							1000		DI	K9	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	2.82	mld	4.02	mld
2) Discharge at the end of 15 yrs	4.02	mld	5.73	mld
3) Average Flow	41	lps	59	lps
4) Average Discharge	3.42	mld	4.88	mld
5) Avg.pumping hours during the period	19.57	hrs	19.57	hrs
6) KW required at combined	0.56	* H1	0.80	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	19126	* KW1	27265	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.041	1.000	0.041	0.003	994.620	0.250	0.001	2.473
300mm	1000	0.041	1.000	0.041	0.003	994.620	0.300	0.003	1.029
350mm	1000	0.041	1.000	0.041	0.003	994.620	0.350	0.006	0.490
400mm	1000	0.041	1.000	0.041	0.003	994.620	0.400	0.012	0.258
450mm	1000	0.041	1.000	0.041	0.003	994.620	0.450	0.021	0.146
500mm	1000	0.041	1.000	0.041	0.003	994.620	0.500	0.036	0.088
600mm	1000	0.041	1.000	0.041	0.003	994.620	0.600	0.086	0.037
700mm	1000	0.041	1.000	0.041	0.003	994.620	0.700	0.180	0.017
800mm	1000	0.041	1.000	0.041	0.003	994.620	0.800	0.342	0.009
900mm	1000	0.041	1.000	0.041	0.003	994.620	0.900	0.602	0.005
1000mm	1000	0.041	1.000	0.041	0.003	994.620	1.000	1.000	0.003

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.002	0.036	0.841
300	143.534	1	0.075	0.182	0.001	0.022	0.584
350	143.534	1	0.088	0.202	0.000	0.015	0.429
400	143.534	1	0.100	0.220	0.000	0.010	0.329
450	143.534	1	0.113	0.238	0.000	0.008	0.260
500	143.534	1	0.125	0.255	0.000	0.006	0.210
600	143.534	1	0.150	0.287	0.000	0.004	0.146
700	143.534	1	0.175	0.318	0.000	0.002	0.107
800	143.534	1	0.200	0.347	0.000	0.002	0.082
900	143.534	1	0.225	0.375	0.000	0.001	0.065
1000	143.534	1	0.250	0.402	0.000	0.001	0.053

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.059	1.000	0.059	0.006	994.620	0.250	0.001	4.697
300mm	1000	0.059	1.000	0.059	0.006	994.620	0.300	0.003	1.954
350mm	1000	0.059	1.000	0.059	0.006	994.620	0.350	0.006	0.931
400mm	1000	0.059	1.000	0.059	0.006	994.620	0.400	0.012	0.490
450mm	1000	0.059	1.000	0.059	0.006	994.620	0.450	0.021	0.278
500mm	1000	0.059	1.000	0.059	0.006	994.620	0.500	0.036	0.167
600mm	1000	0.059	1.000	0.059	0.006	994.620	0.600	0.086	0.070
700mm	1000	0.059	1.000	0.059	0.006	994.620	0.700	0.180	0.033
800mm	1000	0.059	1.000	0.059	0.006	994.620	0.800	0.342	0.017
900mm	1000	0.059	1.000	0.059	0.006	994.620	0.900	0.602	0.010
1000mm	1000	0.059	1.000	0.059	0.006	994.620	1.000	1.000	0.006

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.005	0.052	1.199
300	143.534	1	0.075	0.182	0.002	0.032	0.833
350	143.534	1	0.088	0.202	0.001	0.021	0.612
400	143.534	1	0.100	0.220	0.000	0.015	0.468
450	143.534	1	0.113	0.238	0.000	0.011	0.370
500	143.534	1	0.125	0.255	0.000	0.008	0.300
600	143.534	1	0.150	0.287	0.000	0.005	0.208
700	143.534	1	0.175	0.318	0.000	0.003	0.153
800	143.534	1	0.200	0.347	0.000	0.002	0.117
900	143.534	1	0.225	0.375	0.000	0.002	0.093
1000	143.534	1	0.250	0.402	0.000	0.001	0.075

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		200.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	2.473	4.697	0.841	1.199	0.495	0.049	28.544	0.939	0.094	29.033
2	300	1.029	1.954	0.584	0.833	0.206	0.021	28.226	0.391	0.039	28.430
3	350	0.490	0.931	0.429	0.612	0.098	0.010	28.108	0.186	0.019	28.205
4	400	0.258	0.490	0.329	0.468	0.052	0.005	28.057	0.098	0.010	28.108
5	450	0.146	0.278	0.260	0.370	0.029	0.003	28.032	0.056	0.006	28.061
6	500	0.088	0.167	0.210	0.300	0.018	0.002	28.019	0.033	0.003	28.037
7	600	0.037	0.070	0.146	0.208	0.007	0.001	28.008	0.014	0.001	28.015
8	700	0.017	0.033	0.107	0.153	0.003	0.000	28.004	0.007	0.001	28.007
9	800	0.009	0.017	0.082	0.117	0.002	0.000	28.002	0.003	0.000	28.004
10	900	0.005	0.010	0.065	0.093	0.001	0.000	28.001	0.002	0.000	28.002
11	1000	0.003	0.006	0.053	0.075	0.001	0.000	28.001	0.001	0.000	28.001

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.42		million liters/day				4.88	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	200
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
---	---	---	---	---	---	---	---	---	---	---	---
1	250	K7	28.54	24	603		29.03	35	874	2005	401
2	300	K7	28.23	24	596		28.43	34	856	2543	509
3	350	K7	28.11	24	594		28.20	34	849	3197	639
4	400	K7	28.06	24	593		28.11	34	846	3833	639
5	450	K7	28.03	24	592		28.06	34	845	4547	909
6	500	K7	28.02	24	592		28.04	34	844	5325	1065
7	600	K7	28.01	24	592		28.02	34	844	7015	1403
8	700	K7	28.00	24	592		28.01	34	843	9622	1924
9	800	K7	28.00	24	592		28.00	34	843	12550	2510
10	900	K7	28.00	24	592		28.00	34	843	15314	3063
11	1000	K7	28.00	24	592		28.00	34	843	18354	3671

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.42	mld	2nd stage flow		4.88	mld			
											GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
1	603	546	4152	4755	874	792	6021	6895	1651	250	6807
2	596	540	4106	4703	856	775	5896	6752	1616	300	6828
3	594	538	4089	4683	849	769	5849	6698	1604	350	6926
4	593	537	4082	4674	846	766	5829	6675	1598	400	6912
5	592	536	4078	4670	845	765	5819	6664	1595	450	7175
6	592	536	4076	4668	844	764	5814	6658	1594	500	7327
7	592	536	4074	4666	844	764	5810	6653	1593	600	7662
8	592	536	4074	4665	843	764	5808	6651	1592	700	8182
9	592	536	4074	4665	843	764	5807	6651	1592	800	8767
10	592	536	4073	4665	843	763	5807	6650	1592	900	9320
11	592	536	4073	4665	843	763	5807	6650	1592	1000	9928

*** TABLE 3 shows that the most economical size of MAIN **J33 - J34(Zone2)** is :

250 mm costing **:CAPITALISED Rs.** 6,807 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J33** To: **J35(Zone1)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J33

To : J35(Zone1) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	2.72	mld	
B.	Intermediate		2026	4.09	mld	
C.	Ultimate		2041	6.14	mld	
2) Pumping main			LENGTH	945	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	2.72	mld	4.09	mld
2) Discharge at the end of 15 yrs	4.09	mld	6.14	mld
3) Average Flow	41	lps	62	lps
4) Average Discharge	3.41	mld	5.11	mld
5) Avg.pumping hours during the period	19.15	hrs	19.16	hrs
6) KW required at combined	0.56	* H1	0.84	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	18634	* KW1	28009	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.041	1.000	0.041	0.003	994.620	0.250	0.001	2.453
300mm	1000	0.041	1.000	0.041	0.003	994.620	0.300	0.003	1.021
350mm	1000	0.041	1.000	0.041	0.003	994.620	0.350	0.006	0.486
400mm	1000	0.041	1.000	0.041	0.003	994.620	0.400	0.012	0.256
450mm	1000	0.041	1.000	0.041	0.003	994.620	0.450	0.021	0.145
500mm	1000	0.041	1.000	0.041	0.003	994.620	0.500	0.036	0.087
600mm	1000	0.041	1.000	0.041	0.003	994.620	0.600	0.086	0.036
700mm	1000	0.041	1.000	0.041	0.003	994.620	0.700	0.180	0.017
800mm	1000	0.041	1.000	0.041	0.003	994.620	0.800	0.342	0.009
900mm	1000	0.041	1.000	0.041	0.003	994.620	0.900	0.602	0.005
1000mm	1000	0.041	1.000	0.041	0.003	994.620	1.000	1.000	0.003

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.002	0.036	0.838
300	143.534	1	0.075	0.182	0.001	0.022	0.582
350	143.534	1	0.088	0.202	0.000	0.015	0.427
400	143.534	1	0.100	0.220	0.000	0.010	0.327
450	143.534	1	0.113	0.238	0.000	0.008	0.259
500	143.534	1	0.125	0.255	0.000	0.006	0.209
600	143.534	1	0.150	0.287	0.000	0.004	0.145
700	143.534	1	0.175	0.318	0.000	0.002	0.107
800	143.534	1	0.200	0.347	0.000	0.002	0.082
900	143.534	1	0.225	0.375	0.000	0.001	0.065
1000	143.534	1	0.250	0.402	0.000	0.001	0.052

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.062	1.000	0.062	0.006	994.620	0.250	0.001	5.122
300mm	1000	0.062	1.000	0.062	0.006	994.620	0.300	0.003	2.131
350mm	1000	0.062	1.000	0.062	0.006	994.620	0.350	0.006	1.015
400mm	1000	0.062	1.000	0.062	0.006	994.620	0.400	0.012	0.534
450mm	1000	0.062	1.000	0.062	0.006	994.620	0.450	0.021	0.303
500mm	1000	0.062	1.000	0.062	0.006	994.620	0.500	0.036	0.183
600mm	1000	0.062	1.000	0.062	0.006	994.620	0.600	0.086	0.076
700mm	1000	0.062	1.000	0.062	0.006	994.620	0.700	0.180	0.036
800mm	1000	0.062	1.000	0.062	0.006	994.620	0.800	0.342	0.019
900mm	1000	0.062	1.000	0.062	0.006	994.620	0.900	0.602	0.011
1000mm	1000	0.062	1.000	0.062	0.006	994.620	1.000	1.000	0.007

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.005	0.054	1.258
300	143.534	1	0.075	0.182	0.002	0.033	0.874
350	143.534	1	0.088	0.202	0.001	0.022	0.642
400	143.534	1	0.100	0.220	0.001	0.016	0.491
450	143.534	1	0.113	0.238	0.000	0.011	0.388
500	143.534	1	0.125	0.255	0.000	0.009	0.315
600	143.534	1	0.150	0.287	0.000	0.005	0.218
700	143.534	1	0.175	0.318	0.000	0.004	0.160
800	143.534	1	0.200	0.347	0.000	0.002	0.123
900	143.534	1	0.225	0.375	0.000	0.002	0.097
1000	143.534	1	0.250	0.402	0.000	0.001	0.079

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		945.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	2.453	5.122	0.838	1.258	2.318	0.232	30.550	4.841	0.484	33.325
2	300	1.021	2.131	0.582	0.874	0.965	0.096	29.061	2.014	0.201	30.215
3	350	0.486	1.015	0.427	0.642	0.460	0.046	28.505	0.959	0.096	29.055
4	400	0.256	0.534	0.327	0.491	0.242	0.024	28.266	0.505	0.050	28.555
5	450	0.145	0.303	0.259	0.388	0.137	0.014	28.151	0.286	0.029	28.315
6	500	0.087	0.183	0.209	0.315	0.083	0.008	28.091	0.173	0.017	28.190
7	600	0.036	0.076	0.145	0.218	0.034	0.003	28.038	0.072	0.007	28.079
8	700	0.017	0.036	0.107	0.160	0.016	0.002	28.018	0.034	0.003	28.038
9	800	0.009	0.019	0.082	0.123	0.009	0.001	28.009	0.018	0.002	28.020
10	900	0.005	0.011	0.065	0.097	0.005	0.000	28.005	0.010	0.001	28.011
11	1000	0.00	0.01	0.05235364	0.0786312	0.00	0.00	28.00	0.01	0.00	28.01

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.41		million liters/day				5.11	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	945
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
---	---	---	---	---	---	---	---	---	---	---	---
1	250	K7	30.55	26	643		33.32	42	1053	2005	1895
2	300	K7	29.06	24	611		30.22	38	955	2543	2403
3	350	K7	28.51	24	600		29.06	37	918	3197	3021
4	400	K7	28.27	24	595		28.56	36	902	3833	3021
5	450	K7	28.15	24	592		28.32	36	895	4547	4297
6	500	K7	28.09	24	591		28.19	36	891	5325	5032
7	600	K7	28.04	24	590		28.08	35	887	7015	6629
8	700	K7	28.02	24	589		28.04	35	886	9622	9093
9	800	K7	28.01	24	589		28.02	35	885	12550	11860
10	900	K7	28.01	24	589		28.01	35	885	15314	14472
11	1000	K7	28.00	24	589		28.01	35	885	18354	17345

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.41	mld	2nd stage flow		5.11	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---------	----------	----------	----------	----------	----------	----------	----------	----------		---------	---------
1	643	569	4330	4973	1053	933	7099	8152	1952	250	8819
2	611	542	4119	4730	955	846	6437	7392	1770	300	8903
3	600	531	4040	4640	918	814	6190	7108	1702	350	9363
4	595	527	4006	4601	902	800	6083	6985	1672	400	9294
5	592	525	3990	4582	895	793	6032	6927	1658	450	10537
6	591	523	3981	4572	891	790	6005	6896	1651	500	11255
7	590	522	3974	4564	887	786	5982	6869	1644	600	12837
8	589	522	3971	4560	886	785	5973	6859	1642	700	15295
9	589	522	3970	4559	885	785	5969	6854	1641	800	18060
10	589	522	3969	4558	885	785	5967	6852	1640	900	20671
11	589	522	3969	4558	885	784	5966	6851	1640	1000	23543

*** TABLE 3 shows that the most economical size of MAIN **J33 - J35(Zone1)** is :

250 mm costing **:CAPITALISED Rs.** 8,819 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J31** To: **J24**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J31

To : J24 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial			2011	20.36	mld		P I P E D A T A			
B.	Intermediate			2026	27.51	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	37.70	mld	MM.	IAL			Rs/M
2) Pumping main				LENGTH	1278	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K7	140	12550
at the end of 15 years				HOURS			900	DI	K7	140	15314
							1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	20.36	mld	27.51	mld
2) Discharge at the end of 15 yrs	27.51	mld	37.70	mld
3) Average Flow	289	lps	394	lps
4) Average Discharge	23.94	mld	32.61	mld
5) Avg.pumping hours during the period	20.01	hrs	19.89	hrs
6) KW required at combined	3.94	* H1	5.37	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	136892	* KW1	185368	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.289	1.000	0.289	0.106	994.620	0.250	0.001	83.689
300mm	1000	0.289	1.000	0.289	0.106	994.620	0.300	0.003	34.818
350mm	1000	0.289	1.000	0.289	0.106	994.620	0.350	0.006	16.588
400mm	1000	0.289	1.000	0.289	0.106	994.620	0.400	0.012	8.727
450mm	1000	0.289	1.000	0.289	0.106	994.620	0.450	0.021	4.952
500mm	1000	0.289	1.000	0.289	0.106	994.620	0.500	0.036	2.983
600mm	1000	0.289	1.000	0.289	0.106	994.620	0.600	0.086	1.241
700mm	1000	0.289	1.000	0.289	0.106	994.620	0.700	0.180	0.591
800mm	1000	0.289	1.000	0.289	0.106	994.620	0.800	0.342	0.311
900mm	1000	0.289	1.000	0.289	0.106	994.620	0.900	0.602	0.177
1000mm	1000	0.289	1.000	0.289	0.106	994.620	1.000	1.000	0.106

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.0625	0.161544104	0.08368873	0.253964786	5.888699618
300	143.534	1	0.075	0.182117962	0.03481811	0.156439839	4.089356096
350	143.534	1	0.0875	0.201544195	0.01658789	0.103856718	3.004413308
400	143.534	1	0.1	0.220039171	0.0087267	0.072831549	2.30024626
450	143.534	1	0.1125	0.237756711	0.00495229	0.053257459	1.817473175
500	143.534	1	0.125	0.254811095	0.00298341	0.040251194	1.472149394
600	143.534	1	0.15	0.287263206	0.00124123	0.024794344	1.022321308
700	143.534	1	0.175	0.317905116	0.00059134	0.01646038	0.751090312
800	143.534	1	0.2	0.347078109	0.0003111	0.011543162	0.5750516
900	143.534	1	0.225	0.375024815	0.00017654	0.008440841	0.45436042
1000	143.534	1	0.25	0.401925495	0.00010636	0.006379462	0.368030971

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.394	1.000	0.394	0.185	994.620	0.250	0.001	146.453
300mm	1000	0.394	1.000	0.394	0.185	994.620	0.300	0.003	60.931
350mm	1000	0.394	1.000	0.394	0.185	994.620	0.350	0.006	29.028
400mm	1000	0.394	1.000	0.394	0.185	994.620	0.400	0.012	15.271
450mm	1000	0.394	1.000	0.394	0.185	994.620	0.450	0.021	8.666
500mm	1000	0.394	1.000	0.394	0.185	994.620	0.500	0.036	5.221
600mm	1000	0.394	1.000	0.394	0.185	994.620	0.600	0.086	2.172
700mm	1000	0.394	1.000	0.394	0.185	994.620	0.700	0.180	1.035
800mm	1000	0.394	1.000	0.394	0.185	994.620	0.800	0.342	0.544
900mm	1000	0.394	1.000	0.394	0.185	994.620	0.900	0.602	0.309
1000mm	1000	0.394	1.000	0.394	0.185	994.620	1.000	1.000	0.186

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.146	0.346	8.022
300	143.534	1	0.075	0.182	0.061	0.213	5.571
350	143.534	1	0.088	0.202	0.029	0.141	4.093
400	143.534	1	0.100	0.220	0.015	0.099	3.134
450	143.534	1	0.113	0.238	0.009	0.073	2.476
500	143.534	1	0.125	0.255	0.005	0.055	2.006
600	143.534	1	0.150	0.287	0.002	0.034	1.393
700	143.534	1	0.175	0.318	0.001	0.022	1.023
800	143.534	1	0.200	0.347	0.001	0.016	0.783
900	143.534	1	0.225	0.375	0.000	0.011	0.619
1000	143.534	1	0.250	0.402	0.000	0.009	0.501

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		1278.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
---	---	---	---	---	---	---	---	---	---	---	---
1	250	83.689	146.453	5.889	8.022	106.954	10.695	145.650	187.166	18.717	233.883
2	300	34.818	60.931	4.089	5.571	44.498	4.450	76.947	77.869	7.787	113.656
3	350	16.588	29.028	3.004	4.093	21.199	2.120	51.319	37.098	3.710	68.808
4	400	8.727	15.271	2.300	3.134	11.153	1.115	40.268	19.517	1.952	49.469
5	450	4.952	8.666	1.817	2.476	6.329	0.633	34.962	11.076	1.108	40.183
6	500	2.983	5.221	1.472	2.006	3.813	0.381	32.194	6.672	0.667	35.339
7	600	1.241	2.172	1.022	1.393	1.586	0.159	29.745	2.776	0.278	31.054
8	700	0.591	1.035	0.751	1.023	0.756	0.076	28.831	1.323	0.132	29.455
9	800	0.311	0.544	0.575	0.783	0.398	0.040	28.437	0.696	0.070	28.765
10	900	0.177	0.309	0.454	0.619	0.226	0.023	28.248	0.395	0.039	28.434
11	1000	0.106	0.186	0.368	0.501	0.136	0.014	28.150	0.238	0.024	28.262

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	23.94		million liters/day				32.61	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	1278
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	145.65	861	21536		233.88	1884	47111	2005	2562
2	300	K7	76.95	455	11378		113.66	916	22894	2543	3250
3	350	K7	51.32	304	7588		68.81	554	13860	3197	4086
4	400	K7	40.27	238	5954		49.47	399	9965	3833	4086
5	450	K7	34.96	207	5170		40.18	324	8094	4547	5811
6	500	K7	32.19	190	4760		35.34	285	7118	5325	6805
7	600	K7	29.74	176	4398		31.05	250	6255	7015	8965
8	700	K7	28.83	171	4263		29.45	237	5933	9622	12297
9	800	K7	28.44	168	4205		28.77	232	5794	12550	16039
10	900	K7	28.25	167	4177		28.43	229	5728	15314	19571
11	1000	K7	28.15	166	4162		28.26	228	5693	18354	23456

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		23.94	mld	2nd stage flow		32.61	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	21536	19938	151651	173187	47111	43355	329755	376866	90224	250	265973
2	11378	10534	80118	91495	22894	21068	160245	183139	43845	300	138590
3	7588	7025	53434	61022	13860	12755	97013	110873	26544	350	91652
4	5954	5512	41927	47881	9965	9170	69746	79711	19083	400	71050
5	5170	4786	36403	41572	8094	7449	56655	64749	15501	450	62884
6	4760	4407	33521	38281	7118	6551	49826	56944	13633	500	58719
7	4398	4072	30971	35369	6255	5756	43783	50038	11979	600	56313
8	4263	3947	30019	34282	5933	5460	41529	47462	11363	700	57942
9	4205	3893	29609	33814	5794	5332	40557	46351	11097	800	60949
10	4177	3867	29412	33589	5728	5271	40090	45817	10969	900	64129
11	4162	3853	29309	33472	5693	5239	39846	45539	10902	1000	67830

*** TABLE 3 shows that the most economical size of MAIN **J31 - J24** is :

600 mm costing **:CAPITALISED Rs.** 56,313 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J24** To: **J25(Zone11)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN I N P U T D A T A PANIPAT

From : J24

To : J25(Zone11) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial	2011	3.06	mld		
B.	Intermediate	2026	3.69	mld		
C.	Ultimate	2041	4.44	mld		

2) Pumping main	LENGTH	199	M	
3) Static head for pump	ST.HEAD	28.00	M	
4) Design period	YEAR	30	yr.	
5) Combined eff. of pump set	EFF. %	75	%	
6) Cost of pumping unit	Rs./KW	25000	Rs	
7) Interest rate	INTEREST	10.00	%	
8) Life of electric motor & pump set	P.Yrs	15	yr.	
9) Energy charges per kWh	P/KWH	475	paise	
10) Pumping hours for discharge	PUMPING-	23	hrs	
at the end of 15 years	HOURS			

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	3.06	mld	3.69	mld
2) Discharge at the end of 15 yrs	3.69	mld	4.44	mld
3) Average Flow	41	lps	49	lps
4) Average Discharge	3.38	mld	4.07	mld
5) Avg.pumping hours during the period	21.04	hrs	21.05	hrs
6) KW required at combined	0.56	* H1	0.67	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	20292	* KW1	24466	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.041	1.000	0.041	0.003	994.620	0.250	0.001	2.414
300mm	1000	0.041	1.000	0.041	0.003	994.620	0.300	0.003	1.004
350mm	1000	0.041	1.000	0.041	0.003	994.620	0.350	0.006	0.479
400mm	1000	0.041	1.000	0.041	0.003	994.620	0.400	0.012	0.252
450mm	1000	0.041	1.000	0.041	0.003	994.620	0.450	0.021	0.143
500mm	1000	0.041	1.000	0.041	0.003	994.620	0.500	0.036	0.086
600mm	1000	0.041	1.000	0.041	0.003	994.620	0.600	0.086	0.036
700mm	1000	0.041	1.000	0.041	0.003	994.620	0.700	0.180	0.017
800mm	1000	0.041	1.000	0.041	0.003	994.620	0.800	0.342	0.009
900mm	1000	0.041	1.000	0.041	0.003	994.620	0.900	0.602	0.005
1000mm	1000	0.041	1.000	0.041	0.003	994.620	1.000	1.000	0.003

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.002	0.036	0.830
300	143.534	1	0.075	0.182	0.001	0.022	0.577
350	143.534	1	0.088	0.202	0.000	0.015	0.424
400	143.534	1	0.100	0.220	0.000	0.010	0.324
450	143.534	1	0.113	0.238	0.000	0.008	0.256
500	143.534	1	0.125	0.255	0.000	0.006	0.208
600	143.534	1	0.150	0.287	0.000	0.003	0.144
700	143.534	1	0.175	0.318	0.000	0.002	0.106
800	143.534	1	0.200	0.347	0.000	0.002	0.081
900	143.534	1	0.225	0.375	0.000	0.001	0.064
1000	143.534	1	0.250	0.402	0.000	0.001	0.052

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.049	1.000	0.049	0.004	994.620	0.250	0.001	3.382
300mm	1000	0.049	1.000	0.049	0.004	994.620	0.300	0.003	1.407
350mm	1000	0.049	1.000	0.049	0.004	994.620	0.350	0.006	0.670
400mm	1000	0.049	1.000	0.049	0.004	994.620	0.400	0.012	0.353
450mm	1000	0.049	1.000	0.049	0.004	994.620	0.450	0.021	0.200
500mm	1000	0.049	1.000	0.049	0.004	994.620	0.500	0.036	0.121
600mm	1000	0.049	1.000	0.049	0.004	994.620	0.600	0.086	0.050
700mm	1000	0.049	1.000	0.049	0.004	994.620	0.700	0.180	0.024
800mm	1000	0.049	1.000	0.049	0.004	994.620	0.800	0.342	0.013
900mm	1000	0.049	1.000	0.049	0.004	994.620	0.900	0.602	0.007
1000mm	1000	0.049	1.000	0.049	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.043	1.000
300	143.534	1	0.075	0.182	0.001	0.027	0.695
350	143.534	1	0.088	0.202	0.001	0.018	0.510
400	143.534	1	0.100	0.220	0.000	0.012	0.391
450	143.534	1	0.113	0.238	0.000	0.009	0.309
500	143.534	1	0.125	0.255	0.000	0.007	0.250
600	143.534	1	0.150	0.287	0.000	0.004	0.174
700	143.534	1	0.175	0.318	0.000	0.003	0.128
800	143.534	1	0.200	0.347	0.000	0.002	0.098
900	143.534	1	0.225	0.375	0.000	0.001	0.077
1000	143.534	1	0.250	0.402	0.000	0.001	0.063

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		199.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	2.414	3.382	0.830	1.000	0.480	0.048	28.528	0.673	0.067	28.740
2	300	1.004	1.407	0.577	0.695	0.200	0.020	28.220	0.280	0.028	28.308
3	350	0.479	0.670	0.424	0.510	0.095	0.010	28.105	0.133	0.013	28.147
4	400	0.252	0.353	0.324	0.391	0.050	0.005	28.055	0.070	0.007	28.077
5	450	0.143	0.200	0.256	0.309	0.028	0.003	28.031	0.040	0.004	28.044
6	500	0.086	0.121	0.208	0.250	0.017	0.002	28.019	0.024	0.002	28.026
7	600	0.036	0.050	0.144	0.174	0.007	0.001	28.008	0.010	0.001	28.011
8	700	0.017	0.024	0.106	0.128	0.003	0.000	28.004	0.005	0.000	28.005
9	800	0.009	0.013	0.081	0.098	0.002	0.000	28.002	0.003	0.000	28.003
10	900	0.005	0.007	0.064	0.077	0.001	0.000	28.001	0.001	0.000	28.002
11	1000	0.003	0.004	0.052	0.063	0.001	0.000	28.001	0.001	0.000	28.001

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.38		million liters/day				4.07	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	199
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	28.53	24	595		28.74	29	722	2005	399
2	300	K7	28.22	24	588		28.31	28	711	2543	506
3	350	K7	28.10	23	586		28.15	28	707	3197	636
4	400	K7	28.06	23	585		28.08	28	705	3833	636
5	450	K7	28.03	23	584		28.04	28	704	4547	905
6	500	K7	28.02	23	584		28.03	28	704	5325	1060
7	600	K7	28.01	23	584		28.01	28	704	7015	1396
8	700	K7	28.00	23	584		28.01	28	703	9622	1915
9	800	K7	28.00	23	584		28.00	28	703	12550	2497
10	900	K7	28.00	23	584		28.00	28	703	15314	3047
11	1000	K7	28.00	23	584		28.00	28	703	18354	3652

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.38	mld	2nd stage flow		4.07	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	595	579	4403	4998	722	703	5348	6070	1453	250	6850
2	588	573	4355	4944	711	693	5268	5979	1431	300	6881
3	586	570	4338	4924	707	689	5238	5945	1423	350	6983
4	585	569	4330	4915	705	687	5225	5930	1420	400	6971
5	584	569	4326	4911	704	686	5219	5923	1418	450	7234
6	584	569	4324	4909	704	686	5215	5919	1417	500	7385
7	584	568	4323	4907	704	685	5212	5916	1416	600	7719
8	584	568	4322	4906	703	685	5211	5915	1416	700	8237
9	584	568	4322	4906	703	685	5211	5914	1416	800	8819
10	584	568	4322	4906	703	685	5211	5914	1416	900	9369
11	584	568	4322	4905	703	685	5211	5914	1416	1000	9974

*** TABLE 3 shows that the most economical size of MAIN **J24 - J25(Zone11)** is :

250 mm costing **:CAPITALISED Rs.** 6,850 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J24** To: **J26**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J24

To : J26 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	8.34	mld	
B.	Intermediate		2026	13.67	mld	
C.	Ultimate		2041	21.36	mld	
2) Pumping main			LENGTH	545	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	8.34	mld	13.67	mld
2) Discharge at the end of 15 yrs	13.67	mld	21.36	mld
3) Average Flow	133	lps	212	lps
4) Average Discharge	11.01	mld	17.51	mld
5) Avg.pumping hours during the period	18.52	hrs	18.86	hrs
6) KW required at combined	1.81	* H1	2.89	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	58239	* KW1	94410	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.133	1.000	0.133	0.026	994.620	0.250	0.001	20.507
300mm	1000	0.133	1.000	0.133	0.026	994.620	0.300	0.003	8.532
350mm	1000	0.133	1.000	0.133	0.026	994.620	0.350	0.006	4.065
400mm	1000	0.133	1.000	0.133	0.026	994.620	0.400	0.012	2.138
450mm	1000	0.133	1.000	0.133	0.026	994.620	0.450	0.021	1.213
500mm	1000	0.133	1.000	0.133	0.026	994.620	0.500	0.036	0.731
600mm	1000	0.133	1.000	0.133	0.026	994.620	0.600	0.086	0.304
700mm	1000	0.133	1.000	0.133	0.026	994.620	0.700	0.180	0.145
800mm	1000	0.133	1.000	0.133	0.026	994.620	0.800	0.342	0.076
900mm	1000	0.133	1.000	0.133	0.026	994.620	0.900	0.602	0.043
1000mm	1000	0.133	1.000	0.133	0.026	994.620	1.000	1.000	0.026

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.021	0.117	2.707
300	143.534	1	0.075	0.182	0.009	0.072	1.880
350	143.534	1	0.088	0.202	0.004	0.048	1.381
400	143.534	1	0.100	0.220	0.002	0.033	1.058
450	143.534	1	0.113	0.238	0.001	0.024	0.836
500	143.534	1	0.125	0.255	0.001	0.019	0.677
600	143.534	1	0.150	0.287	0.000	0.011	0.470
700	143.534	1	0.175	0.318	0.000	0.008	0.345
800	143.534	1	0.200	0.347	0.000	0.005	0.264
900	143.534	1	0.225	0.375	0.000	0.004	0.209
1000	143.534	1	0.250	0.402	0.000	0.003	0.169

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.212	1.000	0.212	0.060	994.620	0.250	0.001	47.552
300mm	1000	0.212	1.000	0.212	0.060	994.620	0.300	0.003	19.784
350mm	1000	0.212	1.000	0.212	0.060	994.620	0.350	0.006	9.425
400mm	1000	0.212	1.000	0.212	0.060	994.620	0.400	0.012	4.958
450mm	1000	0.212	1.000	0.212	0.060	994.620	0.450	0.021	2.814
500mm	1000	0.212	1.000	0.212	0.060	994.620	0.500	0.036	1.695
600mm	1000	0.212	1.000	0.212	0.060	994.620	0.600	0.086	0.705
700mm	1000	0.212	1.000	0.212	0.060	994.620	0.700	0.180	0.336
800mm	1000	0.212	1.000	0.212	0.060	994.620	0.800	0.342	0.177
900mm	1000	0.212	1.000	0.212	0.060	994.620	0.900	0.602	0.100
1000mm	1000	0.212	1.000	0.212	0.060	994.620	1.000	1.000	0.060

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.048	0.186	4.309
300	143.534	1	0.075	0.182	0.020	0.114	2.992
350	143.534	1	0.088	0.202	0.009	0.076	2.198
400	143.534	1	0.100	0.220	0.005	0.053	1.683
450	143.534	1	0.113	0.238	0.003	0.039	1.330
500	143.534	1	0.125	0.255	0.002	0.029	1.077
600	143.534	1	0.150	0.287	0.001	0.018	0.748
700	143.534	1	0.175	0.318	0.000	0.012	0.550
800	143.534	1	0.200	0.347	0.000	0.008	0.421
900	143.534	1	0.225	0.375	0.000	0.006	0.332
1000	143.534	1	0.250	0.402	0.000	0.005	0.269

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		545.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	20.51	47.55	2.707494485	4.30903799	11.18	1.12	40.29	25.92	2.59	56.51
2	300	8.53	19.78	1.880195933	2.99237385	4.65	0.46	33.11	10.78	1.08	39.86
3	350	4.06	9.43	1.381363117	2.19847028	2.22	0.22	30.44	5.14	0.51	33.65
4	400	2.14	4.96	1.057602606	1.68319819	1.17	0.12	29.28	2.70	0.27	30.97
5	450	1.21	2.81	0.835634166	1.32993045	0.66	0.07	28.73	1.53	0.15	29.69
6	500	0.73	1.70	0.676861892	1.07724083	0.40	0.04	28.44	0.92	0.09	29.02
7	600	0.30	0.71	0.470040838	0.7480805	0.17	0.02	28.18	0.38	0.04	28.42
8	700	0.14	0.34	0.345334795	0.54960804	0.08	0.01	28.09	0.18	0.02	28.20
9	800	0.08	0.18	0.26439607	0.42079225	0.04	0.00	28.05	0.10	0.01	28.11
10	900	0.04	0.10	0.208904922	0.33247685	0.02	0.00	28.03	0.05	0.01	28.06
11	1000	0.03	0.06	0.169212541	0.26930554	0.01	0.00	28.02	0.03	0.00	28.04

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	11.01		million liters/day				17.51	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	545
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	40.29	110	2739		56.51	245	6114	2005	1093
2	300	K7	33.11	90	2251		39.86	173	4313	2543	1386
3	350	K7	30.44	83	2069		33.65	146	3641	3197	1742
4	400	K7	29.28	80	1991		30.97	134	3351	3833	1742
5	450	K7	28.73	78	1953		29.69	128	3212	4547	2478
6	500	K7	28.44	77	1933		29.02	126	3140	5325	2902
7	600	K7	28.18	77	1916		28.42	123	3075	7015	3823
8	700	K7	28.09	76	1909		28.20	122	3051	9622	5244
9	800	K7	28.05	76	1907		28.11	122	3041	12550	6840
10	900	K7	28.03	76	1905		28.06	121	3036	15314	8346
11	1000	K7	28.02	76	1905		28.04	121	3033	18354	10003

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		11.01	mld	2nd stage flow		17.51	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	2739	2347	17849	20588	6114	5335	40577	46691	11178	250	32859
2	2251	1929	14669	16920	4313	3763	28623	32936	7885	300	26191
3	2069	1773	13482	15552	3641	3177	24164	27805	6657	350	23951
4	1991	1705	12971	14962	3351	2924	22241	25592	6127	400	22831
5	1953	1673	12725	14678	3212	2803	21318	24530	5873	450	23029
6	1933	1656	12597	14531	3140	2739	20836	23976	5740	500	23173
7	1916	1641	12484	14400	3075	2683	20410	23485	5623	600	23845
8	1909	1636	12442	14351	3051	2662	20251	23302	5579	700	25174
9	1907	1633	12423	14330	3041	2653	20182	23223	5560	800	26730
10	1905	1632	12415	14320	3036	2649	20149	23186	5551	900	28217
11	1905	1632	12410	14315	3033	2647	20132	23166	5546	1000	29864

*** TABLE 3 shows that the most economical size of MAIN **J24 - J26** is :

400 mm costing **:CAPITALISED Rs.** 22,831 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J26** To: **J27(Zone13)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN I N P U T D A T A PANIPAT

From : J26

To : J27(Zone13) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial	2011	3.53	mld		
B.	Intermediate	2026	4.23	mld		
C.	Ultimate	2041	5.21	mld		
2) Pumping main		LENGTH	853	M		
3) Static head for pump		ST.HEAD	28.00	M		
4) Design period		YEAR	30	yr.		
5) Combined eff. of pump set		EFF. %	75	%		
6) Cost of pumping unit		Rs./KW	25000	Rs		
7) Interest rate		INTEREST	10.00	%		
8) Life of electric motor & pump set		P.Yrs	15	yr.		
9) Energy charges per kWh		P/KWH	475	paise		
10) Pumping hours for discharge		PUMPING-	23	hrs		
at the end of 15 years		HOURS				

P I P E D A T A

DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	3.53	mld	4.23	mld
2) Discharge at the end of 15 yrs	4.23	mld	5.21	mld
3) Average Flow	47	lps	57	lps
4) Average Discharge	3.88	mld	4.72	mld
5) Avg.pumping hours during the period	21.10	hrs	20.84	hrs
6) KW required at combined	0.64	* H1	0.78	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	23395	* KW1	28108	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.047	1.000	0.047	0.004	994.620	0.250	0.001	3.107
300mm	1000	0.047	1.000	0.047	0.004	994.620	0.300	0.003	1.293
350mm	1000	0.047	1.000	0.047	0.004	994.620	0.350	0.006	0.616
400mm	1000	0.047	1.000	0.047	0.004	994.620	0.400	0.012	0.324
450mm	1000	0.047	1.000	0.047	0.004	994.620	0.450	0.021	0.184
500mm	1000	0.047	1.000	0.047	0.004	994.620	0.500	0.036	0.111
600mm	1000	0.047	1.000	0.047	0.004	994.620	0.600	0.086	0.046
700mm	1000	0.047	1.000	0.047	0.004	994.620	0.700	0.180	0.022
800mm	1000	0.047	1.000	0.047	0.004	994.620	0.800	0.342	0.012
900mm	1000	0.047	1.000	0.047	0.004	994.620	0.900	0.602	0.007
1000mm	1000	0.047	1.000	0.047	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.041	0.955
300	143.534	1	0.075	0.182	0.001	0.025	0.663
350	143.534	1	0.088	0.202	0.001	0.017	0.487
400	143.534	1	0.100	0.220	0.000	0.012	0.373
450	143.534	1	0.113	0.238	0.000	0.009	0.295
500	143.534	1	0.125	0.255	0.000	0.007	0.239
600	143.534	1	0.150	0.287	0.000	0.004	0.166
700	143.534	1	0.175	0.318	0.000	0.003	0.122
800	143.534	1	0.200	0.347	0.000	0.002	0.093
900	143.534	1	0.225	0.375	0.000	0.001	0.074
1000	143.534	1	0.250	0.402	0.000	0.001	0.060

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.057	1.000	0.057	0.006	994.620	0.250	0.001	4.429
300mm	1000	0.057	1.000	0.057	0.006	994.620	0.300	0.003	1.843
350mm	1000	0.057	1.000	0.057	0.006	994.620	0.350	0.006	0.878
400mm	1000	0.057	1.000	0.057	0.006	994.620	0.400	0.012	0.462
450mm	1000	0.057	1.000	0.057	0.006	994.620	0.450	0.021	0.262
500mm	1000	0.057	1.000	0.057	0.006	994.620	0.500	0.036	0.158
600mm	1000	0.057	1.000	0.057	0.006	994.620	0.600	0.086	0.066
700mm	1000	0.057	1.000	0.057	0.006	994.620	0.700	0.180	0.031
800mm	1000	0.057	1.000	0.057	0.006	994.620	0.800	0.342	0.016
900mm	1000	0.057	1.000	0.057	0.006	994.620	0.900	0.602	0.009
1000mm	1000	0.057	1.000	0.057	0.006	994.620	1.000	1.000	0.006

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.004	0.050	1.161
300	143.534	1	0.075	0.182	0.002	0.031	0.806
350	143.534	1	0.088	0.202	0.001	0.020	0.592
400	143.534	1	0.100	0.220	0.000	0.014	0.453
450	143.534	1	0.113	0.238	0.000	0.010	0.358
500	143.534	1	0.125	0.255	0.000	0.008	0.290
600	143.534	1	0.150	0.287	0.000	0.005	0.202
700	143.534	1	0.175	0.318	0.000	0.003	0.148
800	143.534	1	0.200	0.347	0.000	0.002	0.113
900	143.534	1	0.225	0.375	0.000	0.002	0.090
1000	143.534	1	0.250	0.402	0.000	0.001	0.073

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		853.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
1	250	3.11	4.43	0.95454837	1.16096284	2.65	0.27	30.92	3.78	0.38	32.16
2	300	1.29	1.84	0.662877791	0.80622052	1.10	0.11	29.21	1.57	0.16	29.73
3	350	0.62	0.88	0.487010378	0.59232299	0.53	0.05	28.58	0.75	0.07	28.82
4	400	0.32	0.46	0.372866076	0.45349578	0.28	0.03	28.30	0.39	0.04	28.43
5	450	0.18	0.26	0.294609365	0.3583166	0.16	0.02	28.17	0.22	0.02	28.25
6	500	0.11	0.16	0.238632957	0.29023568	0.09	0.01	28.10	0.13	0.01	28.15
7	600	0.05	0.07	0.165716576	0.20155164	0.04	0.00	28.04	0.06	0.01	28.06
8	700	0.02	0.03	0.121750485	0.14807818	0.02	0.00	28.02	0.03	0.00	28.03
9	800	0.01	0.02	0.093214904	0.11337198	0.01	0.00	28.01	0.01	0.00	28.02
10	900	0.01	0.01	0.073651065	0.0895776	0.01	0.00	28.01	0.01	0.00	28.01
11	1000	0.00	0.01	0.059657206	0.07255766	0.00	0.00	28.00	0.00	0.00	28.01

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.88		million liters/day				4.72	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	853
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	30.92	30	741		32.16	37	937	2005	1710
2	300	K7	29.21	28	700		29.73	35	867	2543	2169
3	350	K7	28.58	27	685		28.82	34	840	3197	2727
4	400	K7	28.30	27	678		28.43	33	829	3833	2727
5	450	K7	28.17	27	675		28.25	33	823	4547	3879
6	500	K7	28.10	27	674		28.15	33	821	5325	4542
7	600	K7	28.04	27	672		28.06	33	818	7015	5984
8	700	K7	28.02	27	672		28.03	33	817	9622	8208
9	800	K7	28.01	27	671		28.02	33	817	12550	10705
10	900	K7	28.01	27	671		28.01	33	817	15314	13063
11	1000	K7	28.00	27	671		28.01	33	816	18354	15656

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.88	mld	2nd stage flow		4.72	mld			
											GRAND TOTAL of
Sl. No.	Cost of pump sets	Annual Energy Charges	Capital-ised Energy Charges	Capital-ised Total Cost	Cost of pump sets	Annual Energy Charges	Capital-ised Energy Charges	Capital-ised Total Cost	Initial Capital Investment for pumpsets & annual electricity Charges	PIPE SIZE in (mm)	Capital-ised cost for 30 yrs
	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)		THS (Rs)
1	741	723	5501	6242	937	904	6875	7812	1870	250	9823
2	700	683	5198	5898	867	836	6356	7222	1729	300	9797
3	685	669	5085	5770	840	810	6162	7003	1676	350	10174
4	678	662	5037	5715	829	799	6079	6908	1654	400	10096
5	675	659	5013	5688	823	794	6039	6862	1643	450	11210
6	674	657	5001	5675	821	791	6018	6838	1637	500	11854
7	672	656	4990	5662	818	789	5999	6817	1632	600	13278
8	672	656	4986	5658	817	788	5992	6810	1630	700	15496
9	671	655	4984	5656	817	787	5989	6806	1629	800	17990
10	671	655	4984	5655	817	787	5988	6805	1629	900	20347
11	671	655	4983	5654	816	787	5987	6804	1629	1000	22939

*** TABLE 3 shows that the most economical size of MAIN **J26 - J27(Zone13)** is :

300 mm costing **:CAPITALISED Rs.** 9,797 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J26** To: **J28**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J26

To : J28 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	4.81	mld	
B.	Intermediate		2026	9.44	mld	
C.	Ultimate		2041	16.15	mld	
2) Pumping main			LENGTH	489	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

	P I P E D A T A			
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	4.81	mld	9.44	mld
2) Discharge at the end of 15 yrs	9.44	mld	16.15	mld
3) Average Flow	86	lps	155	lps
4) Average Discharge	7.13	mld	12.80	mld
5) Avg.pumping hours during the period	17.36	hrs	18.22	hrs
6) KW required at combined	1.17	* H1	2.11	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	35351	* KW1	66637	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.086	1.000	0.086	0.012	994.620	0.250	0.001	9.336
300mm	1000	0.086	1.000	0.086	0.012	994.620	0.300	0.003	3.884
350mm	1000	0.086	1.000	0.086	0.012	994.620	0.350	0.006	1.850
400mm	1000	0.086	1.000	0.086	0.012	994.620	0.400	0.012	0.974
450mm	1000	0.086	1.000	0.086	0.012	994.620	0.450	0.021	0.552
500mm	1000	0.086	1.000	0.086	0.012	994.620	0.500	0.036	0.333
600mm	1000	0.086	1.000	0.086	0.012	994.620	0.600	0.086	0.138
700mm	1000	0.086	1.000	0.086	0.012	994.620	0.700	0.180	0.066
800mm	1000	0.086	1.000	0.086	0.012	994.620	0.800	0.342	0.035
900mm	1000	0.086	1.000	0.086	0.012	994.620	0.900	0.602	0.020
1000mm	1000	0.086	1.000	0.086	0.012	994.620	1.000	1.000	0.012

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.009	0.076	1.753
300	143.534	1	0.075	0.182	0.004	0.047	1.217
350	143.534	1	0.088	0.202	0.002	0.031	0.894
400	143.534	1	0.100	0.220	0.001	0.022	0.685
450	143.534	1	0.113	0.238	0.001	0.016	0.541
500	143.534	1	0.125	0.255	0.000	0.012	0.438
600	143.534	1	0.150	0.287	0.000	0.007	0.304
700	143.534	1	0.175	0.318	0.000	0.005	0.224
800	143.534	1	0.200	0.347	0.000	0.003	0.171
900	143.534	1	0.225	0.375	0.000	0.003	0.135
1000	143.534	1	0.250	0.402	0.000	0.002	0.110

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.155	1.000	0.155	0.034	994.620	0.250	0.001	26.940
300mm	1000	0.155	1.000	0.155	0.034	994.620	0.300	0.003	11.208
350mm	1000	0.155	1.000	0.155	0.034	994.620	0.350	0.006	5.340
400mm	1000	0.155	1.000	0.155	0.034	994.620	0.400	0.012	2.809
450mm	1000	0.155	1.000	0.155	0.034	994.620	0.450	0.021	1.594
500mm	1000	0.155	1.000	0.155	0.034	994.620	0.500	0.036	0.960
600mm	1000	0.155	1.000	0.155	0.034	994.620	0.600	0.086	0.400
700mm	1000	0.155	1.000	0.155	0.034	994.620	0.700	0.180	0.190
800mm	1000	0.155	1.000	0.155	0.034	994.620	0.800	0.342	0.100
900mm	1000	0.155	1.000	0.155	0.034	994.620	0.900	0.602	0.057
1000mm	1000	0.155	1.000	0.155	0.034	994.620	1.000	1.000	0.034

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.027	0.136	3.148
300	143.534	1	0.075	0.182	0.011	0.084	2.186
350	143.534	1	0.088	0.202	0.005	0.056	1.606
400	143.534	1	0.100	0.220	0.003	0.039	1.230
450	143.534	1	0.113	0.238	0.002	0.028	0.972
500	143.534	1	0.125	0.255	0.001	0.022	0.787
600	143.534	1	0.150	0.287	0.000	0.013	0.547
700	143.534	1	0.175	0.318	0.000	0.009	0.402
800	143.534	1	0.200	0.347	0.000	0.006	0.307
900	143.534	1	0.225	0.375	0.000	0.005	0.243
1000	143.534	1	0.250	0.402	0.000	0.003	0.197

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		489.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	9.336	26.940	1.753	3.148	4.565	0.457	33.022	13.173	1.317	42.491
2	300	3.884	11.208	1.217	2.186	1.899	0.190	30.089	5.481	0.548	34.029
3	350	1.850	5.340	0.894	1.606	0.905	0.090	28.995	2.611	0.261	30.872
4	400	0.974	2.809	0.685	1.230	0.476	0.048	28.524	1.374	0.137	29.511
5	450	0.552	1.594	0.541	0.972	0.270	0.027	28.297	0.780	0.078	28.857
6	500	0.333	0.960	0.438	0.787	0.163	0.016	28.179	0.470	0.047	28.517
7	600	0.138	0.400	0.304	0.547	0.068	0.007	28.074	0.195	0.020	28.215
8	700	0.066	0.190	0.224	0.402	0.032	0.003	28.035	0.093	0.009	28.102
9	800	0.035	0.100	0.171	0.307	0.017	0.002	28.019	0.049	0.005	28.054
10	900	0.020	0.057	0.135	0.243	0.010	0.001	28.011	0.028	0.003	28.031
11	1000	0.012	0.034	0.110	0.197	0.006	0.001	28.006	0.017	0.002	28.018

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	7.13		million liters/day				12.80	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	489
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	33.02	58	1453		42.49	134	3359	2005	980
2	300	K7	30.09	53	1324		34.03	108	2690	2543	1244
3	350	K7	29.00	51	1276		30.87	98	2440	3197	1563
4	400	K7	28.52	50	1255		29.51	93	2333	3833	1563
5	450	K7	28.30	50	1246		28.86	91	2281	4547	2223
6	500	K7	28.18	50	1240		28.52	90	2254	5325	2604
7	600	K7	28.07	49	1236		28.21	89	2230	7015	3430
8	700	K7	28.04	49	1234		28.10	89	2221	9622	4705
9	800	K7	28.02	49	1233		28.05	89	2218	12550	6137
10	900	K7	28.01	49	1233		28.03	89	2216	15314	7489
11	1000	K7	28.01	49	1233		28.02	89	2215	18354	8975

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		7.13	mld	2nd stage flow		12.80	mld			
											GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
1	1453	1167	8879	10332	3359	2831	21536	24895	5960	250	17273
2	1324	1064	8090	9415	2690	2268	17247	19937	4773	300	15431
3	1276	1025	7796	9073	2440	2057	15647	18088	4330	350	14966
4	1255	1008	7669	8925	2333	1967	14958	17290	4139	400	14628
5	1246	1000	7609	8854	2281	1923	14626	16907	4048	450	15125
6	1240	996	7577	8817	2254	1900	14453	16708	4000	500	15421
7	1236	992	7549	8784	2230	1880	14301	16531	3958	600	16172
8	1234	991	7538	8772	2221	1873	14244	16465	3942	700	17419
9	1233	990	7534	8767	2218	1869	14219	16436	3935	800	18839
10	1233	990	7531	8764	2216	1868	14207	16423	3932	900	20185
11	1233	990	7530	8763	2215	1867	14201	16416	3930	1000	21668

*** TABLE 3 shows that the most economical size of MAIN **J26 - J28** is :

400 mm costing **:CAPITALISED Rs.** 14,628 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J28** To: **J29(Zone18)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J28

To : J29(Zone18) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	2.06	mld	
B.	Intermediate		2026	4.86	mld	
C.	Ultimate		2041	7.44	mld	
2) Pumping main			LENGTH	1210	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

PIPE DATA				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	2.06	mld	4.86	mld
2) Discharge at the end of 15 yrs	4.86	mld	7.44	mld
3) Average Flow	42	lps	74	lps
4) Average Discharge	3.46	mld	6.15	mld
5) Avg.pumping hours during the period	16.37	hrs	19.02	hrs
6) KW required at combined	0.57	* H1	1.01	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	16193	* KW1	33415	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.042	1.000	0.042	0.003	994.620	0.250	0.001	2.525
300mm	1000	0.042	1.000	0.042	0.003	994.620	0.300	0.003	1.051
350mm	1000	0.042	1.000	0.042	0.003	994.620	0.350	0.006	0.501
400mm	1000	0.042	1.000	0.042	0.003	994.620	0.400	0.012	0.263
450mm	1000	0.042	1.000	0.042	0.003	994.620	0.450	0.021	0.149
500mm	1000	0.042	1.000	0.042	0.003	994.620	0.500	0.036	0.090
600mm	1000	0.042	1.000	0.042	0.003	994.620	0.600	0.086	0.037
700mm	1000	0.042	1.000	0.042	0.003	994.620	0.700	0.180	0.018
800mm	1000	0.042	1.000	0.042	0.003	994.620	0.800	0.342	0.009
900mm	1000	0.042	1.000	0.042	0.003	994.620	0.900	0.602	0.005
1000mm	1000	0.042	1.000	0.042	0.003	994.620	1.000	1.000	0.003

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.037	0.851
300	143.534	1	0.075	0.182	0.001	0.023	0.591
350	143.534	1	0.088	0.202	0.001	0.015	0.434
400	143.534	1	0.100	0.220	0.000	0.011	0.333
450	143.534	1	0.113	0.238	0.000	0.008	0.263
500	143.534	1	0.125	0.255	0.000	0.006	0.213
600	143.534	1	0.150	0.287	0.000	0.004	0.148
700	143.534	1	0.175	0.318	0.000	0.002	0.109
800	143.534	1	0.200	0.347	0.000	0.002	0.083
900	143.534	1	0.225	0.375	0.000	0.001	0.066
1000	143.534	1	0.250	0.402	0.000	0.001	0.053

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.074	1.000	0.074	0.009	994.620	0.250	0.001	7.150
300mm	1000	0.074	1.000	0.074	0.009	994.620	0.300	0.003	2.975
350mm	1000	0.074	1.000	0.074	0.009	994.620	0.350	0.006	1.417
400mm	1000	0.074	1.000	0.074	0.009	994.620	0.400	0.012	0.746
450mm	1000	0.074	1.000	0.074	0.009	994.620	0.450	0.021	0.423
500mm	1000	0.074	1.000	0.074	0.009	994.620	0.500	0.036	0.255
600mm	1000	0.074	1.000	0.074	0.009	994.620	0.600	0.086	0.106
700mm	1000	0.074	1.000	0.074	0.009	994.620	0.700	0.180	0.051
800mm	1000	0.074	1.000	0.074	0.009	994.620	0.800	0.342	0.027
900mm	1000	0.074	1.000	0.074	0.009	994.620	0.900	0.602	0.015
1000mm	1000	0.074	1.000	0.074	0.009	994.620	1.000	1.000	0.009

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.007	0.065	1.513
300	143.534	1	0.075	0.182	0.003	0.040	1.050
350	143.534	1	0.088	0.202	0.001	0.027	0.772
400	143.534	1	0.100	0.220	0.001	0.019	0.591
450	143.534	1	0.113	0.238	0.000	0.014	0.467
500	143.534	1	0.125	0.255	0.000	0.010	0.378
600	143.534	1	0.150	0.287	0.000	0.006	0.263
700	143.534	1	0.175	0.318	0.000	0.004	0.193
800	143.534	1	0.200	0.347	0.000	0.003	0.148
900	143.534	1	0.225	0.375	0.000	0.002	0.117
1000	143.534	1	0.250	0.402	0.000	0.002	0.095

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		1210.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	2.525	7.150	0.851	1.513	3.056	0.306	31.361	8.651	0.865	37.516
2	300	1.051	2.975	0.591	1.050	1.271	0.127	29.398	3.599	0.360	31.959
3	350	0.501	1.417	0.434	0.772	0.606	0.061	28.666	1.715	0.171	29.886
4	400	0.263	0.746	0.333	0.591	0.319	0.032	28.351	0.902	0.090	28.992
5	450	0.149	0.423	0.263	0.467	0.181	0.018	28.199	0.512	0.051	28.563
6	500	0.090	0.255	0.213	0.378	0.109	0.011	28.120	0.308	0.031	28.339
7	600	0.037	0.106	0.148	0.263	0.045	0.005	28.050	0.128	0.013	28.141
8	700	0.018	0.051	0.109	0.193	0.022	0.002	28.024	0.061	0.006	28.067
9	800	0.009	0.027	0.083	0.148	0.011	0.001	28.012	0.032	0.003	28.035
10	900	0.005	0.015	0.066	0.117	0.006	0.001	28.007	0.018	0.002	28.020
11	1000	0.003	0.009	0.053	0.095	0.004	0.000	28.004	0.011	0.001	28.012

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.46		million liters/day				6.15	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	1210
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
---	---	---	---	---	---	---	---	---	---	---	---
1	250	K7	31.36	27	670		37.52	57	1425	2005	2426
2	300	K7	29.40	25	628		31.96	49	1214	2543	3077
3	350	K7	28.67	25	613		29.89	45	1135	3197	3868
4	400	K7	28.35	24	606		28.99	44	1101	3833	3868
5	450	K7	28.20	24	603		28.56	43	1085	4547	5502
6	500	K7	28.12	24	601		28.34	43	1076	5325	6443
7	600	K7	28.05	24	600		28.14	43	1069	7015	8488
8	700	K7	28.02	24	599		28.07	43	1066	9622	11643
9	800	K7	28.01	24	599		28.04	43	1065	12550	15186
10	900	K7	28.01	24	599		28.02	43	1064	15314	18530
11	1000	K7	28.00	24	599		28.01	43	1064	18354	22208

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.46	mld	2nd stage flow		6.15	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---------	----------	----------	----------	----------	----------	----------	----------	----------		----------	----------
1	670	508	3863	4533	1425	1254	9535	10960	2624	250	9583
2	628	476	3621	4249	1214	1068	8123	9337	2235	300	9561
3	613	464	3531	4143	1135	999	7596	8731	2090	350	10102
4	606	459	3492	4098	1101	969	7369	8470	2028	400	9994
5	603	457	3473	4076	1085	954	7259	8344	1998	450	11575
6	601	455	3463	4064	1076	947	7203	8279	1982	500	12490
7	600	454	3455	4054	1069	940	7152	8221	1968	600	14511
8	599	454	3451	4050	1066	938	7133	8200	1963	700	17656
9	599	454	3450	4049	1065	937	7125	8190	1961	800	21195
10	599	454	3449	4048	1064	936	7121	8186	1960	900	24538
11	599	453	3449	4048	1064	936	7119	8183	1959	1000	28215

*** TABLE 3 shows that the most economical size of MAIN **J28 - J29(Zone18)** is :

300 mm costing **:CAPITALISED Rs.** 9,561 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J28** To: **J30(Zone14)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J28

To : J30(Zone14) PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	2.75	mld	
B.	Intermediate		2026	4.58	mld	
C.	Ultimate		2041	8.71	mld	
2) Pumping main			LENGTH	1278	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	2.75	mld	4.58	mld
2) Discharge at the end of 15 yrs	4.58	mld	8.71	mld
3) Average Flow	44	lps	80	lps
4) Average Discharge	3.67	mld	6.65	mld
5) Avg.pumping hours during the period	18.41	hrs	17.54	hrs
6) KW required at combined	0.60	* H1	0.60	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	19279	* KW1	18377	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.044	1.000	0.044	0.004	994.620	0.250	0.001	2.803
300mm	1000	0.044	1.000	0.044	0.004	994.620	0.300	0.003	1.166
350mm	1000	0.044	1.000	0.044	0.004	994.620	0.350	0.006	0.556
400mm	1000	0.044	1.000	0.044	0.004	994.620	0.400	0.012	0.292
450mm	1000	0.044	1.000	0.044	0.004	994.620	0.450	0.021	0.166
500mm	1000	0.044	1.000	0.044	0.004	994.620	0.500	0.036	0.100
600mm	1000	0.044	1.000	0.044	0.004	994.620	0.600	0.086	0.042
700mm	1000	0.044	1.000	0.044	0.004	994.620	0.700	0.180	0.020
800mm	1000	0.044	1.000	0.044	0.004	994.620	0.800	0.342	0.010
900mm	1000	0.044	1.000	0.044	0.004	994.620	0.900	0.602	0.006
1000mm	1000	0.044	1.000	0.044	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.039	0.902
300	143.534	1	0.075	0.182	0.001	0.024	0.626
350	143.534	1	0.088	0.202	0.001	0.016	0.460
400	143.534	1	0.100	0.220	0.000	0.011	0.352
450	143.534	1	0.113	0.238	0.000	0.008	0.278
500	143.534	1	0.125	0.255	0.000	0.006	0.225
600	143.534	1	0.150	0.287	0.000	0.004	0.157
700	143.534	1	0.175	0.318	0.000	0.003	0.115
800	143.534	1	0.200	0.347	0.000	0.002	0.088
900	143.534	1	0.225	0.375	0.000	0.001	0.070
1000	143.534	1	0.250	0.402	0.000	0.001	0.056

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.080	1.000	0.080	0.010	994.620	0.250	0.001	8.233
300mm	1000	0.080	1.000	0.080	0.010	994.620	0.300	0.003	3.425
350mm	1000	0.080	1.000	0.080	0.010	994.620	0.350	0.006	1.632
400mm	1000	0.080	1.000	0.080	0.010	994.620	0.400	0.012	0.859
450mm	1000	0.080	1.000	0.080	0.010	994.620	0.450	0.021	0.487
500mm	1000	0.080	1.000	0.080	0.010	994.620	0.500	0.036	0.294
600mm	1000	0.080	1.000	0.080	0.010	994.620	0.600	0.086	0.122
700mm	1000	0.080	1.000	0.080	0.010	994.620	0.700	0.180	0.058
800mm	1000	0.080	1.000	0.080	0.010	994.620	0.800	0.342	0.031
900mm	1000	0.080	1.000	0.080	0.010	994.620	0.900	0.602	0.017
1000mm	1000	0.080	1.000	0.080	0.010	994.620	1.000	1.000	0.010

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.008	0.071	1.635
300	143.534	1	0.075	0.182	0.003	0.043	1.136
350	143.534	1	0.088	0.202	0.002	0.029	0.834
400	143.534	1	0.100	0.220	0.001	0.020	0.639
450	143.534	1	0.113	0.238	0.000	0.015	0.505
500	143.534	1	0.125	0.255	0.000	0.011	0.409
600	143.534	1	0.150	0.287	0.000	0.007	0.284
700	143.534	1	0.175	0.318	0.000	0.005	0.209
800	143.534	1	0.200	0.347	0.000	0.003	0.160
900	143.534	1	0.225	0.375	0.000	0.002	0.126
1000	143.534	1	0.250	0.402	0.000	0.002	0.102

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		1278.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
1	250	2.803	8.233	0.902	1.635	3.582	0.358	31.940	10.522	1.052	39.574
2	300	1.166	3.425	0.626	1.136	1.490	0.149	29.639	4.378	0.438	32.815
3	350	0.556	1.632	0.460	0.834	0.710	0.071	28.781	2.086	0.209	30.294
4	400	0.292	0.859	0.352	0.639	0.374	0.037	28.411	1.097	0.110	29.207
5	450	0.166	0.487	0.278	0.505	0.212	0.021	28.233	0.623	0.062	28.685
6	500	0.100	0.294	0.225	0.409	0.128	0.013	28.140	0.375	0.038	28.413
7	600	0.042	0.122	0.157	0.284	0.053	0.005	28.058	0.156	0.016	28.172
8	700	0.020	0.058	0.115	0.209	0.025	0.003	28.028	0.074	0.007	28.082
9	800	0.010	0.031	0.088	0.160	0.013	0.001	28.015	0.039	0.004	28.043
10	900	0.006	0.017	0.070	0.126	0.008	0.001	28.008	0.022	0.002	28.024
11	1000	0.004	0.010	0.056	0.102	0.005	0.000	28.005	0.013	0.001	28.015

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.67		million liters/day				6.65	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	1278
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	31.94	29	723		39.57	36	896	2005	2562
2	300	K7	29.64	27	671		32.82	30	743	2543	3250
3	350	K7	28.78	26	652		30.29	27	686	3197	4086
4	400	K7	28.41	26	643		29.21	26	661	3833	4086
5	450	K7	28.23	26	639		28.68	26	649	4547	5811
6	500	K7	28.14	25	637		28.41	26	643	5325	6805
7	600	K7	28.06	25	635		28.17	26	638	7015	8965
8	700	K7	28.03	25	635		28.08	25	636	9622	12297
9	800	K7	28.01	25	634		28.04	25	635	12550	16039
10	900	K7	28.01	25	634		28.02	25	635	15314	19571
11	1000	K7	28.01	25	634		28.01	25	634	18354	23456

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.67	mld	2nd stage flow		6.65	mld			
	------	---------	---------	---------	------	---------	---------	---------			GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
---	---	---	---	---	---	---	---	---		---	---
1	723	616	4684	5407	896	727	5532	6428	1539	250	9508
2	671	571	4346	5017	743	603	4587	5330	1276	300	9543
3	652	555	4220	4872	686	557	4234	4920	1178	350	10136
4	643	548	4166	4809	661	537	4083	4744	1136	400	10031
5	639	544	4140	4779	649	527	4010	4659	1115	450	11706
6	637	543	4126	4764	643	522	3971	4615	1105	500	12674
7	635	541	4114	4750	638	518	3938	4576	1095	600	14810
8	635	540	4110	4744	636	516	3925	4561	1092	700	18133
9	634	540	4108	4742	635	515	3920	4555	1090	800	21872
10	634	540	4107	4741	635	515	3917	4552	1090	900	25402
11	634	540	4107	4741	634	515	3916	4550	1089	1000	29286

*** TABLE 3 shows that the most economical size of MAIN **J28 - J30(Zone14)** is :

300 mm costing **:CAPITALISED Rs.** 9,508 thousands

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Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J24** To: **J22**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J24

To : J22 PANIPAT

1) Water requirement : Year Peak Discharge

							P I P E D A T A				
A.	Initial			2011	8.96	mld	--------	---------	---------	---------	--------
B.	Intermediate			2026	10.15	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate			2041	11.90	mld	MM.	IAL			Rs/M
							--------	---------	---------	---------	--------
2) Pumping main				LENGTH	599	M	250	DI	K7	140	2005
3) Static head for pump				ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period				YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set				EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit				Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate				INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set				P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh				P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge				PUMPING-	23	hrs	800	DI	K7	140	12550
	at the end of 15 years			HOURS			900	DI	K7	140	15314
							1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	8.96	mld	10.15	mld
2) Discharge at the end of 15 yrs	10.15	mld	11.90	mld
3) Average Flow	115	lps	133	lps
4) Average Discharge	9.56	mld	11.03	mld
5) Avg.pumping hours during the period	21.65	hrs	21.31	hrs
6) KW required at combined	1.57	* H1	1.82	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	59129	* KW1	67146	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.115	1.000	0.115	0.020	994.620	0.250	0.001	15.879
300mm	1000	0.115	1.000	0.115	0.020	994.620	0.300	0.003	6.607
350mm	1000	0.115	1.000	0.115	0.020	994.620	0.350	0.006	3.147
400mm	1000	0.115	1.000	0.115	0.020	994.620	0.400	0.012	1.656
450mm	1000	0.115	1.000	0.115	0.020	994.620	0.450	0.021	0.940
500mm	1000	0.115	1.000	0.115	0.020	994.620	0.500	0.036	0.566
600mm	1000	0.115	1.000	0.115	0.020	994.620	0.600	0.086	0.236
700mm	1000	0.115	1.000	0.115	0.020	994.620	0.700	0.180	0.112
800mm	1000	0.115	1.000	0.115	0.020	994.620	0.800	0.342	0.059
900mm	1000	0.115	1.000	0.115	0.020	994.620	0.900	0.602	0.033
1000mm	1000	0.115	1.000	0.115	0.020	994.620	1.000	1.000	0.020

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.016	0.101	2.351
300	143.534	1	0.075	0.182	0.007	0.062	1.632
350	143.534	1	0.088	0.202	0.003	0.041	1.199
400	143.534	1	0.100	0.220	0.002	0.029	0.918
450	143.534	1	0.113	0.238	0.001	0.021	0.726
500	143.534	1	0.125	0.255	0.001	0.016	0.588
600	143.534	1	0.150	0.287	0.000	0.010	0.408
700	143.534	1	0.175	0.318	0.000	0.007	0.300
800	143.534	1	0.200	0.347	0.000	0.005	0.230
900	143.534	1	0.225	0.375	0.000	0.003	0.181
1000	143.534	1	0.250	0.402	0.000	0.003	0.147

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.133	1.000	0.133	0.026	994.620	0.250	0.001	20.578
300mm	1000	0.133	1.000	0.133	0.026	994.620	0.300	0.003	8.561
350mm	1000	0.133	1.000	0.133	0.026	994.620	0.350	0.006	4.079
400mm	1000	0.133	1.000	0.133	0.026	994.620	0.400	0.012	2.146
450mm	1000	0.133	1.000	0.133	0.026	994.620	0.450	0.021	1.218
500mm	1000	0.133	1.000	0.133	0.026	994.620	0.500	0.036	0.734
600mm	1000	0.133	1.000	0.133	0.026	994.620	0.600	0.086	0.305
700mm	1000	0.133	1.000	0.133	0.026	994.620	0.700	0.180	0.145
800mm	1000	0.133	1.000	0.133	0.026	994.620	0.800	0.342	0.076
900mm	1000	0.133	1.000	0.133	0.026	994.620	0.900	0.602	0.043
1000mm	1000	0.133	1.000	0.133	0.026	994.620	1.000	1.000	0.026

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.021	0.117	2.713
300	143.534	1	0.075	0.182	0.009	0.072	1.884
350	143.534	1	0.088	0.202	0.004	0.048	1.384
400	143.534	1	0.100	0.220	0.002	0.034	1.060
450	143.534	1	0.113	0.238	0.001	0.025	0.837
500	143.534	1	0.125	0.255	0.001	0.019	0.678
600	143.534	1	0.150	0.287	0.000	0.011	0.471
700	143.534	1	0.175	0.318	0.000	0.008	0.346
800	143.534	1	0.200	0.347	0.000	0.005	0.265
900	143.534	1	0.225	0.375	0.000	0.004	0.209
1000	143.534	1	0.250	0.402	0.000	0.003	0.170

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		599.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------
1	250	15.879	20.578	2.351	2.713	9.512	0.951	38.463	12.326	1.233	41.559
2	300	6.607	8.561	1.632	1.884	3.957	0.396	32.353	5.128	0.513	33.641
3	350	3.147	4.079	1.199	1.384	1.885	0.189	30.074	2.443	0.244	30.687
4	400	1.656	2.146	0.918	1.060	0.992	0.099	29.091	1.285	0.129	29.414
5	450	0.940	1.218	0.726	0.837	0.563	0.056	28.619	0.729	0.073	28.802
6	500	0.566	0.734	0.588	0.678	0.339	0.034	28.373	0.439	0.044	28.483
7	600	0.236	0.305	0.408	0.471	0.141	0.014	28.155	0.183	0.018	28.201
8	700	0.112	0.145	0.300	0.346	0.067	0.007	28.074	0.087	0.009	28.096
9	800	0.059	0.076	0.230	0.265	0.035	0.004	28.039	0.046	0.005	28.050
10	900	0.033	0.043	0.181	0.209	0.020	0.002	28.022	0.026	0.003	28.029
11	1000	0.020	0.026	0.147	0.170	0.012	0.001	28.013	0.016	0.002	28.017

---------- >>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	9.56		million liters/day				11.03	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	599
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
---	---	---	---	---	---	---	---	---	---	---	---
1	250	K7	38.46	91	2270		41.56	113	2831	2005	1201
2	300	K7	32.35	76	1910		33.64	92	2291	2543	1523
3	350	K7	30.07	71	1775		30.69	84	2090	3197	1915
4	400	K7	29.09	69	1717		29.41	80	2004	3833	1915
5	450	K7	28.62	68	1689		28.80	78	1962	4547	2724
6	500	K7	28.37	67	1675		28.48	78	1940	5325	3190
7	600	K7	28.16	66	1662		28.20	77	1921	7015	4202
8	700	K7	28.07	66	1657		28.10	77	1914	9622	5764
9	800	K7	28.04	66	1655		28.05	76	1911	12550	7517
10	900	K7	28.02	66	1654		28.03	76	1909	15314	9173
11	1000	K7	28.01	66	1654		28.02	76	1908	18354	10994

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		9.56	mld	2nd stage flow		11.03	mld			
											GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
1	2270	2274	17298	19568	2831	2790	21224	24055	5759	250	26528
2	1910	1913	14550	16460	2291	2259	17181	19472	4662	300	22645
3	1775	1778	13525	15300	2090	2061	15672	17763	4252	350	21468
4	1717	1720	13083	14800	2004	1975	15022	17025	4076	400	20791
5	1689	1692	12871	14560	1962	1934	14710	16672	3991	450	21275
6	1675	1678	12760	14435	1940	1913	14547	16487	3947	500	21572
7	1662	1665	12662	14324	1921	1894	14403	16324	3908	600	22434
8	1657	1660	12626	14283	1914	1887	14349	16263	3893	700	23940
9	1655	1658	12610	14265	1911	1883	14326	16236	3887	800	25670
10	1654	1657	12602	14257	1909	1882	14315	16224	3884	900	27314
11	1654	1656	12599	14252	1908	1881	14309	16217	3882	1000	29129

*** TABLE 3 shows that the most economical size of MAIN **J24 - J22** is :

400 mm costing : CAPITALISED Rs. 20,791 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J22** To: **J23(Zone12)**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN I N P U T D A T A PANIPAT

From : J22

To : J23(Zone12) PANIPAT

1) Water requirement : Year Peak Discharge

							P I P E D A T A				
A.	Initial		2011	3.27	mld	--------	---------	---------	---------	--------
B.	Intermediate		2026	4.15	mld	DIAMETER	MATER-	CLASS	HWC	RATE
C.	Ultimate		2041	5.58	mld	MM.	IAL			Rs/M
						--------	---------	---------	---------	--------
2) Pumping main			LENGTH	548	M	250	DI	K7	140	2005
3) Static head for pump			ST.HEAD	28.00	M	300	DI	K7	140	2543
4) Design period			YEAR	30	yr.	350	DI	K7	140	3197
5) Combined eff. of pump set			EFF. %	75	%	400	DI	K7	140	3833
6) Cost of pumping unit			Rs./KW	25000	Rs	450	DI	K7	140	4547
7) Interest rate			INTEREST	10.00	%	500	DI	K7	140	5325
8) Life of electric motor & pump set			P.Yrs	15	yr.	600	DI	K7	140	7015
9) Energy charges per kWh			P/KWH	475	paise	700	DI	K7	140	9622
10) Pumping hours for discharge			PUMPING-	23	hrs	800	DI	K7	140	12550
at the end of 15 years			HOURS			900	DI	K7	140	15314
						1000	DI	K7	140	18354

CALCULATIONS:

			1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD			3.27	mld	4.15	mld
2) Discharge at the end of 15 yrs			4.15	mld	5.58	mld
3) Average Flow			45	lps	59	lps
4) Average Discharge			3.71	mld	4.86	mld
5) Avg.pumping hours during the period			20.56	hrs	20.06	hrs
6) KW required at combined			0.61	* H1	0.80	* H2
efficiency of pumping set						
7) Avg annual charges for electrical						
energy Rs.			21802	* KW1	27880	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.045	1.000	0.045	0.004	994.620	0.250	0.001	2.865
300mm	1000	0.045	1.000	0.045	0.004	994.620	0.300	0.003	1.192
350mm	1000	0.045	1.000	0.045	0.004	994.620	0.350	0.006	0.568
400mm	1000	0.045	1.000	0.045	0.004	994.620	0.400	0.012	0.299
450mm	1000	0.045	1.000	0.045	0.004	994.620	0.450	0.021	0.170
500mm	1000	0.045	1.000	0.045	0.004	994.620	0.500	0.036	0.102
600mm	1000	0.045	1.000	0.045	0.004	994.620	0.600	0.086	0.042
700mm	1000	0.045	1.000	0.045	0.004	994.620	0.700	0.180	0.020
800mm	1000	0.045	1.000	0.045	0.004	994.620	0.800	0.342	0.011
900mm	1000	0.045	1.000	0.045	0.004	994.620	0.900	0.602	0.006
1000mm	1000	0.045	1.000	0.045	0.004	994.620	1.000	1.000	0.004

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.003	0.039	0.913
300	143.534	1	0.075	0.182	0.001	0.024	0.634
350	143.534	1	0.088	0.202	0.001	0.016	0.466
400	143.534	1	0.100	0.220	0.000	0.011	0.357
450	143.534	1	0.113	0.238	0.000	0.008	0.282
500	143.534	1	0.125	0.255	0.000	0.006	0.228
600	143.534	1	0.150	0.287	0.000	0.004	0.158
700	143.534	1	0.175	0.318	0.000	0.003	0.116
800	143.534	1	0.200	0.347	0.000	0.002	0.089
900	143.534	1	0.225	0.375	0.000	0.001	0.070
1000	143.534	1	0.250	0.402	0.000	0.001	0.057

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.059	1.000	0.059	0.006	994.620	0.250	0.001	4.676
300mm	1000	0.059	1.000	0.059	0.006	994.620	0.300	0.003	1.946
350mm	1000	0.059	1.000	0.059	0.006	994.620	0.350	0.006	0.927
400mm	1000	0.059	1.000	0.059	0.006	994.620	0.400	0.012	0.488
450mm	1000	0.059	1.000	0.059	0.006	994.620	0.450	0.021	0.277
500mm	1000	0.059	1.000	0.059	0.006	994.620	0.500	0.036	0.167
600mm	1000	0.059	1.000	0.059	0.006	994.620	0.600	0.086	0.069
700mm	1000	0.059	1.000	0.059	0.006	994.620	0.700	0.180	0.033
800mm	1000	0.059	1.000	0.059	0.006	994.620	0.800	0.342	0.017
900mm	1000	0.059	1.000	0.059	0.006	994.620	0.900	0.602	0.010
1000mm	1000	0.059	1.000	0.059	0.006	994.620	1.000	1.000	0.006

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.005	0.052	1.196
300	143.534	1	0.075	0.182	0.002	0.032	0.831
350	143.534	1	0.088	0.202	0.001	0.021	0.610
400	143.534	1	0.100	0.220	0.000	0.015	0.467
450	143.534	1	0.113	0.238	0.000	0.011	0.369
500	143.534	1	0.125	0.255	0.000	0.008	0.299
600	143.534	1	0.150	0.287	0.000	0.005	0.208
700	143.534	1	0.175	0.318	0.000	0.003	0.153
800	143.534	1	0.200	0.347	0.000	0.002	0.117
900	143.534	1	0.225	0.375	0.000	0.002	0.092
1000	143.534	1	0.250	0.402	0.000	0.001	0.075

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for	548.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head			
No.	Size	loss per		m/s								
	in	1000 m				1st stage flow			2nd stage flow			
	mm											
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
1	250	2.865	4.676	0.913	1.196	1.570	0.157	29.727	2.563	0.256	30.819
2	300	1.192	1.946	0.634	0.831	0.653	0.065	28.719	1.066	0.107	29.173
3	350	0.568	0.927	0.466	0.610	0.311	0.031	28.342	1.111	0.111	29.223
4	400	0.299	0.488	0.357	0.467	0.164	0.016	28.180	0.585	0.058	28.643
5	450	0.170	0.277	0.282	0.369	0.093	0.009	28.102	0.332	0.033	28.365
6	500	0.102	0.167	0.228	0.299	0.056	0.006	28.062	0.200	0.020	28.220
7	600	0.042	0.069	0.158	0.208	0.023	0.002	28.026	0.083	0.008	28.091
8	700	0.020	0.033	0.116	0.153	0.011	0.001	28.012	0.040	0.004	28.044
9	800	0.011	0.017	0.089	0.117	0.006	0.001	28.006	0.021	0.002	28.023
10	900	0.006	0.010	0.070	0.092	0.003	0.000	28.004	0.012	0.001	28.013
11	1000	0.004	0.006	0.057	0.075	0.002	0.000	28.002	0.007	0.001	28.008

>>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	3.71		million liters/day				4.86	million liters/day		of	of
			H1	Kw	Pump		H2	Kw	Pump	pipe	548
Sl.	PIPE	Class	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	per	meter
No.	Size	of	head		25000.00		head	plus %	25000.00	unit	pipe
	in	PIPE	in	plus 50%	per kw		in	50	per kw	length	line
	mm		meters	standby	Rs THS		meters	standby	Rs THS		THS
										(Rs)	(Rs)
1	250	K7	29.73	27	681		30.82	37	926	2005	1099
2	300	K7	28.72	26	658		29.17	35	876	2543	1394
3	350	K7	28.34	26	650		29.22	35	878	3197	1752
4	400	K7	28.18	26	646		28.64	34	860	3833	1752
5	450	K7	28.10	26	644		28.36	34	852	4547	2492
6	500	K7	28.06	26	643		28.22	34	848	5325	2918
7	600	K7	28.03	26	642		28.09	34	844	7015	3844
8	700	K7	28.01	26	642		28.04	34	842	9622	5273
9	800	K7	28.01	26	642		28.02	34	842	12550	6877
10	900	K7	28.00	26	642		28.01	34	842	15314	8392
11	1000	K7	28.00	26	642		28.01	34	841	18354	10058

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		3.71	mld	2nd stage flow		4.86	mld			
											GRAND
											TOTAL
											of
	Cost	Annual	Capital-	Capital-	Cost	Annual	Capital-	Capital-	Initial	PIPE	Capital-
	of	Energy	ised	ised	of	Energy	ised	ised	Capital	SIZE	ised
Sl.	pump	Charges	Energy	Total	pump	Charges	Energy	Total	Investment	in	cost
No.	sets		Charges	Cost	sets		Charges	Cost	for pumpsets	(mm)	for
									& annual ele		
									ct. Charges		30 yrs
	THS	THS	THS	THS	THS	THS	THS	THS	THS		THS
	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)	(Rs)		(Rs)
1	681	648	4930	5611	926	859	6535	7461	1786	250	8496
2	658	626	4762	5421	876	813	6186	7063	1691	300	8505
3	650	618	4700	5350	878	815	6197	7075	1694	350	8795
4	646	614	4673	5319	860	799	6074	6934	1660	400	8731
5	644	613	4660	5304	852	791	6015	6867	1644	450	9440
6	643	612	4653	5297	848	787	5984	6832	1636	500	9850
7	642	611	4647	5290	844	783	5957	6801	1628	600	10762
8	642	611	4645	5287	842	782	5947	6789	1625	700	12185
9	642	611	4644	5286	842	781	5942	6784	1624	800	13788
10	642	611	4644	5286	842	781	5940	6782	1624	900	15301
11	642	611	4644	5285	841	781	5939	6781	1623	1000	16967

*** TABLE 3 shows that the most economical size of MAIN **J22 - J23(Zone12)** is :

250 mm costing : CAPITALISED Rs. 8,496 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J22** To: **J20**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN INPUT DATA PANIPAT

From : J22

To : J20 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	5.69	mld	
B.	Intermediate		2026	6.00	mld	
C.	Ultimate		2041	6.33	mld	
2) Pumping main			LENGTH	1574	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

CALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	5.69	mld	6.00	mld
2) Discharge at the end of 15 yrs	6.00	mld	6.33	mld
3) Average Flow	71	lps	74	lps
4) Average Discharge	5.85	mld	6.16	mld
5) Avg.pumping hours during the period	22.41	hrs	22.41	hrs
6) KW required at combined	0.96	* H1	1.02	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	37430	* KW1	39469	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.071	1.000	0.071	0.008	994.620	0.250	0.001	6.524
300mm	1000	0.071	1.000	0.071	0.008	994.620	0.300	0.003	2.714
350mm	1000	0.071	1.000	0.071	0.008	994.620	0.350	0.006	1.293
400mm	1000	0.071	1.000	0.071	0.008	994.620	0.400	0.012	0.680
450mm	1000	0.071	1.000	0.071	0.008	994.620	0.450	0.021	0.386
500mm	1000	0.071	1.000	0.071	0.008	994.620	0.500	0.036	0.233
600mm	1000	0.071	1.000	0.071	0.008	994.620	0.600	0.086	0.097
700mm	1000	0.071	1.000	0.071	0.008	994.620	0.700	0.180	0.046
800mm	1000	0.071	1.000	0.071	0.008	994.620	0.800	0.342	0.024
900mm	1000	0.071	1.000	0.071	0.008	994.620	0.900	0.602	0.014
1000mm	1000	0.071	1.000	0.071	0.008	994.620	1.000	1.000	0.008

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.007	0.062	1.438
300	143.534	1	0.075	0.182	0.003	0.038	0.999
350	143.534	1	0.088	0.202	0.001	0.025	0.734
400	143.534	1	0.100	0.220	0.001	0.018	0.562
450	143.534	1	0.113	0.238	0.000	0.013	0.444
500	143.534	1	0.125	0.255	0.000	0.010	0.359
600	143.534	1	0.150	0.287	0.000	0.006	0.250
700	143.534	1	0.175	0.318	0.000	0.004	0.183
800	143.534	1	0.200	0.347	0.000	0.003	0.140
900	143.534	1	0.225	0.375	0.000	0.002	0.111
1000	143.534	1	0.250	0.402	0.000	0.002	0.090

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.074	1.000	0.074	0.009	994.620	0.250	0.001	7.180
300mm	1000	0.074	1.000	0.074	0.009	994.620	0.300	0.003	2.987
350mm	1000	0.074	1.000	0.074	0.009	994.620	0.350	0.006	1.423
400mm	1000	0.074	1.000	0.074	0.009	994.620	0.400	0.012	0.749
450mm	1000	0.074	1.000	0.074	0.009	994.620	0.450	0.021	0.425
500mm	1000	0.074	1.000	0.074	0.009	994.620	0.500	0.036	0.256
600mm	1000	0.074	1.000	0.074	0.009	994.620	0.600	0.086	0.106
700mm	1000	0.074	1.000	0.074	0.009	994.620	0.700	0.180	0.051
800mm	1000	0.074	1.000	0.074	0.009	994.620	0.800	0.342	0.027
900mm	1000	0.074	1.000	0.074	0.009	994.620	0.900	0.602	0.015
1000mm	1000	0.074	1.000	0.074	0.009	994.620	1.000	1.000	0.009

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.007	0.065	1.516
300	143.534	1	0.075	0.182	0.003	0.040	1.053
350	143.534	1	0.088	0.202	0.001	0.027	0.774
400	143.534	1	0.100	0.220	0.001	0.019	0.592
450	143.534	1	0.113	0.238	0.000	0.014	0.468
500	143.534	1	0.125	0.255	0.000	0.010	0.379
600	143.534	1	0.150	0.287	0.000	0.006	0.263
700	143.534	1	0.175	0.318	0.000	0.004	0.193
800	143.534	1	0.200	0.347	0.000	0.003	0.148
900	143.534	1	0.225	0.375	0.000	0.002	0.117
1000	143.534	1	0.250	0.402	0.000	0.002	0.095

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

							Total head(m) for		1574.00	m length	
Sl.	Pipe	Frictional Head		Velocity in			including	28.00	m static head		
No.	Size	loss per		m/s		------	---------	---------	---------	---------	---------
	in	1000 m				1st stage flow			2nd stage flow		
	mm	----------		----------		-------	---------	--------	-------	---------	---------
		1st	2nd	1st	2nd	Frict-		Total	Frict-		Total
		stage	stage	stage	stage	ional	Other*	losses	ional	Other*	losses
		flow	flow	flow	flow	loss	losses	H1	loss	losses	H2
1	250	6.524	7.180	1.438	1.516	10.268	1.027	39.295	11.302	1.130	40.432
2	300	2.714	2.987	0.999	1.053	4.272	0.427	32.699	4.702	0.470	33.172
3	350	1.293	1.423	0.734	0.774	2.035	0.204	30.239	2.240	0.224	30.464
4	400	0.680	0.749	0.562	0.592	1.071	0.107	29.178	1.178	0.118	29.296
5	450	0.386	0.425	0.444	0.468	0.608	0.061	28.668	0.669	0.067	28.736
6	500	0.233	0.256	0.359	0.379	0.366	0.037	28.403	0.403	0.040	28.443
7	600	0.097	0.106	0.250	0.263	0.152	0.015	28.168	0.168	0.017	28.184
8	700	0.046	0.051	0.183	0.193	0.073	0.007	28.080	0.080	0.008	28.088
9	800	0.024	0.027	0.140	0.148	0.038	0.004	28.042	0.042	0.004	28.046
10	900	0.014	0.015	0.111	0.117	0.022	0.002	28.024	0.024	0.002	28.026
11	1000	0.008	0.009	0.090	0.095	0.013	0.001	28.014	0.014	0.001	28.016

>>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	5.85		million liters/day				6.16	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	1574
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	39.30	57	1419		40.43	62	1539	2005	3156
2	300	K7	32.70	47	1181		33.17	51	1263	2543	4003
3	350	K7	30.24	44	1092		30.46	46	1160	3197	5032
4	400	K7	29.18	42	1054		29.30	45	1115	3833	5032
5	450	K7	28.67	41	1035		28.74	44	1094	4547	7157
6	500	K7	28.40	41	1026		28.44	43	1083	5325	8382
7	600	K7	28.17	41	1017		28.18	43	1073	7015	11042
8	700	K7	28.08	41	1014		28.09	43	1069	9622	15145
9	800	K7	28.04	41	1013		28.05	43	1068	12550	19754
10	900	K7	28.02	40	1012		28.03	43	1067	15314	24104
11	1000	K7	28.01	40	1012		28.02	43	1067	18354	28889

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		5.85	mld	2nd stage flow		6.16	mld			
											GRAND TOTAL of
Sl. No.	Cost of pump sets	Annual Energy Charges	Capital-ised Energy Charges	Capital-ised Total Cost	Cost of pump sets	Annual Energy Charges	Capital-ised Energy Charges	Capital-ised Total Cost	Initial Capital Investment for pumpsets & annual electricity Charges	PIPE SIZE in (mm)	Capital-ised cost for 30 yrs
	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)		THS (Rs)
1	1419	1471	11187	12606	1539	1596	12138	13677	3274	250	19036
2	1181	1224	9309	10490	1263	1309	9958	11221	2686	300	17179
3	1092	1132	8609	9701	1160	1202	9145	10305	2467	350	17200
4	1054	1092	8307	9360	1115	1156	8795	9910	2373	400	16765
5	1035	1073	8162	9197	1094	1134	8627	9721	2327	450	18681
6	1026	1063	8086	9112	1083	1123	8539	9622	2303	500	19797
7	1017	1054	8019	9036	1073	1112	8461	9534	2283	600	22360
8	1014	1051	7994	9008	1069	1109	8432	9501	2275	700	26428
9	1013	1050	7983	8996	1068	1107	8420	9487	2271	800	31021
10	1012	1049	7978	8990	1067	1106	8414	9481	2270	900	35364
11	1012	1049	7976	8987	1067	1106	8410	9477	2269	1000	40145

*** TABLE 3 shows that the most economical size of MAIN **J22 - J20** is :

400 mm costing : CAPITALISED Rs. 16,765 thousands

Design of Least Cost Pipe Size : Pumping Transmission Main

From: **J18** To: **J20**

ECONOMACAL SIZE OF CLEAR WATER RISING MAIN MAIN — I N P U T D A T A — PANIPAT

From : J18

To : J20 PANIPAT

1) Water requirement : Year Peak Discharge

A.	Initial		2011	8.39	mld	
B.	Intermediate		2026	9.65	mld	
C.	Ultimate		2041	12.70	mld	
2) Pumping main			LENGTH	294	M	
3) Static head for pump			ST.HEAD	28.00	M	
4) Design period			YEAR	30	yr.	
5) Combined eff. of pump set			EFF. %	75	%	
6) Cost of pumping unit			Rs./KW	25000	Rs	
7) Interest rate			INTEREST	10.00	%	
8) Life of electric motor & pump set			P.Yrs	15	yr.	
9) Energy charges per kWh			P/KWH	475	paise	
10) Pumping hours for discharge			PUMPING-	23	hrs	
	at the end of 15 years		HOURS			

P I P E D A T A				
DIAMETER MM.	MATER-IAL	CLASS	HWC	RATE Rs/M
250	DI	K7	140	2005
300	DI	K7	140	2543
350	DI	K7	140	3197
400	DI	K7	140	3833
450	DI	K7	140	4547
500	DI	K7	140	5325
600	DI	K7	140	7015
700	DI	K7	140	9622
800	DI	K7	140	12550
900	DI	K7	140	15314
1000	DI	K7	140	18354

ALCULATIONS:

	1st 15 years		2nd 15 years	
1) Discharge at Start OF PERIOD	8.39	mld	9.65	mld
2) Discharge at the end of 15 yrs	9.65	mld	12.70	mld
3) Average Flow	109	lps	135	lps
4) Average Discharge	9.02	mld	11.17	mld
5) Avg.pumping hours during the period	21.50	hrs	20.24	hrs
6) KW required at combined	1.49	* H1	1.84	* H2
efficiency of pumping set				
7) Avg annual charges for electrical				
energy Rs.	55423	* KW1	64637	* KW2

Modified Hazen William's Formula

V= 143.534CR r0.6575 S0.5525

h= [L(Q/CR)1.81]/[994.62D4.81]

Friction Head Loss (First 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(First 15 yrs)
250mm	1000	0.109	1.000	0.109	0.018	994.620	0.250	0.001	14.307
300mm	1000	0.109	1.000	0.109	0.018	994.620	0.300	0.003	5.952
350mm	1000	0.109	1.000	0.109	0.018	994.620	0.350	0.006	2.836
400mm	1000	0.109	1.000	0.109	0.018	994.620	0.400	0.012	1.492
450mm	1000	0.109	1.000	0.109	0.018	994.620	0.450	0.021	0.847
500mm	1000	0.109	1.000	0.109	0.018	994.620	0.500	0.036	0.510
600mm	1000	0.109	1.000	0.109	0.018	994.620	0.600	0.086	0.212
700mm	1000	0.109	1.000	0.109	0.018	994.620	0.700	0.180	0.101
800mm	1000	0.109	1.000	0.109	0.018	994.620	0.800	0.342	0.053
900mm	1000	0.109	1.000	0.109	0.018	994.620	0.900	0.602	0.030
1000mm	1000	0.109	1.000	0.109	0.018	994.620	1.000	1.000	0.018

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1.000	0.063	0.162	0.014	0.096	2.219
300	143.534	1.000	0.075	0.182	0.006	0.059	1.541
350	143.534	1.000	0.088	0.202	0.003	0.039	1.132
400	143.534	1.000	0.100	0.220	0.001	0.027	0.867
450	143.534	1.000	0.113	0.238	0.001	0.020	0.685
500	143.534	1.000	0.125	0.255	0.001	0.015	0.555
600	143.534	1.000	0.150	0.287	0.000	0.009	0.385
700	143.534	1.000	0.175	0.318	0.000	0.006	0.283
800	143.534	1.000	0.200	0.347	0.000	0.004	0.217
900	143.534	1.000	0.225	0.375	0.000	0.003	0.171
1000	143.534	1.000	0.250	0.402	0.000	0.002	0.139

Friction Head Loss (Second 15 years)

Dia. in mm	L	Q	CR	Q/CR	(Q/CR)1.81	994.62	D	D4.81	h(Second 15 yrs)
250mm	1000	0.135	1.000	0.135	0.027	994.620	0.250	0.001	21.078
300mm	1000	0.135	1.000	0.135	0.027	994.620	0.300	0.003	8.770
350mm	1000	0.135	1.000	0.135	0.027	994.620	0.350	0.006	4.178
400mm	1000	0.135	1.000	0.135	0.027	994.620	0.400	0.012	2.198
450mm	1000	0.135	1.000	0.135	0.027	994.620	0.450	0.021	1.247
500mm	1000	0.135	1.000	0.135	0.027	994.620	0.500	0.036	0.751
600mm	1000	0.135	1.000	0.135	0.027	994.620	0.600	0.086	0.313
700mm	1000	0.135	1.000	0.135	0.027	994.620	0.700	0.180	0.149
800mm	1000	0.135	1.000	0.135	0.027	994.620	0.800	0.342	0.078
900mm	1000	0.135	1.000	0.135	0.027	994.620	0.900	0.602	0.044
1000mm	1000	0.135	1.000	0.135	0.027	994.620	1.000	1.000	0.027

Velocity

Dia. in mm	143.534	CR	r=A/P=D/4	r0.6575	S	S0.5525	V
250	143.534	1	0.063	0.162	0.021	0.119	2.749
300	143.534	1	0.075	0.182	0.009	0.073	1.909
350	143.534	1	0.088	0.202	0.004	0.048	1.403
400	143.534	1	0.100	0.220	0.002	0.034	1.074
450	143.534	1	0.113	0.238	0.001	0.025	0.848
500	143.534	1	0.125	0.255	0.001	0.019	0.687
600	143.534	1	0.150	0.287	0.000	0.012	0.477
700	143.534	1	0.175	0.318	0.000	0.008	0.351
800	143.534	1	0.200	0.347	0.000	0.005	0.268
900	143.534	1	0.225	0.375	0.000	0.004	0.212
1000	143.534	1	0.250	0.402	0.000	0.003	0.172

TABLE 1 - VELOCITY AND HEADLOSSES FOR DIFFERENT PIPE SIZES

Sl. No.	Pipe Size in mm	Frictional Head loss per 1000 m 1st stage flow	Frictional Head loss per 1000 m 2nd stage flow	Velocity in m/s 1st stage flow	Velocity in m/s 2nd stage flow	1st stage flow Frictional loss	1st stage flow Other* losses	Total head(m) for including 28.00 1st stage flow Total losses H1	294.00 m static head 2nd stage flow Frictional loss	294.00 m static head 2nd stage flow Other* losses	m length 2nd stage flow Total losses H2
1	250	14.307	21.078	2.219	2.749	4.206	0.421	32.627	6.197	0.620	34.817
2	300	5.952	8.770	1.541	1.909	1.750	0.175	29.925	2.578	0.258	30.836
3	350	2.836	4.178	1.132	1.403	0.834	0.083	28.917	1.228	0.123	29.351
4	400	1.492	2.198	0.867	1.074	0.439	0.044	28.482	0.646	0.065	28.711
5	450	0.847	1.247	0.685	0.848	0.249	0.025	28.274	0.367	0.037	28.403
6	500	0.510	0.751	0.555	0.687	0.150	0.015	28.165	0.221	0.022	28.243
7	600	0.212	0.313	0.385	0.477	0.062	0.006	28.069	0.092	0.009	28.101
8	700	0.101	0.149	0.283	0.351	0.030	0.003	28.033	0.044	0.004	28.048
9	800	0.053	0.078	0.217	0.268	0.016	0.002	28.017	0.023	0.002	28.025
10	900	0.030	0.044	0.171	0.212	0.009	0.001	28.010	0.013	0.001	28.014
11	1000	0.018	0.027	0.139	0.172	0.005	0.001	28.006	0.008	0.001	28.009

>>> * Other losses = 10% of frictional loss

TABLE 2 - KILOWATTS & COST OF PUMP SETS REQUIRED FOR DIFFERENT PIPE SIZES AND PIPE COST

			1st stage flow of				2nd stage flow of			Cost	Cost
	9.02			million liters/day			11.17	million liters/day		of	of
			--------	---------	---------		--------	---------	---------	pipe	294
Sl.	PIPE	Class	H1	Kw	Pump		H2	Kw	Pump	per	meter
No.	Size	of	Total	req'd	Cost @ Rs		Total	req'd	Cost @ Rs	unit	pipe
	in	PIPE	head		25000.00		head	plus %	25000.00	length	line
	mm		in	plus 50%	per kw		in	50	per kw		THS
			meters	standby	Rs THS		meters	standby	Rs THS	(Rs)	(Rs)
1	250	K7	32.63	73	1818		34.82	96	2403	2005	589
2	300	K7	29.92	67	1667		30.84	85	2128	2543	748
3	350	K7	28.92	64	1611		29.35	81	2026	3197	940
4	400	K7	28.48	63	1587		28.71	79	1982	3833	940
5	450	K7	28.27	63	1575		28.40	78	1961	4547	1337
6	500	K7	28.16	63	1569		28.24	78	1949	5325	1566
7	600	K7	28.07	63	1564		28.10	78	1940	7015	2062
8	700	K7	28.03	62	1562		28.05	77	1936	9622	2829
9	800	K7	28.02	62	1561		28.03	77	1934	12550	3690
10	900	K7	28.01	62	1561		28.01	77	1934	15314	4502
11	1000	K7	28.01	62	1561		28.01	77	1933	18354	5396

TABLE 3 - COMPARATIVE STATEMENT OF OVERALL COST OF PUMPING MAIN FOR DIFFERENT PIPE SIZES

	1st stage flow		9.02	mld	2nd stage flow		11.17	mld			
											GRAND TOTAL of
Sl. No.	Cost of pump sets	Annual Energy Charges	Capital-ised Energy Charges	Capital-ised Total Cost	Cost of pump sets	Annual Energy Charges	Capital-ised Energy Charges	Capital-ised Total Cost	Initial Capital Investment for pumpsets & annual electricity Charges	PIPE SIZE in (mm)	Capital-ised cost for 30 yrs
	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)	THS (Rs)		THS (Rs)
1	1818	1808	13754	15572	2403	2250	17117	19520	4673	250	20834
2	1667	1659	12615	14282	2128	1993	15160	17288	4139	300	19169
3	1611	1603	12190	13801	2026	1897	14430	16456	3940	350	18681
4	1587	1579	12007	13594	1982	1856	14115	16097	3854	400	18387
5	1575	1567	11919	13494	1961	1836	13964	15924	3812	450	18643
6	1569	1561	11873	13442	1949	1826	13885	15835	3791	500	18799
7	1564	1556	11832	13396	1940	1816	13815	15755	3772	600	19231
8	1562	1554	11817	13379	1936	1813	13789	15725	3765	700	19973
9	1561	1553	11811	13372	1934	1811	13778	15713	3762	800	20823
10	1561	1552	11807	13368	1934	1811	13773	15706	3760	900	21631
11	1561	1552	11806	13366	1933	1810	13770	15703	3759	1000	22522

*** TABLE 3 shows that the most economical size of MAIN **J14 - J16** is :

400 mm costing : CAPITALISED Rs. 18,387 thousands

Appendix D-20: Network Hydraulic Design (Zone 1 to Zone 18)

Zone -1

Distribution Network Design Output: Zone 1

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	14.5	1.796	21.659	177.60085	T-1	J-1	236.13	-8,970.29	5,249.83	355	1.79	6.7	177.60085	HDPE	145	0.1
P-10	48	21.354	21.38	-5.51293	J-9	J-10	236.12	-8,904.63	5,215.96	110	0.58	3.25	5.51293	uPVC	145	0.16
P-100	55.5	19.648	19.291	2.36488	J-60	J-69	236.13	-9,246.39	4,928.48	110	0.25	0.68	2.36488	uPVC	145	0.04
P-101	22	19.291	19.292	-0.73914	J-69	J-70	236.45	-9,301.37	4,922.28	110	0.08	0.08	0.73914	uPVC	145	0
P-102	13	19.292	19.337	-4.91544	J-70	J-71	236.45	-9,303.80	4,944.13	110	0.52	2.63	4.91544	uPVC	145	0.03
P-103	14	19.337	19.33	-1.28596	J-71	J-72	236.44	-9,305.01	4,957.08	110	0.14	0.22	1.28596	uPVC	145	0
P-104	21.5	19.33	19.401	-5.57723	J-72	J-73	236.45	-9,307.44	4,970.84	110	0.59	3.32	5.57723	uPVC	145	0.07
P-105	23	19.401	19.46	-1.79565	J-73	J-74	236.45	-9,310.67	4,992.28	110	0.19	0.41	1.79565	uPVC	145	0.01
P-106	54.5	19.46	19.823	-4.92459	J-74	J-57	236.4	-9,313.91	5,014.94	110	0.52	2.64	4.92459	uPVC	145	0.14
P-107	44.5	19.46	19.503	-2.06738	J-74	J-51	236.4	-9,313.91	5,014.94	110	0.22	0.53	2.06738	uPVC	145	0.02
P-108	84.5	19.503	19.385	4.75385	J-51	J-75	236.38	-9,319.91	5,058.85	110	0.5	2.47	4.75385	uPVC	145	0.21
P-109	45	19.385	19.117	1.79812	J-75	J-76	236.29	-9,403.74	5,048.93	110	0.19	0.41	1.79812	uPVC	145	0.02
P-11	64.5	21.38	21.659	-12.74665	J-10	J-1	236.25	-8,920.47	5,261.04	160	0.63	2.47	12.74665	HDPE	145	0.16
P-110	84	19.117	19.46	-4.70519	J-76	J-74	236.54	-9,397.21	5,004.30	110	0.5	2.42	4.70519	uPVC	145	0.2
P-111	45	19.117	18.999	2.27218	J-76	J-77	236.54	-9,397.21	5,004.30	110	0.24	0.63	2.27218	uPVC	145	0.03
P-112	84	18.999	19.33	-4.00636	J-77	J-72	236.63	-9,390.60	4,959.75	110	0.42	1.8	4.00636	uPVC	145	0.15
P-113	25.5	18.999	18.97	3.14924	J-77	J-78	236.63	-9,390.60	4,959.75	110	0.33	1.15	3.14924	uPVC	145	0.03
P-114	84	18.97	19.292	-3.89258	J-78	J-70	236.63	-9,387.29	4,934.67	110	0.41	1.7	3.89258	uPVC	145	0.14
P-115	15.5	18.97	18.897	6.7438	J-78	J-79	236.63	-9,387.29	4,934.67	110	0.71	4.72	6.7438	uPVC	145	0.07
P-116	81.5	18.897	19.303	1.10902	J-79	J-80	236.63	-9,392.88	4,920.24	110	0.12	0.17	1.10902	uPVC	145	0.01
P-117	37	19.303	19.189	-4.90135	J-80	J-81	236.21	-9,386.95	4,838.74	110	0.52	2.61	4.90135	uPVC	145	0.1
P-118	35.5	19.189	19.15	-3.51899	J-81	J-82	236.42	-9,350.05	4,843.27	110	0.37	1.41	3.51899	uPVC	145	0.05
P-119	36.5	19.15	19.088	-2.52204	J-82	J-83	236.51	-9,353.93	4,878.55	110	0.27	0.76	2.52204	uPVC	145	0.03
P-12	35	21.659	21.38	64.79288	J-1	J-11	236.13	-8,981.35	5,240.41	250	1.32	5.71	64.79288	HDPE	145	0.2
P-120	58.5	19.088	19.291	-2.77978	J-83	J-69	236.6	-9,359.44	4,914.81	110	0.29	0.91	2.77978	uPVC	145	0.05
P-121	114	19.15	19.57	-1.4404	J-82	J-68	236.51	-9,353.93	4,878.55	110	0.15	0.27	1.4404	uPVC	145	0.03
P-122	24.5	19.567	19.608	3.19046	J-67	J-84	236.09	-9,235.61	4,850.73	110	0.34	1.18	3.19046	uPVC	145	0.03
P-123	17	19.608	19.663	1.43541	J-84	J-85	236.02	-9,232.62	4,826.60	110	0.15	0.27	1.43541	uPVC	145	0
P-124	6	19.663	19.664	3.79854	J-85	J-86	235.96	-9,230.14	4,810.03	110	0.4	1.63	3.79854	uPVC	145	0.01
P-125	25	19.664	19.787	2.34385	J-86	J-87	235.95	-9,229.72	4,804.23	110	0.25	0.67	2.34385	uPVC	145	0.02
P-126	85	19.787	19.718	1.29662	J-87	J-88	235.81	-9,226.82	4,779.36	110	0.14	0.22	1.29662	uPVC	145	0.02
P-127	41	19.718	19.635	-1.11051	J-88	J-89	235.86	-9,310.73	4,764.86	110	0.12	0.17	1.11051	uPVC	145	0.01
P-128	25.5	19.635	19.594	-1.63144	J-89	J-90	235.95	-9,351.54	4,761.55	110	0.17	0.34	1.63144	uPVC	145	0.01

Distribution Network Design Output: Zone 1

P-129	27.5	19.594	19.577	-0.98021	J-90	J-91	236	-9,355.27	4,786.82	110	0.1	0.13	0.98021	uPVC	145	0
P-13	65	21.38	21.249	2.57441	J-11	J-12	236.21	-8,993.19	5,273.43	110	0.27	0.79	2.57441	uPVC	145	0.05
P-130	128	19.577	19.608	-1.35094	J-91	J-84	236.02	-9,359.83	4,813.96	110	0.14	0.24	1.35094	uPVC	145	0.03
P-131	126.5	19.594	19.664	-1.07919	J-90	J-86	236	-9,355.27	4,786.82	110	0.11	0.16	1.07919	uPVC	145	0.02
P-132	51.5	19.635	19.615	0.23961	J-89	J-92	235.95	-9,351.54	4,761.55	110	0.03	0.01	0.23961	uPVC	145	0
P-133	25.5	19.787	19.835	0.72417	J-87	J-93	235.81	-9,226.82	4,779.36	110	0.08	0.08	0.72417	uPVC	145	0
P-134	32.5	19.835	19.822	3.36527	J-93	J-94	235.76	-9,224.60	4,753.96	110	0.35	1.3	3.36527	uPVC	145	0.04
P-135	33.5	19.822	19.798	1.01286	J-94	J-95	235.73	-9,222.01	4,721.33	110	0.11	0.14	1.01286	uPVC	145	0
P-136	27.5	19.798	19.797	0.50612	J-95	J-96	235.75	-9,219.68	4,687.66	110	0.05	0.04	0.50612	uPVC	145	0
P-137	8	19.797	19.787	0.35905	J-96	J-97	235.75	-9,217.35	4,660.21	110	0.04	0.02	0.35905	uPVC	145	0
P-138	48.5	19.835	19.912	-2.89501	J-93	J-98	235.76	-9,224.60	4,753.96	110	0.3	0.99	2.89501	uPVC	145	0.05
P-139	65.5	19.912	20.195	-1.66601	J-98	J-99	235.73	-9,175.92	4,755.51	110	0.18	0.35	1.66601	uPVC	145	0.02
P-14	35	21.249	21.38	-6.88206	J-12	J-10	236.29	-8,931.45	5,294.38	125	0.56	2.63	6.88206	HDPE	145	0.09
P-140	54	20.195	21.282	0.33872	J-99	J-100	235.47	-9,110.40	4,755.77	110	0.04	0.02	0.33872	uPVC	145	0
P-141	45.5	21.282	20.668	-1.61198	J-100	J-101	234.38	-9,111.44	4,701.65	110	0.17	0.33	1.61198	uPVC	145	0.02
P-142	54.5	20.668	20.356	-1.57903	J-101	J-102	235.01	-9,065.86	4,702.42	110	0.17	0.32	1.57903	uPVC	145	0.02
P-143	45.5	20.356	20.195	2.39812	J-102	J-99	235.34	-9,065.08	4,757.07	110	0.25	0.7	2.39812	uPVC	145	0.03
P-144	88	20.356	20.689	-3.01126	J-102	J-103	235.34	-9,065.08	4,757.07	110	0.32	1.06	3.01126	uPVC	145	0.09
P-145	53.5	20.689	20.774	3.50415	J-103	J-104	235.1	-8,977.03	4,759.40	110	0.37	1.4	3.50415	uPVC	145	0.08
P-146	94	20.774	20.668	1.72918	J-104	J-101	234.94	-8,972.11	4,706.31	110	0.18	0.38	1.72918	uPVC	145	0.04
P-147	40	20.774	20.793	-1.32248	J-104	J-105	234.94	-8,972.11	4,706.31	110	0.14	0.23	1.32248	uPVC	145	0.01
P-148	50.5	20.793	20.9	-4.80552	J-105	J-106	234.93	-8,932.75	4,713.82	110	0.51	2.52	4.80552	uPVC	145	0.13
P-149	41	20.9	20.689	3.62776	J-106	J-103	234.95	-8,936.37	4,764.32	110	0.38	1.5	3.62776	uPVC	145	0.06
P-15	72.5	21.249	21.021	4.44197	J-12	J-13	236.29	-8,931.45	5,294.38	110	0.47	2.18	4.44197	uPVC	145	0.16
P-150	57.5	20.689	20.628	-3.45985	J-103	J-107	235.1	-8,977.03	4,759.40	110	0.36	1.37	3.45985	uPVC	145	0.08
P-151	82.5	20.628	20.204	4.09119	J-107	J-108	235.24	-8,981.95	4,816.63	110	0.43	1.87	4.09119	uPVC	145	0.15
P-152	116	20.204	19.841	1.92965	J-108	J-109	235.51	-9,064.56	4,814.56	110	0.2	0.46	1.92965	uPVC	145	0.05
P-153	49.5	19.841	19.663	2.53598	J-109	J-85	235.82	-9,180.58	4,810.41	110	0.27	0.77	2.53598	uPVC	145	0.04
P-154	53	20.742	20.628	8.01118	J-63	J-107	235.31	-8,985.20	4,869.30	125	0.65	3.48	8.01118	HDPE	145	0.18
P-155	101.5	20.57	20.9	5.14407	J-33	J-106	235.57	-8,941.56	4,865.75	110	0.54	2.86	5.14407	uPVC	145	0.29
P-156	31	20.9	21.001	-3.82326	J-106	J-110	234.95	-8,936.37	4,764.32	110	0.4	1.65	3.82326	uPVC	145	0.05
P-157	93.5	21.001	20.302	-7.52616	J-110	J-111	234.9	-8,905.79	4,767.97	125	0.61	3.1	7.52616	HDPE	145	0.29
P-158	61	20.302	21.839	-12.26529	J-111	J-112	235.89	-8,909.33	4,861.54	160	0.61	2.3	12.26529	HDPE	145	0.14
P-159	63	21.839	21.119	-5.11794	J-112	J-113	234.49	-8,922.98	4,920.72	110	0.54	2.83	5.11794	uPVC	145	0.18
P-16	46	21.021	21.007	-1.62401	J-13	J-14	236.36	-8,954.05	5,363.05	110	0.17	0.34	1.62401	uPVC	145	0.02
P-160	45.5	21.119	21.321	16.32204	J-113	J-114	235.39	-8,875.44	4,961.69	160	0.81	3.91	16.32204	HDPE	145	0.18
P-161	56	21.321	21.233	9.12218	J-114	J-115	235.01	-8,860.77	4,918.70	125	0.74	4.43	9.12218	HDPE	145	0.25
P-162	13.5	21.233	21.192	0.66618	J-115	J-116	234.85	-8,842.40	4,866.14	110	0.07	0.06	0.66618	uPVC	145	0

P-163	54	21.192	20.302	-4.24203	J-116	J-111	234.89	-8,855.66	4,863.65	110	0.45	2	4.24203	uPVC	145	0.11
P-164	96.5	21.192	21.016	4.51721	J-116	J-117	234.89	-8,855.66	4,863.65	110	0.48	2.25	4.51721	uPVC	145	0.22
P-165	27	21.016	21.001	-3.34171	J-117	J-110	234.85	-8,879.06	4,770.24	110	0.35	1.29	3.34171	uPVC	145	0.03
P-166	5	21.016	21.01	7.55256	J-117	J-118	234.85	-8,879.06	4,770.24	125	0.62	3.12	7.55256	HDPE	145	0.02
P-167	42.5	21.01	20.834	5.26122	J-118	J-119	234.84	-8,874.18	4,770.11	110	0.55	2.98	5.26122	uPVC	145	0.13
P-168	63.5	20.834	20.793	0.37312	J-119	J-105	234.89	-8,870.55	4,727.60	110	0.04	0.02	0.37312	uPVC	145	0
P-169	42.5	21.01	21.038	2.07676	J-118	J-120	234.84	-8,874.18	4,770.11	110	0.22	0.53	2.07676	uPVC	145	0.02
P-17	73.5	21.007	21.053	-2.00905	J-14	J-15	236.39	-8,910.99	5,379.24	110	0.21	0.5	2.00905	uPVC	145	0.04
P-170	48	21.038	20.841	5.33303	J-120	J-121	234.79	-8,832.08	4,773.72	110	0.56	3.05	5.33303	uPVC	145	0.15
P-171	43.5	20.841	20.714	8.19623	J-121	J-122	234.84	-8,784.17	4,776.83	125	0.67	3.63	8.19623	HDPE	145	0.16
P-172	26	20.714	20.554	13.31361	J-122	J-123	234.81	-8,740.67	4,780.97	160	0.66	2.68	13.31361	HDPE	145	0.07
P-173	130.5	20.554	20.834	-4.32425	J-123	J-119	234.9	-8,742.74	4,754.82	110	0.46	2.07	4.32425	uPVC	145	0.27
P-174	96.5	21.038	21.217	-3.7021	J-120	J-124	234.79	-8,832.08	4,773.72	110	0.39	1.55	3.7021	uPVC	145	0.15
P-175	29	21.217	21.233	-8.22116	J-124	J-115	234.76	-8,813.55	4,868.24	125	0.67	3.65	8.22116	HDPE	145	0.11
P-176	50.5	21.217	21.111	5.91028	J-124	J-125	234.76	-8,813.55	4,868.24	110	0.62	3.69	5.91028	uPVC	145	0.19
P-177	88	21.111	20.841	3.29115	J-125	J-121	234.68	-8,763.56	4,862.54	110	0.35	1.25	3.29115	uPVC	145	0.11
P-178	13.5	21.111	21.102	2.25674	J-125	J-126	234.68	-8,763.56	4,862.54	110	0.24	0.62	2.25674	uPVC	145	0.01
P-179	21.5	19.303	19.379	5.6766	J-80	J-127	236.21	-9,386.95	4,838.74	110	0.6	3.43	5.6766	uPVC	145	0.07
P-18	47.5	21.053	21.249	-4.48998	J-15	J-12	236.38	-8,886.63	5,309.75	110	0.47	2.22	4.48998	uPVC	145	0.11
P-180	65.5	19.379	19.003	2.11811	J-127	J-128	236.06	-9,385.97	4,817.50	110	0.22	0.55	2.11811	uPVC	145	0.04
P-181	40.5	19.003	18.877	1.79863	J-128	J-129	236.4	-9,381.92	4,751.95	110	0.19	0.41	1.79863	uPVC	145	0.02
P-182	67.5	18.877	19.15	-0.61044	J-129	J-130	236.51	-9,422.39	4,748.31	110	0.06	0.06	0.61044	uPVC	145	0
P-183	40	19.15	19.379	-3.2557	J-130	J-127	236.24	-9,426.03	4,815.48	110	0.34	1.22	3.2557	uPVC	145	0.05
P-184	41	18.877	18.776	2.05383	J-129	J-131	236.51	-9,422.39	4,748.31	110	0.22	0.52	2.05383	uPVC	145	0.02
P-185	21.5	18.776	18.766	0.05126	J-131	J-132	236.59	-9,463.26	4,747.09	110	0.01	0	0.05126	uPVC	145	0
P-186	65.5	18.776	18.931	1.69741	J-131	J-133	236.59	-9,463.26	4,747.09	110	0.18	0.37	1.69741	uPVC	145	0.02
P-187	42	18.931	19.15	-3.17592	J-133	J-130	236.41	-9,467.71	4,812.64	110	0.33	1.17	3.17592	uPVC	145	0.05
P-188	104	19.15	18.809	-1.13503	J-130	J-134	236.24	-9,426.03	4,815.48	110	0.12	0.17	1.13503	uPVC	145	0.02
P-189	104.5	18.722	18.931	0.0865	J-135	J-133	236.62	-9,474.59	4,917.04	110	0.01	0	0.0865	uPVC	145	0
P-19	83.5	21.053	20.827	1.88608	J-15	J-16	236.38	-8,886.63	5,309.75	110	0.2	0.45	1.88608	uPVC	145	0.04
P-190	40	18.931	18.718	4.35902	J-133	J-136	236.41	-9,467.71	4,812.64	110	0.46	2.1	4.35902	uPVC	145	0.08
P-191	28.5	18.718	18.609	2.3726	J-136	J-137	236.54	-9,507.77	4,810.22	110	0.25	0.68	2.3726	uPVC	145	0.02
P-192	11.5	18.609	18.605	1.57457	J-137	J-138	236.63	-9,536.09	4,809.00	110	0.17	0.32	1.57457	uPVC	145	0
P-193	81	18.605	18.356	-0.14358	J-138	J-139	236.63	-9,547.42	4,809.00	110	0.02	0	0.14358	uPVC	145	0
P-194	74	18.668	18.558	-0.17643	J-140	J-141	236.63	-9,507.77	4,842.59	110	0.02	0.01	0.17643	uPVC	145	0
P-195	34.5	18.718	18.764	1.74086	J-136	J-142	236.54	-9,507.77	4,810.22	110	0.18	0.38	1.74086	uPVC	145	0.01
P-196	25.5	18.764	18.686	1.59781	J-142	J-143	236.48	-9,504.53	4,775.82	110	0.17	0.33	1.59781	uPVC	145	0.01
P-197	40	18.686	18.609	-0.6073	J-143	J-137	236.55	-9,529.21	4,769.35	110	0.06	0.05	0.6073	uPVC	145	0

P-198	31	18.686	18.591	1.97503	J-143	J-144	236.55	-9,529.21	4,769.35	110	0.21	0.49	1.97503	uPVC	145	0.02
P-199	31	18.591	18.595	-0.92781	J-144	J-145	236.63	-9,559.56	4,762.06	110	0.1	0.12	0.92781	uPVC	145	0
P-2	50	21.659	21.554	99.67031	J-1	J-2	236.13	-8,981.35	5,240.41	315	1.28	4.11	99.67031	HDPE	145	0.21
P-20	47.5	20.827	21.354	-5.36736	J-16	J-9	236.57	-8,859.41	5,230.58	125	0.44	1.66	5.36736	HDPE	145	0.08
P-200	15	18.595	18.599	-1.35218	J-145	J-146	236.63	-9,567.25	4,792.01	110	0.14	0.24	1.35218	uPVC	145	0
P-201	23	18.599	18.605	-1.44278	J-146	J-138	236.63	-9,570.48	4,806.57	110	0.15	0.27	1.44278	uPVC	145	0.01
P-202	66	18.345	18.595	-0.15735	J-147	J-145	236.88	-9,630.78	4,775.01	110	0.02	0	0.15735	uPVC	145	0
P-203	26.5	18.591	18.589	2.69184	J-144	J-148	236.63	-9,559.56	4,762.06	110	0.28	0.86	2.69184	uPVC	145	0.02
P-204	61.5	18.589	18.678	0.14662	J-148	J-149	236.61	-9,555.92	4,735.76	110	0.02	0	0.14662	uPVC	145	0
P-205	43.5	18.589	18.525	2.09581	J-148	J-150	236.61	-9,555.92	4,735.76	110	0.22	0.54	2.09581	uPVC	145	0.02
P-206	62.5	18.525	18.565	0.14901	J-150	J-151	236.65	-9,598.40	4,726.05	110	0.02	0	0.14901	uPVC	145	0
P-207	40.5	18.525	18.492	1.59752	J-150	J-152	236.65	-9,598.40	4,726.05	110	0.17	0.33	1.59752	uPVC	145	0.01
P-208	38.5	18.492	18.431	1.51977	J-152	J-153	236.67	-9,637.65	4,715.93	110	0.16	0.3	1.51977	uPVC	145	0.01
P-209	87	18.431	18.264	0.7692	J-153	J-154	236.72	-9,675.29	4,707.03	110	0.08	0.08	0.7692	uPVC	145	0.01
P-21	140	20.827	21.165	6.50006	J-16	J-17	236.57	-8,859.41	5,230.58	125	0.53	2.36	6.50006	HDPE	145	0.33
P-210	34.5	18.264	18.263	0.12497	J-154	J-155	236.88	-9,759.85	4,687.61	110	0.01	0	0.12497	uPVC	145	0
P-211	148	18.263	18.32	0.35285	J-155	J-156	236.88	-9,761.07	4,653.22	110	0.04	0.02	0.35285	uPVC	145	0
P-212	80.5	18.492	18.284	-0.30251	J-152	J-157	236.67	-9,637.65	4,715.93	110	0.03	0.02	0.30251	uPVC	145	0
P-213	40.5	18.284	18.27	1.62175	J-157	J-158	236.88	-9,654.65	4,794.84	110	0.17	0.34	1.62175	uPVC	145	0.01
P-214	67	18.27	18.333	0.85234	J-158	J-159	236.88	-9,691.47	4,778.25	110	0.09	0.1	0.85234	uPVC	145	0.01
P-215	86.5	18.333	18.489	0.5	J-159	J-160	236.81	-9,755.81	4,759.23	110	0.05	0.04	0.5	uPVC	145	0
P-216	56	18.489	18.555	-0.88689	J-160	J-161	236.65	-9,776.04	4,843.40	110	0.09	0.11	0.88689	uPVC	145	0.01
P-217	9.5	18.555	18.557	-1.15658	J-161	J-162	236.59	-9,721.82	4,857.15	110	0.12	0.18	1.15658	uPVC	145	0
P-218	34.5	18.557	18.572	-1.03847	J-162	J-163	236.59	-9,712.51	4,857.96	110	0.11	0.15	1.03847	uPVC	145	0.01
P-219	23.5	18.572	18.616	-1.17675	J-163	J-164	236.58	-9,679.33	4,866.86	110	0.12	0.19	1.17675	uPVC	145	0
P-22	49	21.165	21.2	0.83139	J-17	J-8	235.9	-8,814.63	5,097.83	110	0.09	0.1	0.83139	uPVC	145	0
P-220	72	18.616	18.631	-1.62987	J-164	J-165	236.54	-9,682.16	4,890.33	110	0.17	0.34	1.62987	uPVC	145	0.02
P-221	108	18.631	18.291	0.8226	J-165	J-166	236.55	-9,610.54	4,891.14	110	0.09	0.1	0.8226	uPVC	145	0.01
P-222	12.5	18.291	18.284	2.24255	J-166	J-157	236.88	-9,644.53	4,802.12	110	0.24	0.61	2.24255	uPVC	145	0.01
P-223	128.5	18.291	18.356	-2.01359	J-166	J-139	236.88	-9,644.53	4,802.12	110	0.21	0.5	2.01359	uPVC	145	0.06
P-224	24	18.356	18.407	-2.71387	J-139	J-167	236.88	-9,551.87	4,889.93	110	0.29	0.87	2.71387	uPVC	145	0.02
P-225	62.5	18.407	18.636	2.30254	J-167	J-168	236.85	-9,541.35	4,911.37	110	0.24	0.64	2.30254	uPVC	145	0.04
P-226	34	18.636	18.631	2.96268	J-168	J-165	236.58	-9,602.45	4,923.92	110	0.31	1.03	2.96268	uPVC	145	0.03
P-227	46.5	18.636	18.654	-1.12743	J-168	J-169	236.58	-9,602.45	4,923.92	110	0.12	0.17	1.12743	uPVC	145	0.01
P-228	79	18.654	18.524	-3.13371	J-169	J-170	236.57	-9,599.21	4,970.45	110	0.33	1.14	3.13371	uPVC	145	0.09
P-229	45.5	18.524	18.424	2.72624	J-170	J-171	236.79	-9,521.12	4,958.72	110	0.29	0.88	2.72624	uPVC	145	0.04
P-23	49.5	21.233	21.31	-4.81157	J-7	J-18	235.71	-8,849.77	5,046.72	125	0.39	1.35	4.81157	HDPE	145	0.07
P-230	6	18.424	18.407	5.23694	J-171	J-167	236.85	-9,539.33	4,917.04	110	0.55	2.95	5.23694	uPVC	145	0.02

Distribution Network Design Output: Zone 1

P-231	36.5	18.524	18.743	-6.2438	J-170	J-172	236.79	-9,521.12	4,958.72	110	0.66	4.09	6.2438	uPVC	145	0.15
P-232	18.5	18.743	18.826	-1.02075	J-172	J-173	236.72	-9,503.72	4,990.68	110	0.11	0.14	1.02075	uPVC	145	0
P-233	97	18.826	18.67	4.71241	J-173	J-174	236.64	-9,497.65	5,008.08	110	0.5	2.43	4.71241	uPVC	145	0.24
P-234	47.5	18.67	18.654	0.99412	J-174	J-169	236.56	-9,593.95	5,017.79	110	0.1	0.14	0.99412	uPVC	145	0.01
P-235	101	18.654	18.746	2.34714	J-169	J-175	236.57	-9,599.21	4,970.45	110	0.25	0.67	2.34714	uPVC	145	0.07
P-236	73	18.746	18.616	-0.05139	J-175	J-164	236.41	-9,699.16	4,961.55	110	0.01	0	0.05139	uPVC	145	0
P-237	56.5	18.746	18.895	0.38605	J-175	J-176	236.41	-9,699.16	4,961.55	110	0.04	0.02	0.38605	uPVC	145	0
P-238	46.5	18.895	18.693	1.40324	J-176	J-177	236.26	-9,708.87	5,017.39	110	0.15	0.26	1.40324	uPVC	145	0.01
P-239	15	18.693	18.682	0.78159	J-177	J-178	236.45	-9,754.19	5,006.87	110	0.08	0.09	0.78159	uPVC	145	0
P-24	37.5	21.31	21.165	-5.01899	J-18	J-17	235.7	-8,802.96	5,062.02	125	0.41	1.46	5.01899	HDPE	145	0.05
P-240	41	18.682	18.645	-0.80162	J-178	J-179	236.46	-9,752.17	4,991.90	110	0.08	0.09	0.80162	uPVC	145	0
P-241	97	18.645	18.555	0.11774	J-179	J-161	236.5	-9,743.26	4,951.84	110	0.01	0	0.11774	uPVC	145	0
P-242	70	18.895	18.803	-1.42965	J-176	J-180	236.26	-9,708.87	5,017.39	110	0.15	0.27	1.42965	uPVC	145	0.02
P-243	46	18.803	18.67	-3.26411	J-180	J-174	236.37	-9,639.68	5,022.65	110	0.34	1.23	3.26411	uPVC	145	0.06
P-244	77	18.803	18.425	1.37433	J-180	J-181	236.37	-9,639.68	5,022.65	110	0.14	0.25	1.37433	uPVC	145	0.02
P-245	54	18.425	18.616	1.062	J-181	J-182	236.73	-9,635.63	5,099.53	110	0.11	0.15	1.062	uPVC	145	0.01
P-246	52	18.616	18.772	0.77879	J-182	J-183	236.53	-9,689.45	5,100.34	110	0.08	0.09	0.77879	uPVC	145	0
P-247	32.5	18.772	18.802	-0.17021	J-183	J-184	236.37	-9,741.65	5,100.34	110	0.02	0.01	0.17021	uPVC	145	0
P-248	51	18.802	18.993	-0.41162	J-184	J-185	236.34	-9,742.05	5,067.97	110	0.04	0.03	0.41162	uPVC	145	0
P-249	35.5	18.993	18.616	-0.76566	J-185	J-182	236.15	-9,691.07	5,064.73	110	0.08	0.08	0.76566	uPVC	145	0
P-25	52	21.106	21.116	9.74853	J-4	J-19	235.64	-8,899.34	5,014.58	140	0.63	2.88	9.74853	HDPE	145	0.15
P-250	31	18.993	18.863	0.07391	J-185	J-186	236.15	-9,691.07	5,064.73	110	0.01	0	0.07391	uPVC	145	0
P-251	25	18.802	18.722	-0.01727	J-184	J-187	236.34	-9,742.05	5,067.97	110	0	0	0.01727	uPVC	145	0
P-252	61.5	18.722	18.693	-0.3284	J-187	J-177	236.42	-9,767.14	5,066.76	110	0.03	0.02	0.3284	uPVC	145	0
P-253	57	18.682	18.539	1.31379	J-178	J-188	236.46	-9,752.17	4,991.90	110	0.14	0.23	1.31379	uPVC	145	0.01
P-254	142	18.539	18.489	-0.7086	J-188	J-160	236.59	-9,808.41	4,981.78	110	0.07	0.07	0.7086	uPVC	145	0.01
P-255	34	18.772	18.48	0.66648	J-183	J-189	236.37	-9,741.65	5,100.34	110	0.07	0.06	0.66648	uPVC	145	0
P-256	52	18.48	18.361	-1.24262	J-189	J-190	236.66	-9,743.00	5,134.51	110	0.13	0.21	1.24262	uPVC	145	0.01
P-257	35	18.361	18.616	0.90325	J-190	J-182	236.79	-9,690.79	5,135.33	110	0.1	0.11	0.90325	uPVC	145	0
P-258	194.5	18.361	18.625	-4.03479	J-190	J-191	236.79	-9,690.79	5,135.33	110	0.42	1.82	4.03479	uPVC	145	0.35
P-259	57.5	18.625	18.948	-4.79294	J-191	J-192	236.88	-9,496.39	5,140.69	110	0.5	2.51	4.79294	uPVC	145	0.14
P-26	89	21.116	21.139	-11.23279	J-19	J-20	235.48	-8,949.00	4,999.47	140	0.73	3.75	11.23279	HDPE	145	0.33
P-260	97	18.948	19.476	-4.30347	J-192	J-55	236.7	-9,439.23	5,145.25	110	0.45	2.05	4.30347	uPVC	145	0.2
P-261	42	18.948	19.245	-2.75397	J-192	J-193	236.7	-9,439.23	5,145.25	110	0.29	0.9	2.75397	uPVC	145	0.04
P-262	55.5	18.948	19.118	1.66369	J-192	J-194	236.7	-9,439.23	5,145.25	110	0.18	0.35	1.66369	uPVC	145	0.02
P-263	74	19.118	19.288	0.0842	J-194	J-195	236.51	-9,445.81	5,200.38	110	0.01	0	0.0842	uPVC	145	0
P-264	109.5	18.977	19.118	-0.26106	J-196	J-194	236.65	-9,555.06	5,191.27	110	0.03	0.01	0.26106	uPVC	145	0
P-265	157	19.118	19.444	0.37431	J-194	J-197	236.51	-9,445.81	5,200.38	110	0.04	0.02	0.37431	uPVC	145	0

P-266	120.5	18.511	18.961	-0.28729	J-198	J-199	236.74	-9,622.33	5,163.96	110	0.03	0.01	0.28729	uPVC	145	0
P-267	100.5	18.361	18.827	0.97818	J-190	J-200	236.79	-9,690.79	5,135.33	110	0.1	0.13	0.97818	uPVC	145	0.01
P-268	85	18.827	18.998	-1.00478	J-200	J-201	236.31	-9,696.18	5,235.78	110	0.11	0.14	1.00478	uPVC	145	0.01
P-269	86.5	18.48	18.964	1.49783	J-189	J-202	236.66	-9,743.00	5,134.51	110	0.16	0.29	1.49783	uPVC	145	0.03
P-27	54.5	21.139	21.164	-23.47096	J-20	J-3	235.79	-8,982.93	5,081.82	180	0.92	4.31	23.47096	HDPE	145	0.24
P-270	36	18.964	18.747	1.20578	J-202	J-203	236.15	-9,758.90	5,219.60	110	0.13	0.19	1.20578	uPVC	145	0.01
P-271	106	18.747	18.959	-0.33044	J-203	J-204	236.36	-9,794.30	5,213.02	110	0.03	0.02	0.33044	uPVC	145	0
P-272	45.5	18.959	18.958	0.16005	J-204	J-205	236.15	-9,815.55	5,316.71	110	0.02	0	0.16005	uPVC	145	0
P-273	36	18.958	19.022	1.12622	J-205	J-206	236.15	-9,826.17	5,360.72	110	0.12	0.17	1.12622	uPVC	145	0.01
P-274	156	19.022	18.762	0.12538	J-206	J-207	236.08	-9,862.08	5,358.19	110	0.01	0	0.12538	uPVC	145	0
P-275	36.5	18.762	18.712	0.39424	J-207	J-208	236.34	-9,827.69	5,205.94	110	0.04	0.02	0.39424	uPVC	145	0
P-276	13	18.762	18.783	-0.75881	J-207	J-209	236.34	-9,827.69	5,205.94	110	0.08	0.08	0.75881	uPVC	145	0
P-277	21.5	18.783	18.747	-1.14641	J-209	J-203	236.32	-9,814.99	5,208.02	110	0.12	0.18	1.14641	uPVC	145	0
P-278	146.5	18.783	18.694	-0.04393	J-209	J-210	236.32	-9,814.99	5,208.02	110	0	0	0.04393	uPVC	145	0
P-279	144.5	18.959	18.827	-1.19619	J-204	J-200	236.15	-9,815.55	5,316.71	110	0.13	0.19	1.19619	uPVC	145	0.03
P-28	101.5	21.139	21.278	-15.46366	J-20	J-21	235.79	-8,982.93	5,081.82	160	0.77	3.54	15.46366	HDPE	145	0.36
P-280	84	18.999	18.903	2.56068	J-77	J-211	236.63	-9,390.60	4,959.75	110	0.27	0.78	2.56068	uPVC	145	0.07
P-281	43.5	18.903	18.896	2.2567	J-211	J-212	236.66	-9,473.96	4,950.41	110	0.24	0.62	2.2567	uPVC	145	0.03
P-282	23.5	18.896	18.743	5.41021	J-212	J-172	236.64	-9,480.17	4,993.66	110	0.57	3.14	5.41021	uPVC	145	0.07
P-283	40	18.896	19.119	-3.40861	J-212	J-213	236.64	-9,480.17	4,993.66	110	0.36	1.33	3.40861	uPVC	145	0.05
P-284	43.5	19.119	19.117	-3.71259	J-213	J-76	236.47	-9,440.55	4,999.35	110	0.39	1.56	3.71259	uPVC	145	0.07
P-285	40.5	18.826	19.054	-6.10508	J-173	J-214	236.64	-9,497.65	5,008.08	110	0.64	3.92	6.10508	uPVC	145	0.16
P-286	70	19.054	19.385	-2.4801	J-214	J-75	236.57	-9,473.19	5,040.47	110	0.26	0.74	2.4801	uPVC	145	0.05
P-287	46.5	19.054	19.347	-3.99929	J-214	J-215	236.57	-9,473.19	5,040.47	110	0.42	1.79	3.99929	uPVC	145	0.08
P-288	38	19.347	19.411	-0.90225	J-215	J-216	236.36	-9,440.46	5,073.00	110	0.09	0.11	0.90225	uPVC	145	0
P-289	68.5	19.411	19.401	-4.13424	J-216	J-54	236.3	-9,411.66	5,097.86	110	0.44	1.91	4.13424	uPVC	145	0.13
P-29	57	21.278	21.554	-46.68197	J-21	J-2	236.01	-9,019.01	5,176.75	225	1.17	5.2	46.68197	HDPE	145	0.3
P-290	113.5	19.347	19.481	-3.5691	J-215	J-52	236.36	-9,440.46	5,073.00	110	0.38	1.45	3.5691	uPVC	145	0.16
P-291	27.5	20.046	20.074	15.86755	J-46	J-217	236.37	-9,187.68	5,271.83	160	0.79	3.71	15.86755	HDPE	145	0.1
P-292	23.5	20.074	20.106	12.75758	J-217	J-218	236.24	-9,201.10	5,295.64	160	0.63	2.48	12.75758	HDPE	145	0.06
P-293	21.5	20.106	20.038	10.27763	J-218	J-219	236.15	-9,210.81	5,317.01	140	0.67	3.18	10.27763	HDPE	145	0.07
P-294	24.5	20.016	20.066	-4.31322	J-220	J-221	236.15	-9,281.70	5,317.65	110	0.45	2.06	4.31322	uPVC	145	0.05
P-295	42	20.066	20.096	-2.41857	J-221	J-222	236.15	-9,273.93	5,294.67	110	0.25	0.71	2.41857	uPVC	145	0.03
P-296	73.5	20.096	20.074	-2.81314	J-222	J-217	236.15	-9,262.28	5,254.53	110	0.3	0.93	2.81314	uPVC	145	0.07
P-297	25	20.096	20.086	0.0596	J-222	J-223	236.15	-9,262.28	5,254.53	110	0.01	0	0.0596	uPVC	145	0
P-298	4.5	20.325	20.316	4.18629	J-47	J-224	236.39	-9,132.97	5,310.67	110	0.44	1.95	4.18629	uPVC	145	0.01
P-299	70	20.316	20.283	42.27215	J-224	J-225	236.39	-9,134.38	5,314.78	225	1.06	4.33	42.27215	HDPE	145	0.3
P-3	99	21.554	21.164	41.83224	J-2	J-3	236.03	-8,964.65	5,193.52	225	1.05	4.24	41.83224	HDPE	145	0.42

Distribution Network Design Output: Zone 1

P-30	11.5	21.554	21.544	0.02742	J-2	J-22	236.03	-8,964.65	5,193.52	110	0	0	0.02742	HDPE	145	0
P-300	58	20.283	20.037	11.74395	J-225	J-226	236.12	-9,165.20	5,377.45	140	0.76	4.07	11.74395	HDPE	145	0.24
P-301	130.5	20.283	19.866	29.9119	J-225	J-227	236.12	-9,165.20	5,377.45	200	0.95	4.05	29.9119	HDPE	145	0.53
P-302	25	19.866	19.738	25.75858	J-227	J-228	236.01	-9,050.32	5,439.42	180	1.01	5.13	25.75858	HDPE	145	0.13
P-303	55.5	19.738	19.54	28.74367	J-228	J-229	236.01	-9,028.06	5,451.15	200	0.91	3.76	28.74367	HDPE	145	0.21
P-304	55.5	19.54	19.434	9.31473	J-229	J-230	236	-8,979.91	5,479.07	125	0.76	4.6	9.31473	HDPE	145	0.26
P-305	236.5	19.434	19.707	-5.37252	J-230	J-231	235.85	-9,008.24	5,526.82	125	0.44	1.66	5.37252	HDPE	145	0.39
P-306	197.5	19.707	19.541	5.86229	J-231	J-232	235.97	-9,203.27	5,471.39	125	0.48	1.95	5.86229	HDPE	145	0.39
P-307	50	19.541	19.434	1.02901	J-232	J-230	235.75	-9,033.73	5,570.12	110	0.11	0.14	1.02901	uPVC	145	0.01
P-308	90.5	19.434	19.124	14.68512	J-230	J-233	235.85	-9,008.24	5,526.82	160	0.73	3.21	14.68512	HDPE	145	0.29
P-309	142.5	19.124	18.76	4.92256	J-233	J-234	235.87	-8,928.52	5,569.31	110	0.52	2.63	4.92256	uPVC	145	0.38
P-31	83	21.278	21.116	-1.91671	J-21	J-23	236.01	-9,019.01	5,176.75	110	0.2	0.46	1.91671	uPVC	145	0.04
P-310	15	18.76	18.709	7.00369	J-234	J-235	235.86	-8,910.72	5,695.15	125	0.57	2.71	7.00369	HDPE	145	0.04
P-311	56	18.709	18.685	1.85831	J-235	J-236	235.87	-8,903.03	5,708.10	110	0.2	0.43	1.85831	uPVC	145	0.02
P-312	57.5	18.685	18.799	-3.10515	J-236	J-237	235.87	-8,877.54	5,658.33	110	0.33	1.12	3.10515	uPVC	145	0.06
P-313	87	18.799	19.124	-8.99964	J-237	J-233	235.82	-8,850.43	5,607.75	125	0.73	4.32	8.99964	HDPE	145	0.38
P-314	56.5	19.541	19.525	4.10849	J-232	J-238	235.75	-9,033.73	5,570.12	110	0.43	1.88	4.10849	uPVC	145	0.11
P-315	53	18.76	18.982	-2.58299	J-234	J-239	235.86	-8,910.72	5,695.15	110	0.27	0.8	2.58299	uPVC	145	0.04
P-316	42	18.982	19.033	-2.90008	J-239	J-240	235.68	-8,945.52	5,733.59	110	0.31	0.99	2.90008	uPVC	145	0.04
P-317	135	18.709	17.202	4.65425	J-235	J-241	235.87	-8,903.03	5,708.10	110	0.49	2.37	4.65425	uPVC	145	0.32
P-318	57.5	17.202	17.724	5.18098	J-241	J-242	237.06	-8,787.71	5,775.67	110	0.55	2.9	5.18098	uPVC	145	0.17
P-319	58	17.724	18.395	1.55024	J-242	J-243	236.37	-8,735.92	5,794.69	110	0.16	0.31	1.55024	uPVC	145	0.02
P-32	57	21.116	21.38	-43.86085	J-23	J-11	236.21	-9,047.23	5,254.97	225	1.1	4.63	43.86085	HDPE	145	0.26
P-320	115.5	18.395	18.526	-3.25229	J-243	J-244	235.68	-8,687.76	5,765.15	110	0.34	1.22	3.25229	uPVC	145	0.14
P-321	62.5	18.526	18.388	-2.65219	J-244	J-245	235.69	-8,730.25	5,674.11	110	0.28	0.84	2.65219	uPVC	145	0.05
P-322	54	18.388	17.202	1.11443	J-245	J-241	235.88	-8,761.00	5,728.73	110	0.12	0.17	1.11443	uPVC	145	0.01
P-323	136	18.685	18.388	4.36861	J-236	J-245	235.87	-8,877.54	5,658.33	110	0.46	2.11	4.36861	uPVC	145	0.29
P-324	137.5	18.799	18.526	5.22216	J-237	J-244	235.82	-8,850.43	5,607.75	110	0.55	2.94	5.22216	uPVC	145	0.4
P-325	57	18.526	18.396	3.73397	J-244	J-246	235.69	-8,730.25	5,674.11	110	0.39	1.58	3.73397	uPVC	145	0.09
P-326	149.5	18.396	18.319	3.29552	J-246	J-247	235.73	-8,702.33	5,624.34	110	0.35	1.25	3.29552	uPVC	145	0.19
P-327	49.5	18.319	18.48	-2.26888	J-247	J-248	235.62	-8,628.69	5,742.90	110	0.24	0.63	2.26888	uPVC	145	0.03
P-328	52	18.48	18.395	-4.26491	J-248	J-243	235.49	-8,642.44	5,790.24	110	0.45	2.02	4.26491	uPVC	145	0.1
P-329	66.5	18.48	18.498	1.59549	J-248	J-249	235.49	-8,642.44	5,790.24	110	0.17	0.33	1.59549	uPVC	145	0.02
P-33	71.5	21.38	21.022	17.81285	J-11	J-24	236.21	-8,993.19	5,273.43	160	0.89	4.59	17.81285	HDPE	145	0.33
P-330	21	18.498	18.547	-3.46345	J-249	J-250	235.45	-8,673.60	5,848.91	110	0.36	1.37	3.46345	uPVC	145	0.03
P-331	45	18.547	18.56	-0.75656	J-250	J-251	235.43	-8,684.93	5,866.31	110	0.08	0.08	0.75656	uPVC	145	0
P-332	64.5	18.498	18.343	4.69655	J-249	J-252	235.45	-8,673.60	5,848.91	110	0.49	2.41	4.69655	uPVC	145	0.16
P-333	86.5	18.343	18.277	2.07407	J-252	J-253	235.45	-8,616.95	5,880.07	110	0.22	0.53	2.07407	uPVC	145	0.05

Distribution Network Design Output: Zone 1

P-334	63	18.277	18.086	0.29145	J-253	J-254	235.47	-8,539.26	5,917.70	110	0.03	0.01	0.29145	uPVC	145	0
P-335	69.5	18.086	18.112	-2.05075	J-254	J-255	235.66	-8,484.23	5,948.05	110	0.22	0.52	2.05075	uPVC	145	0.04
P-336	69	18.343	18.345	2.09797	J-252	J-256	235.45	-8,616.95	5,880.07	110	0.22	0.54	2.09797	uPVC	145	0.04
P-337	97.5	18.345	18.316	1.51982	J-256	J-257	235.41	-8,583.77	5,819.78	110	0.16	0.3	1.51982	uPVC	145	0.03
P-338	80	18.316	17.749	1.97209	J-257	J-258	235.41	-8,489.49	5,813.71	110	0.21	0.48	1.97209	uPVC	145	0.04
P-339	177	17.749	18.086	-1.6043	J-258	J-254	235.94	-8,416.25	5,784.57	110	0.17	0.33	1.6043	uPVC	145	0.06
P-34	68.5	21.022	21.021	-5.5081	J-24	J-13	236.24	-9,018.75	5,340.43	125	0.45	1.74	5.5081	HDPE	145	0.12
P-340	110.5	17.749	17.663	2.70022	J-258	J-259	235.94	-8,416.25	5,784.57	110	0.28	0.87	2.70022	uPVC	145	0.1
P-341	37	17.663	17.674	2.01478	J-259	J-260	235.93	-8,372.39	5,683.19	110	0.21	0.5	2.01478	uPVC	145	0.02
P-342	59.5	17.674	17.632	1.23478	J-260	J-261	235.9	-8,357.06	5,649.62	110	0.13	0.2	1.23478	uPVC	145	0.01
P-343	86.5	17.632	17.662	1.33864	J-261	J-262	235.93	-8,333.44	5,594.98	110	0.14	0.24	1.33864	uPVC	145	0.02
P-344	61.5	17.662	17.7	1.66422	J-262	J-263	235.88	-8,297.71	5,516.26	110	0.18	0.35	1.66422	uPVC	145	0.02
P-345	40.5	17.7	17.733	1.08964	J-263	J-264	235.82	-8,272.58	5,460.21	110	0.11	0.16	1.08964	uPVC	145	0.01
P-346	85.5	17.733	17.69	0.48407	J-264	J-265	235.78	-8,255.99	5,423.39	110	0.05	0.04	0.48407	uPVC	145	0
P-347	100.5	17.69	17.777	0.97417	J-265	J-266	235.82	-8,220.78	5,345.29	110	0.1	0.13	0.97417	uPVC	145	0.01
P-348	82.5	17.777	17.662	0.67915	J-266	J-267	235.72	-8,179.91	5,253.44	110	0.07	0.07	0.67915	uPVC	145	0.01
P-349	82.5	17.662	17.6	0.40313	J-267	J-268	235.83	-8,141.47	5,180.60	110	0.04	0.03	0.40313	uPVC	145	0
P-35	54	21.022	20.771	22.85842	J-24	J-25	236.24	-9,018.75	5,340.43	180	0.9	4.11	22.85842	HDPE	145	0.22
P-350	41.5	17.777	17.827	-0.24022	J-266	J-269	235.72	-8,179.91	5,253.44	110	0.03	0.01	0.24022	uPVC	145	0
P-351	61.5	17.827	17.683	-1.38439	J-269	J-270	235.67	-8,204.19	5,219.85	110	0.15	0.25	1.38439	uPVC	145	0.02
P-352	80.5	17.683	17.958	-3.19232	J-270	J-271	235.83	-8,238.99	5,169.27	110	0.34	1.18	3.19232	uPVC	145	0.1
P-353	36	17.958	18.117	-3.47008	J-271	J-272	235.65	-8,285.93	5,103.72	110	0.37	1.38	3.47008	uPVC	145	0.05
P-354	46	18.117	18.081	0.93024	J-272	J-273	235.54	-8,320.73	5,113.03	110	0.1	0.12	0.93024	uPVC	145	0.01
P-355	56.5	18.081	18.297	0.68587	J-273	J-274	235.57	-8,312.63	5,158.35	110	0.07	0.07	0.68587	uPVC	145	0
P-356	67	18.297	18.101	2.67373	J-274	J-275	235.35	-8,367.67	5,172.11	110	0.28	0.85	2.67373	uPVC	145	0.06
P-357	6.5	18.101	18.083	3.19162	J-275	J-276	235.49	-8,369.28	5,238.87	110	0.34	1.18	3.19162	uPVC	145	0.01
P-358	28.5	18.083	17.975	2.90553	J-276	J-277	235.5	-8,363.62	5,242.51	110	0.31	0.99	2.90553	uPVC	145	0.03
P-359	30.5	17.975	17.873	2.44868	J-277	J-278	235.58	-8,340.15	5,258.29	110	0.26	0.72	2.44868	uPVC	145	0.02
P-36	71.5	20.771	21.116	-16.53871	J-25	J-23	236.27	-9,070.02	5,322.82	160	0.82	4	16.53871	HDPE	145	0.29
P-360	117	17.873	17.69	1.2125	J-278	J-265	235.66	-8,316.28	5,277.31	110	0.13	0.2	1.2125	uPVC	145	0.02
P-361	185.5	17.873	17.588	0.44226	J-278	J-279	235.66	-8,316.28	5,277.31	110	0.05	0.03	0.44226	uPVC	145	0.01
P-362	218.5	17.975	17.537	-0.20475	J-277	J-280	235.58	-8,340.15	5,258.29	110	0.02	0.01	0.20475	uPVC	145	0
P-363	31	17.537	17.585	0.76684	J-280	J-281	236.02	-8,422.29	5,460.61	110	0.08	0.08	0.76684	uPVC	145	0
P-364	105.5	17.585	17.662	0.92996	J-281	J-262	235.97	-8,393.56	5,472.35	110	0.1	0.12	0.92996	uPVC	145	0.01
P-365	73.5	17.585	17.51	-0.66379	J-281	J-282	235.97	-8,393.56	5,472.35	110	0.07	0.06	0.66379	uPVC	145	0
P-366	32	17.51	17.443	-0.91532	J-282	J-283	236.05	-8,424.72	5,539.11	110	0.1	0.12	0.91532	uPVC	145	0
P-367	77	17.443	17.539	0.57257	J-283	J-284	236.12	-8,455.07	5,528.59	110	0.06	0.05	0.57257	uPVC	145	0
P-368	6.5	17.539	17.537	1.58193	J-284	J-280	236.02	-8,427.15	5,456.57	110	0.17	0.32	1.58193	uPVC	145	0

Distribution Network Design Output: Zone 1

P-369	26.5	17.513	17.553	-0.06318	J-285	J-286	236.05	-8,414.20	5,582.81	110	0.01	0	0.06318	uPVC	145	0
P-37	64.5	21.116	20.73	24.74741	J-23	J-26	236.21	-9,047.23	5,254.97	180	0.97	4.76	24.74741	HDPE	145	0.31
P-370	24.5	17.553	17.594	-0.3612	J-286	J-287	236.01	-8,387.49	5,583.62	110	0.04	0.02	0.3612	uPVC	145	0
P-371	30.5	17.594	17.632	0.52466	J-287	J-261	235.97	-8,363.21	5,588.07	110	0.06	0.04	0.52466	uPVC	145	0
P-372	54.5	17.594	17.593	-1.14692	J-287	J-288	235.97	-8,363.21	5,588.07	110	0.12	0.18	1.14692	uPVC	145	0.01
P-373	34.5	17.593	17.674	-0.46767	J-288	J-260	235.98	-8,388.71	5,636.22	110	0.05	0.03	0.46767	uPVC	145	0
P-374	8.5	17.593	17.574	-0.9117	J-288	J-289	235.98	-8,388.71	5,636.22	110	0.1	0.12	0.9117	uPVC	145	0
P-375	48	17.574	17.473	-1.15846	J-289	J-290	236	-8,396.80	5,632.99	110	0.12	0.18	1.15846	uPVC	145	0.01
P-376	47.5	17.473	17.447	-1.4982	J-290	J-291	236.11	-8,440.50	5,613.56	110	0.16	0.29	1.4982	uPVC	145	0.01
P-377	73	17.447	17.443	1.92179	J-291	J-283	236.15	-8,484.61	5,595.36	110	0.2	0.46	1.92179	uPVC	145	0.03
P-378	37.5	17.447	17.529	-0.54051	J-291	J-292	236.15	-8,484.61	5,595.36	110	0.06	0.04	0.54051	uPVC	145	0
P-379	150.5	17.529	17.498	1.24319	J-292	J-293	236.07	-8,519.81	5,582.00	110	0.13	0.21	1.24319	uPVC	145	0.03
P-38	81	20.73	20.844	2.13721	J-26	J-27	236.29	-9,108.35	5,235.03	110	0.22	0.56	2.13721	uPVC	145	0.05
P-380	36.5	17.498	17.539	1.29546	J-293	J-284	236.07	-8,461.14	5,443.21	110	0.14	0.22	1.29546	uPVC	145	0.01
P-381	64	17.527	17.498	-0.15258	J-294	J-293	236.04	-8,437.26	5,383.73	110	0.02	0	0.15258	uPVC	145	0
P-382	38	17.498	17.452	-0.89387	J-293	J-295	236.07	-8,461.14	5,443.21	110	0.09	0.11	0.89387	uPVC	145	0
P-383	154	17.452	17.605	-1.64726	J-295	J-296	236.12	-8,495.53	5,426.62	110	0.17	0.35	1.64726	uPVC	145	0.05
P-384	40.5	17.605	17.529	2.32847	J-296	J-292	236.02	-8,557.44	5,567.44	110	0.25	0.66	2.32847	uPVC	145	0.03
P-385	15.5	17.605	17.649	-4.4764	J-296	J-297	236.02	-8,557.44	5,567.44	110	0.47	2.21	4.4764	uPVC	145	0.03
P-386	16.5	17.649	17.654	-1.41229	J-297	J-298	236.01	-8,572.01	5,562.18	110	0.15	0.26	1.41229	uPVC	145	0
P-387	110	17.654	17.627	1.3541	J-298	J-299	236.01	-8,581.31	5,553.68	110	0.14	0.24	1.3541	uPVC	145	0.03
P-388	170	17.627	17.644	1.19771	J-299	J-300	236.01	-8,538.42	5,452.11	110	0.13	0.19	1.19771	uPVC	145	0.03
P-389	92	17.644	18.048	0.61344	J-300	J-301	235.96	-8,471.29	5,295.98	110	0.06	0.06	0.61344	uPVC	145	0.01
P-39	67	20.844	21.278	-32.39952	J-27	J-21	236.13	-9,082.75	5,158.34	200	1.03	4.69	32.39952	HDPE	145	0.31
P-390	73	18.048	18.101	0.86717	J-301	J-275	235.55	-8,434.71	5,211.51	110	0.09	0.11	0.86717	uPVC	145	0.01
P-391	38	18.048	18.011	-0.73772	J-301	J-302	235.55	-8,434.71	5,211.51	110	0.08	0.08	0.73772	uPVC	145	0
P-392	86	18.011	17.485	-0.40888	J-302	J-303	235.59	-8,471.74	5,203.22	110	0.04	0.03	0.40888	uPVC	145	0
P-393	37	17.485	17.644	0.12859	J-303	J-300	236.12	-8,505.67	5,282.47	110	0.01	0	0.12859	uPVC	145	0
P-394	170	17.485	17.699	-1.23602	J-303	J-304	236.12	-8,505.67	5,282.47	110	0.13	0.2	1.23602	uPVC	145	0.03
P-395	56.5	17.699	17.793	-2.84658	J-304	J-305	235.94	-8,574.03	5,438.05	110	0.3	0.95	2.84658	uPVC	145	0.05
P-396	52.5	17.793	17.735	-1.31928	J-305	J-306	235.9	-8,594.42	5,490.49	110	0.14	0.23	1.31928	uPVC	145	0.01
P-397	36	17.735	17.654	3.15382	J-306	J-298	235.97	-8,614.17	5,539.37	110	0.33	1.15	3.15382	uPVC	145	0.04
P-398	62	17.452	17.462	0.14782	J-295	J-307	236.12	-8,495.53	5,426.62	110	0.02	0	0.14782	uPVC	145	0
P-399	35.5	17.699	17.649	0.29117	J-304	J-308	235.94	-8,574.03	5,438.05	110	0.03	0.01	0.29117	uPVC	145	0
P-4	91.5	21.164	21.106	17.77717	J-3	J-4	236	-8,931.71	5,100.04	160	0.88	4.58	17.77717	HDPE	145	0.42
P-40	53.5	20.844	20.83	14.32238	J-27	J-28	236.13	-9,082.75	5,158.34	160	0.71	3.07	14.32238	HDPE	145	0.16
P-400	245	17.649	18.074	0.995	J-308	J-309	235.99	-8,607.14	5,424.80	110	0.1	0.14	0.995	uPVC	145	0.03
P-401	40	18.074	18.011	0.71983	J-309	J-302	235.53	-8,511.54	5,199.23	110	0.08	0.07	0.71983	uPVC	145	0

Distribution Network Design Output: Zone 1

P-402	40.5	18.074	18.186	-0.50087	J-309	J-310	235.53	-8,511.54	5,199.23	110	0.05	0.04	0.50087	uPVC	145	0
P-403	33.5	17.649	17.588	-1.45246	J-308	J-311	235.99	-8,607.14	5,424.80	110	0.15	0.27	1.45246	uPVC	145	0.01
P-404	62	17.588	17.729	-3.37904	J-311	J-312	236.06	-8,638.05	5,412.23	110	0.36	1.31	3.37904	uPVC	145	0.08
P-405	75	17.729	17.793	1.96599	J-312	J-305	236	-8,662.98	5,459.81	110	0.21	0.48	1.96599	uPVC	145	0.04
P-406	60	17.729	17.984	-5.8147	J-312	J-313	236	-8,662.98	5,459.81	110	0.61	3.58	5.8147	uPVC	145	0.22
P-407	91.5	17.984	17.735	4.90224	J-313	J-306	235.96	-8,698.58	5,504.48	110	0.52	2.61	4.90224	uPVC	145	0.24
P-408	110	17.984	18.532	-11.3404	J-313	J-314	235.96	-8,698.58	5,504.48	140	0.74	3.82	11.3404	HDPE	145	0.42
P-409	69	18.532	18.396	5.67341	J-314	J-246	235.83	-8,763.64	5,592.96	110	0.6	3.43	5.67341	uPVC	145	0.24
P-41	48.5	20.83	20.832	6.59759	J-28	J-29	235.98	-9,064.95	5,107.83	125	0.54	2.43	6.59759	HDPE	145	0.12
P-410	138	18.396	17.865	5.12601	J-246	J-315	235.73	-8,702.33	5,624.34	110	0.54	2.84	5.12601	uPVC	145	0.39
P-411	61.5	17.865	17.649	3.28702	J-315	J-297	235.87	-8,595.64	5,618.86	110	0.35	1.25	3.28702	uPVC	145	0.08
P-412	94	17.865	17.739	2.22222	J-315	J-316	235.87	-8,595.64	5,618.86	110	0.23	0.6	2.22222	uPVC	145	0.06
P-413	151.5	17.739	18.118	-1.9149	J-316	J-317	235.94	-8,508.23	5,652.85	110	0.2	0.46	1.9149	uPVC	145	0.07
P-414	72.5	18.118	18.1	-2.18535	J-317	J-318	235.63	-8,501.76	5,751.25	110	0.23	0.59	2.18535	uPVC	145	0.04
P-415	59	18.1	17.972	2.32407	J-318	J-319	235.69	-8,573.62	5,752.87	110	0.24	0.66	2.32407	uPVC	145	0.04
P-416	98.5	17.972	18.118	0.49844	J-319	J-317	235.78	-8,579.13	5,693.96	110	0.05	0.04	0.49844	uPVC	145	0
P-417	56	18.319	18.1	4.95645	J-247	J-318	235.62	-8,628.69	5,742.90	110	0.52	2.67	4.95645	uPVC	145	0.15
P-418	77	17.972	17.865	1.26655	J-319	J-315	235.78	-8,579.13	5,693.96	110	0.13	0.21	1.26655	uPVC	145	0.02
P-419	29	19.54	19.408	19.09516	J-229	J-320	236	-8,979.91	5,479.07	160	0.95	5.23	19.09516	HDPE	145	0.15
P-42	4	20.832	20.823	-1.15256	J-29	J-30	235.86	-9,049.74	5,061.54	110	0.12	0.18	1.15256	uPVC	145	0
P-420	114.5	19.408	18.889	18.60522	J-320	J-321	235.98	-8,953.97	5,491.99	160	0.93	4.98	18.60522	HDPE	145	0.57
P-421	101	18.889	18.532	17.68137	J-321	J-314	235.93	-8,852.81	5,545.10	160	0.88	4.53	17.68137	HDPE	145	0.46
P-422	86	18.889	18.699	0.20504	J-321	J-322	235.93	-8,852.81	5,545.10	110	0.02	0.01	0.20504	uPVC	145	0
P-423	17	18.297	18.338	-2.32283	J-274	J-323	235.35	-8,367.67	5,172.11	110	0.24	0.66	2.32283	uPVC	145	0.01
P-424	31.5	18.338	18.343	-2.55052	J-323	J-324	235.32	-8,373.35	5,156.28	110	0.27	0.78	2.55052	uPVC	145	0.02
P-425	52.5	18.343	18.167	0.93764	J-324	J-325	235.34	-8,380.64	5,125.53	110	0.1	0.12	0.93764	uPVC	145	0.01
P-426	8.5	18.167	18.117	4.61608	J-325	J-272	235.51	-8,329.25	5,113.79	110	0.49	2.34	4.61608	uPVC	145	0.02
P-427	102	18.167	18.555	-4.06706	J-325	J-326	235.51	-8,329.25	5,113.79	110	0.43	1.85	4.06706	uPVC	145	0.19
P-428	48.5	18.555	18.719	-0.8248	J-326	J-327	235.31	-8,352.51	5,014.51	110	0.09	0.1	0.8248	uPVC	145	0
P-429	107	18.719	18.343	3.94352	J-327	J-324	235.15	-8,400.06	5,024.37	110	0.41	1.75	3.94352	uPVC	145	0.19
P-43	39	20.823	21.009	-15.94937	J-30	J-31	235.87	-9,045.85	5,061.22	160	0.79	3.74	15.94937	uPVC	145	0.15
P-430	16.5	18.555	18.519	-3.64041	J-326	J-328	235.31	-8,352.51	5,014.51	110	0.38	1.51	3.64041	uPVC	145	0.02
P-431	78	18.519	18.674	-3.92293	J-328	J-329	235.37	-8,336.14	5,011.42	110	0.41	1.73	3.92293	uPVC	145	0.13
P-432	35.5	18.674	18.7	-4.39928	J-329	J-330	235.35	-8,372.75	4,965.77	110	0.46	2.14	4.39928	uPVC	145	0.08
P-433	9	18.7	18.74	-4.54352	J-330	J-331	235.4	-8,380.00	4,931.18	110	0.48	2.27	4.54352	uPVC	145	0.02
P-434	30.5	18.74	18.838	-2.20454	J-331	J-332	235.38	-8,389.12	4,932.21	110	0.23	0.59	2.20454	uPVC	145	0.02
P-435	36	18.838	18.754	5.45306	J-332	J-333	235.3	-8,419.16	4,938.63	110	0.57	3.18	5.45306	uPVC	145	0.11
P-436	52	18.754	18.719	5.26304	J-333	J-327	235.27	-8,410.87	4,973.65	110	0.55	2.98	5.26304	uPVC	145	0.15

Distribution Network Design Output: Zone 1

P-437	39	18.674	18.754	0.11277	J-329	J-333	235.35	-8,372.75	4,965.77	110	0.01	0	0.11277	uPVC	145	0
P-438	37	18.838	18.93	-7.90435	J-332	J-334	235.3	-8,419.16	4,938.63	140	0.51	1.96	7.90435	HDPE	145	0.07
P-439	15	18.93	18.933	-5.11879	J-334	J-335	235.28	-8,442.35	4,919.71	110	0.54	2.83	5.11879	uPVC	145	0.04
P-44	27	21.009	21.139	-27.05334	J-31	J-20	235.83	-9,008.62	5,073.19	200	0.86	3.36	27.05334	HDPE	145	0.09
P-440	22.5	18.933	18.891	-3.30097	J-335	J-336	235.32	-8,457.04	4,917.29	110	0.35	1.26	3.30097	uPVC	145	0.03
P-441	119	18.891	17.144	-3.63833	J-336	J-337	235.39	-8,479.20	4,913.97	110	0.38	1.5	3.63833	uPVC	145	0.18
P-442	47	17.256	18.88	3.96049	J-338	J-339	237.12	-8,433.19	4,802.27	110	0.42	1.76	3.96049	uPVC	145	0.08
P-443	70.5	18.88	18.933	2.0753	J-339	J-335	235.41	-8,442.72	4,848.47	110	0.22	0.53	2.0753	uPVC	145	0.04
P-444	69	18.93	18.827	-3.07404	J-334	J-340	235.28	-8,442.35	4,919.71	110	0.32	1.1	3.07404	uPVC	145	0.08
P-445	8.5	18.827	18.62	-1.71336	J-340	J-341	235.46	-8,430.49	4,851.78	110	0.18	0.37	1.71336	uPVC	145	0
P-446	47	18.62	17.174	-1.90767	J-341	J-342	235.67	-8,421.79	4,851.78	110	0.2	0.46	1.90767	uPVC	145	0.02
P-447	52	16.942	17.966	3.00058	J-343	J-344	237.29	-8,379.97	4,814.07	110	0.32	1.05	3.00058	uPVC	145	0.05
P-448	26	17.966	17.706	0.06199	J-344	J-345	236.21	-8,388.78	4,865.34	110	0.01	0	0.06199	uPVC	145	0
P-449	67	17.966	18.74	2.59289	J-344	J-331	236.21	-8,388.78	4,865.34	110	0.27	0.8	2.59289	uPVC	145	0.05
P-45	89.5	21.009	21	10.73323	J-31	J-32	235.83	-9,008.62	5,073.19	140	0.7	3.45	10.73323	HDPE	145	0.31
P-450	54.5	19.707	19.785	-12.39946	J-231	J-346	235.97	-9,203.27	5,471.39	160	0.62	2.35	12.39946	HDPE	145	0.13
P-46	26.5	21	21.116	-12.74323	J-32	J-19	235.53	-8,973.99	4,990.83	160	0.63	2.47	12.74323	uPVC	145	0.07
P-47	131	21	20.57	9.92912	J-32	J-33	235.53	-8,973.99	4,990.83	140	0.65	2.98	9.92912	HDPE	145	0.39
P-48	37.5	20.57	20.758	4.14133	J-33	J-34	235.57	-8,941.56	4,865.75	110	0.44	1.91	4.14133	uPVC	145	0.07
P-49	99.5	20.758	20.902	-5.2388	J-34	J-35	235.31	-8,978.85	4,868.90	110	0.55	2.96	5.2388	uPVC	145	0.29
P-5	4.5	21.106	21.081	7.67579	J-4	J-5	235.64	-8,899.34	5,014.58	125	0.63	3.22	7.67579	HDPE	145	0.01
P-50	15.5	20.902	20.9	-15.94012	J-35	J-36	235.46	-9,010.92	4,963.16	160	0.79	3.74	15.94012	HDPE	145	0.06
P-51	44	20.9	21	-12.85356	J-36	J-32	235.52	-9,015.89	4,978.08	160	0.64	2.51	12.85356	HDPE	145	0.11
P-52	21	20.9	20.846	-3.27848	J-36	J-37	235.52	-9,015.89	4,978.08	110	0.34	1.24	3.27848	uPVC	145	0.03
P-53	34	20.846	20.856	-8.7746	J-37	J-38	235.6	-9,023.02	4,997.80	125	0.72	4.12	8.7746	HDPE	145	0.14
P-54	33.5	20.856	20.823	-14.61443	J-38	J-30	235.73	-9,035.02	5,029.54	160	0.73	3.18	14.61443	HDPE	145	0.11
P-55	213	20.832	19.948	7.11716	J-29	J-39	235.86	-9,049.74	5,061.54	125	0.58	2.8	7.11716	HDPE	145	0.6
P-56	25	19.948	19.975	-3.01539	J-39	J-40	236.15	-9,261.92	5,042.16	110	0.32	1.06	3.01539	uPVC	145	0.03
P-57	9	19.975	19.996	-12.37191	J-40	J-41	236.15	-9,265.86	5,067.02	160	0.62	2.34	12.37191	HDPE	145	0.02
P-58	37.5	19.996	20.034	-16.44199	J-41	J-42	236.15	-9,267.51	5,075.93	160	0.82	3.96	16.44199	HDPE	145	0.15
P-59	32	20.034	20.207	-11.87768	J-42	J-43	236.26	-9,230.84	5,082.77	140	0.77	4.16	11.87768	HDPE	145	0.13
P-6	51.5	21.081	21.304	-14.59029	J-5	J-6	235.65	-8,895.25	5,015.95	160	0.73	3.18	14.59029	HDPE	145	0.16
P-60	136	20.207	20.83	-7.15736	J-43	J-28	236.22	-9,199.15	5,087.32	125	0.58	2.83	7.15736	HDPE	145	0.38
P-61	57.5	20.207	20.208	-5.25794	J-43	J-44	236.22	-9,199.15	5,087.32	110	0.55	2.98	5.25794	uPVC	145	0.17
P-62	124	20.208	20.844	-19.43832	J-44	J-27	236.39	-9,206.17	5,144.15	180	0.76	3.04	19.43832	HDPE	145	0.38
P-63	101.5	20.208	20.057	4.11694	J-44	J-45	236.39	-9,206.17	5,144.15	110	0.43	1.89	4.11694	uPVC	145	0.19
P-64	42	20.057	20.046	-1.33448	J-45	J-46	236.35	-9,219.73	5,244.63	110	0.14	0.24	1.33448	uPVC	145	0.01
P-65	67	20.046	20.325	-17.52746	J-46	J-47	236.37	-9,187.68	5,271.83	160	0.87	4.46	17.52746	HDPE	145	0.3

Distribution Network Design Output: Zone 1

P-66	79.5	20.325	20.73	-22.07376	J-47	J-26	236.39	-9,132.97	5,310.67	180	0.87	3.85	22.07376	HDPE	145	0.31
P-67	59	20.034	20.236	-4.87068	J-42	J-48	236.26	-9,230.84	5,082.77	110	0.51	2.58	4.87068	uPVC	145	0.15
P-68	33	20.236	20.208	-9.31004	J-48	J-44	236.21	-9,238.99	5,140.99	125	0.76	4.6	9.31004	HDPE	145	0.15
P-69	81.5	20.236	20.079	4.02572	J-48	J-49	236.21	-9,238.99	5,140.99	110	0.42	1.81	4.02572	uPVC	145	0.15
P-7	15	21.304	21.233	-14.74884	J-6	J-7	235.59	-8,846.21	5,032.15	160	0.73	3.24	14.74884	HDPE	145	0.05
P-70	39.5	20.079	20.057	-5.01512	J-49	J-45	236.22	-9,251.53	5,221.51	110	0.53	2.73	5.01512	uPVC	145	0.11
P-71	44.5	20.079	19.901	8.64626	J-49	J-50	236.22	-9,251.53	5,221.51	125	0.7	4.01	8.64626	HDPE	145	0.18
P-73	54.5	19.975	19.503	9.14553	J-40	J-51	236.15	-9,265.86	5,067.02	125	0.75	4.45	9.14553	HDPE	145	0.24
P-74	29.5	19.503	19.481	1.81647	J-51	J-52	236.38	-9,319.91	5,058.85	110	0.19	0.42	1.81647	uPVC	145	0.01
P-75	22	19.481	19.494	-2.14602	J-52	J-53	236.39	-9,327.60	5,087.17	110	0.23	0.57	2.14602	uPVC	145	0.01
P-76	38.5	19.494	19.401	3.07224	J-53	J-54	236.39	-9,334.08	5,108.21	110	0.32	1.1	3.07224	uPVC	145	0.04
P-77	20	19.401	19.476	-1.36478	J-54	J-55	236.44	-9,357.14	5,138.97	110	0.14	0.24	1.36478	uPVC	145	0
P-78	70	19.476	19.901	-6.11408	J-55	J-50	236.37	-9,342.57	5,152.32	110	0.64	3.93	6.11408	uPVC	145	0.28
P-79	79	19.901	19.759	2.07085	J-50	J-56	236.22	-9,286.33	5,193.59	110	0.22	0.53	2.07085	uPVC	145	0.04
P-8	37.5	21.233	21.2	-10.18045	J-7	J-8	235.71	-8,849.77	5,046.72	140	0.66	3.12	10.18045	HDPE	145	0.12
P-80	40	19.759	19.996	-3.86385	J-56	J-41	236.32	-9,273.78	5,115.50	110	0.41	1.68	3.86385	uPVC	145	0.07
P-81	60.5	19.494	19.759	-5.50674	J-53	J-56	236.39	-9,334.08	5,108.21	110	0.58	3.24	5.50674	uPVC	145	0.2
P-82	20	19.948	19.823	9.51744	J-39	J-57	236.15	-9,261.92	5,042.16	125	0.78	4.79	9.51744	HDPE	145	0.1
P-83	25.5	19.823	19.78	4.35444	J-57	J-58	236.18	-9,259.94	5,022.45	110	0.46	2.1	4.35444	uPVC	145	0.05
P-84	223.5	19.78	20.856	-5.14604	J-58	J-38	236.17	-9,255.96	4,997.43	110	0.54	2.86	5.14604	uPVC	145	0.64
P-85	35.5	19.78	19.725	4.67226	J-58	J-59	236.17	-9,255.96	4,997.43	110	0.49	2.39	4.67226	uPVC	145	0.08
P-86	231	19.725	20.846	-4.81426	J-59	J-37	236.14	-9,251.06	4,962.51	110	0.51	2.53	4.81426	uPVC	145	0.58
P-87	34.5	19.725	19.648	4.81756	J-59	J-60	236.14	-9,251.06	4,962.51	110	0.51	2.53	4.81756	uPVC	145	0.09
P-88	69	19.648	19.881	-2.55028	J-60	J-61	236.13	-9,246.39	4,928.48	110	0.27	0.78	2.55028	uPVC	145	0.05
P-89	126.5	19.881	20.596	-5.41118	J-61	J-62	235.95	-9,178.01	4,938.19	110	0.57	3.14	5.41118	uPVC	145	0.4
P-9	140	21.2	21.354	-9.88907	J-8	J-9	235.86	-8,861.10	5,082.65	140	0.64	2.96	9.88907	HDPE	145	0.41
P-90	42.5	20.596	20.902	-10.32581	J-62	J-35	235.63	-9,052.57	4,955.99	140	0.67	3.21	10.32581	HDPE	145	0.14
P-91	6.5	20.758	20.742	9.03801	J-34	J-63	235.31	-8,978.85	4,868.90	140	0.59	2.5	9.03801	HDPE	145	0.02
P-92	58.5	20.742	20.518	0.74551	J-63	J-64	235.31	-8,985.20	4,869.30	110	0.08	0.08	0.74551	uPVC	145	0
P-93	87	20.518	20.596	-4.3043	J-64	J-62	235.53	-9,043.87	4,869.30	110	0.45	2.05	4.3043	uPVC	145	0.18
P-94	124	20.518	19.893	4.40728	J-64	J-65	235.53	-9,043.87	4,869.30	110	0.46	2.15	4.40728	uPVC	145	0.27
P-95	80.5	19.893	19.881	-2.20288	J-65	J-61	235.89	-9,167.29	4,858.17	110	0.23	0.59	2.20288	uPVC	145	0.05
P-96	20	19.893	19.756	6.07491	J-65	J-66	235.89	-9,167.29	4,858.17	110	0.64	3.89	6.07491	uPVC	145	0.08
P-97	48.5	19.756	19.567	2.93069	J-66	J-67	235.95	-9,187.13	4,855.50	110	0.31	1.01	2.93069	uPVC	145	0.05
P-98	39.5	19.567	19.57	-2.63155	J-67	J-68	236.09	-9,235.61	4,850.73	110	0.28	0.83	2.63155	uPVC	145	0.03
P-99	39	19.57	19.648	-4.5309	J-68	J-60	236.12	-9,240.38	4,889.88	110	0.48	2.26	4.5309	uPVC	145	0.09
PP-451	63	20.016	20.038	-1.66473	J-220	J-219	236.15	-9,281.70	5,317.65	110	0.18	0.35	1.66473	HDPE	145	0.02
PP-452	18	20.038	20.037	8.36853	J-219	J-226	236.15	-9,221.17	5,335.78	160	0.42	1.13	8.36853	HDPE	145	0.02

Distribution Network Design Output: Zone 1

PP-453	117	20.037	19.785	19.65234	J-226	J-346	236.13	-9,215.69	5,349.22	180	0.77	3.11	19.65234	HDPE	145	0.36
PP-454	47.5	19.785	19.535	6.73076	J-346	PJ-347	236.02	-9,256.53	5,458.98	125	0.55	2.52	6.73076	HDPE	145	0.12
PP-455	242.5	19.535	19.525	6.03936	PJ-347	J-238	236.15	-9,270.08	5,504.42	125	0.49	2.06	6.03936	HDPE	145	0.5
PP-456	195.5	19.525	19.033	8.96889	J-238	J-240	235.66	-9,058.01	5,621.10	140	0.58	2.47	8.96889	HDPE	145	0.48
PP-457	285.5	19.033	18.56	4.82191	J-240	J-251	235.67	-8,960.09	5,772.84	110	0.51	2.53	4.82191	HDPE	145	0.72
PP-458	222.5	18.56	18.112	2.74692	J-251	J-255	235.42	-8,708.00	5,904.75	110	0.29	0.89	2.74692	HDPE	145	0.2
PP-459	115.5	18.277	18.316	1.15082	J-253	J-257	235.47	-8,539.26	5,917.70	110	0.12	0.18	1.15082	HDPE	145	0.02
PP-460	38	18.345	18.335	0.0906	J-256	PJ-348	235.41	-8,583.77	5,819.78	110	0.01	0	0.0906	HDPE	145	0
PP-461	103	17.724	18.547	3.10981	J-242	J-250	236.37	-8,735.92	5,794.69	110	0.33	1.12	3.10981	HDPE	145	0.12
PP-462	62	17.447	17.739	-3.404	J-291	J-316	236.15	-8,484.61	5,595.36	110	0.36	1.33	3.404	HDPE	145	0.08
PP-463	70	17.603	17.663	-0.16689	PJ-349	J-259	235.99	-8,436.85	5,656.29	110	0.02	0.01	0.16689	HDPE	145	0
PP-464	23.5	17.473	17.493	0.05603	J-290	PJ-350	236.11	-8,440.50	5,613.56	110	0.01	0	0.05603	HDPE	145	0
PP-465	23.5	17.574	17.564	0.05603	J-289	PJ-351	236	-8,396.80	5,632.99	110	0.01	0	0.05603	HDPE	145	0
PP-466	37	17.553	17.613	0.08821	J-286	PJ-352	236.01	-8,387.49	5,583.62	110	0.01	0	0.08821	HDPE	145	0
PP-467	38.5	17.699	17.627	0.60296	J-304	J-299	235.94	-8,574.03	5,438.05	110	0.06	0.05	0.60296	HDPE	145	0
PP-468	231	17.588	18.186	1.14816	J-311	J-310	236.06	-8,638.05	5,412.23	110	0.12	0.18	1.14816	HDPE	145	0.04
PP-469	23.5	18.348	18.338	-0.05603	PJ-353	J-323	235.31	-8,396.57	5,160.91	110	0.01	0	0.05603	HDPE	145	0
PP-470	42.5	18.083	18.123	0.10133	J-276	PJ-354	235.5	-8,363.62	5,242.51	110	0.01	0	0.10133	HDPE	145	0
PP-471	73	17.683	17.328	1.29535	J-270	PJ-355	235.83	-8,238.99	5,169.27	110	0.14	0.22	1.29535	HDPE	145	0.02
PP-472	25	17.328	17.318	0.0596	PJ-355	PJ-356	236.17	-8,188.93	5,116.32	110	0.01	0	0.0596	HDPE	145	0
PP-473	43.5	17.328	17.682	0.89839	PJ-355	PJ-357	236.17	-8,188.93	5,116.32	110	0.09	0.11	0.89839	HDPE	145	0
PP-474	76.5	17.682	17.827	-0.71622	PJ-357	J-269	235.81	-8,166.67	5,153.14	110	0.08	0.07	0.71622	HDPE	145	0.01
PP-475	37.5	17.662	17.682	-0.20677	J-267	PJ-357	235.83	-8,141.47	5,180.60	110	0.02	0.01	0.20677	HDPE	145	0
PP-476	40.5	17.682	17.388	0.93578	PJ-357	PJ-358	235.81	-8,166.67	5,153.14	110	0.1	0.12	0.93578	HDPE	145	0
PP-477	25.5	17.388	17.208	0.0608	PJ-358	PJ-359	236.1	-8,149.27	5,116.32	110	0.01	0	0.0608	HDPE	145	0
PP-478	34.5	17.388	17.096	0.63537	PJ-358	PJ-360	236.1	-8,149.27	5,116.32	110	0.07	0.06	0.63537	HDPE	145	0
PP-479	28	17.096	17.146	0.06676	PJ-360	PJ-361	236.39	-8,169.50	5,088.40	110	0.01	0	0.06676	HDPE	145	0
PP-480	88	17.096	17.565	0.2098	PJ-360	PJ-362	236.39	-8,169.50	5,088.40	110	0.02	0.01	0.2098	HDPE	145	0
PP-481	58.5	17.6	17.51	-0.01075	J-268	PJ-363	235.89	-8,100.20	5,109.39	110	0	0	0.01075	HDPE	145	0
PP-482	37	17.51	17.48	-0.21172	PJ-363	PJ-364	235.98	-8,118.90	5,054.11	110	0.02	0.01	0.21172	HDPE	145	0
PP-483	39	17.48	17.591	-0.39292	PJ-364	PJ-365	236.01	-8,131.20	5,019.15	110	0.04	0.02	0.39292	HDPE	145	0
PP-484	29	17.591	17.6	0.49082	PJ-365	PJ-366	235.9	-8,107.38	4,988.53	110	0.05	0.04	0.49082	HDPE	145	0
PP-485	34.5	17.6	17.69	0.03138	PJ-366	PJ-367	235.89	-8,084.40	5,006.01	110	0	0	0.03138	HDPE	145	0
PP-486	95.5	17.69	17.6	0.14996	PJ-367	J-268	235.8	-8,055.59	5,025.11	110	0.02	0	0.14996	HDPE	145	0
PP-487	59	17.51	17.6	-0.16738	PJ-363	PJ-366	235.98	-8,118.90	5,054.11	110	0.02	0	0.16738	HDPE	145	0
PP-488	90	17.591	17.101	-1.26043	PJ-365	PJ-368	235.9	-8,107.38	4,988.53	110	0.13	0.21	1.26043	HDPE	145	0.02
PP-489	48	17.101	16.024	-0.38869	PJ-368	PJ-369	236.41	-8,063.63	4,918.46	110	0.04	0.02	0.38869	HDPE	145	0
PP-490	40	16.024	16.016	1.23436	PJ-369	PJ-370	237.49	-8,034.63	4,879.93	110	0.13	0.2	1.23436	HDPE	145	0.01

PP-491	149	16.016	17.69	0.78376	PJ-370	PJ-367	237.49	-7,995.68	4,889.66	110	0.08	0.09	0.78376	HDPE	145	0.01
PP-492	45.5	16.553	16.762	-0.10848	PJ-371	PJ-372	236.97	-8,145.32	4,893.42	110	0.01	0	0.10848	HDPE	145	0
PP-493	46	16.762	17.101	1.31042	PJ-372	PJ-368	236.76	-8,100.65	4,902.48	110	0.14	0.23	1.31042	HDPE	145	0.01
PP-494	37.5	16.762	15.938	-1.72646	PJ-372	PJ-373	236.76	-8,100.65	4,902.48	110	0.18	0.38	1.72646	HDPE	145	0.01
PP-495	49.5	15.938	16.024	1.95087	PJ-373	PJ-369	237.6	-8,082.85	4,869.46	110	0.21	0.47	1.95087	HDPE	145	0.02
PP-496	303.5	15.938	16.774	-4.60833	PJ-373	PJ-374	237.6	-8,082.85	4,869.46	110	0.48	2.33	4.60833	HDPE	145	0.71
PP-497	9.5	16.774	16.942	3.14721	PJ-374	J-343	237.47	-8,379.18	4,804.57	110	0.33	1.15	3.14721	HDPE	145	0.01
PP-498	33	16.774	16.889	-8.58045	PJ-374	PJ-375	237.47	-8,379.18	4,804.57	140	0.56	2.28	8.58045	HDPE	145	0.08
PP-499	7	16.889	17.174	2.03641	PJ-375	J-342	237.43	-8,411.55	4,798.75	110	0.21	0.51	2.03641	HDPE	145	0
PP-500	21.5	16.889	16.913	-10.76349	PJ-375	PJ-376	237.43	-8,411.55	4,798.75	140	0.7	3.46	10.76349	HDPE	145	0.07
PP-501	8.5	16.913	17.256	4.09281	PJ-376	J-338	237.48	-8,432.26	4,793.57	110	0.43	1.87	4.09281	HDPE	145	0.02
PP-502	25.5	16.913	17.078	-14.98862	PJ-376	PJ-377	237.48	-8,432.26	4,793.57	160	0.75	3.34	14.98862	HDPE	145	0.09
PP-503	8	17.078	17.144	3.94112	PJ-377	J-337	237.4	-8,457.19	4,788.71	110	0.41	1.74	3.94112	HDPE	145	0.01
PP-504	12.5	18.88	18.827	1.57525	J-339	J-340	235.41	-8,442.72	4,848.47	110	0.17	0.32	1.57525	HDPE	145	0
PP-505	13	18.62	18.391	0.03099	J-341	PJ-378	235.67	-8,421.79	4,851.78	110	0	0	0.03099	HDPE	145	0
PP-506	294	17.078	18.283	-19.71054	PJ-377	PJ-379	237.4	-8,457.19	4,788.71	180	0.77	3.12	19.71054	HDPE	145	0.92
PP-507	27	18.283	20.554	-17.20038	PJ-379	J-123	237.11	-8,744.92	4,727.68	180	0.68	2.43	17.20038	HDPE	145	0.07
PP-508	27	20.793	18.771	3.42463	J-105	PJ-380	234.93	-8,932.75	4,713.82	110	0.36	1.34	3.42463	HDPE	145	0.04
PP-509	189.5	18.771	18.283	3.72727	PJ-380	PJ-379	236.92	-8,930.04	4,686.72	110	0.39	1.57	3.72727	HDPE	145	0.3
PP-510	40.5	18.771	19.005	-0.91536	PJ-380	PJ-381	236.92	-8,930.04	4,686.72	110	0.1	0.12	0.91536	HDPE	145	0
PP-511	28	19.005	20.774	-2.58367	PJ-381	J-104	236.69	-8,969.49	4,678.62	110	0.27	0.8	2.58367	HDPE	145	0.02
PP-512	98.5	19.005	19.573	1.27015	PJ-381	PJ-382	236.69	-8,969.49	4,678.62	110	0.13	0.21	1.27015	HDPE	145	0.02
PP-513	45.5	19.573	20.668	-1.12523	PJ-382	J-101	236.1	-9,065.60	4,656.87	110	0.12	0.17	1.12523	HDPE	145	0.01
PP-514	47	19.573	19.9	1.94002	PJ-382	PJ-383	236.1	-9,065.60	4,656.87	110	0.2	0.47	1.94002	HDPE	145	0.02
PP-515	54.5	19.9	21.282	-1.43811	PJ-383	J-100	235.75	-9,111.62	4,647.26	110	0.15	0.27	1.43811	HDPE	145	0.01
PP-516	30.5	21.282	20.553	0.07272	J-100	PJ-384	234.38	-9,111.44	4,701.65	110	0.01	0	0.07272	HDPE	145	0
PP-517	105	19.9	19.757	2.8858	PJ-383	PJ-385	235.75	-9,111.62	4,647.26	110	0.3	0.98	2.8858	HDPE	145	0.1
PP-518	27.5	19.757	19.787	0.40511	PJ-385	J-97	235.79	-9,214.30	4,625.01	110	0.04	0.03	0.40511	HDPE	145	0
PP-519	26.5	19.787	19.755	0.61634	J-97	PJ-386	235.76	-9,217.35	4,652.18	110	0.06	0.06	0.61634	HDPE	145	0
PP-520	21	19.755	19.724	0.61605	PJ-386	PJ-387	235.79	-9,243.64	4,649.29	110	0.06	0.06	0.61605	HDPE	145	0
PP-521	37	19.724	19.753	0.47777	PJ-387	PJ-388	235.82	-9,264.37	4,648.27	110	0.05	0.04	0.47777	HDPE	145	0
PP-522	33	19.753	19.745	-0.62	PJ-388	PJ-389	235.79	-9,267.41	4,685.20	110	0.07	0.06	0.62	HDPE	145	0
PP-523	19	19.745	19.776	-0.74397	PJ-389	PJ-390	235.8	-9,269.94	4,718.07	110	0.08	0.08	0.74397	HDPE	145	0
PP-524	70	19.776	19.755	0.27984	PJ-390	PJ-386	235.77	-9,250.72	4,719.09	110	0.03	0.01	0.27984	HDPE	145	0
PP-525	29	19.776	19.822	-1.30514	PJ-390	J-94	235.77	-9,250.72	4,719.09	110	0.14	0.23	1.30514	HDPE	145	0.01
PP-526	66.5	19.822	20.227	0.66224	J-94	PJ-391	235.73	-9,222.01	4,721.33	110	0.07	0.06	0.66224	HDPE	145	0
PP-527	33	20.227	20.037	0.42501	PJ-391	PJ-392	235.32	-9,155.63	4,724.65	110	0.04	0.03	0.42501	HDPE	145	0
PP-528	66.5	20.037	19.798	-0.20276	PJ-392	J-95	235.51	-9,153.10	4,691.77	110	0.02	0.01	0.20276	HDPE	145	0

PP-529	26.5	20.037	19.947	0.32737	PJ-392	PJ-393	235.51	-9,153.10	4,691.77	110	0.03	0.02	0.32737	HDPE	145	0
PP-530	68.5	19.947	19.797	0.10088	PJ-393	J-96	235.6	-9,149.05	4,665.47	110	0.01	0	0.10088	HDPE	145	0
PP-531	123.5	19.757	19.633	1.87035	PJ-385	PJ-394	235.79	-9,214.30	4,625.01	110	0.2	0.44	1.87035	HDPE	145	0.05
PP-532	451.5	19.633	18.954	2.46659	PJ-394	PJ-395	235.86	-9,335.19	4,598.71	110	0.26	0.73	2.46659	HDPE	145	0.33
PP-533	152.5	18.954	18.263	1.02657	PJ-395	J-155	236.21	-9,776.24	4,501.59	110	0.11	0.14	1.02657	HDPE	145	0.02
PP-534	78	19.633	19.688	-2.15309	PJ-394	PJ-396	235.86	-9,335.19	4,598.71	110	0.23	0.57	2.15309	HDPE	145	0.04
PP-535	90	19.688	19.718	-1.89216	PJ-396	J-88	235.85	-9,322.93	4,675.52	110	0.2	0.45	1.89216	HDPE	145	0.04
PP-536	24.5	19.615	19.425	0.05841	J-92	PJ-397	235.97	-9,345.28	4,710.19	110	0.01	0	0.05841	HDPE	145	0
PP-537	56.5	19.688	19.753	-0.79617	PJ-396	PJ-388	235.85	-9,322.93	4,675.52	110	0.08	0.09	0.79617	HDPE	145	0.01
PP-538	14	19.003	19.183	0.03338	J-128	PJ-398	236.4	-9,381.92	4,751.95	110	0	0	0.03338	HDPE	145	0
PP-539	55	19.912	19.841	-1.63192	J-98	J-109	235.73	-9,175.92	4,755.51	110	0.17	0.34	1.63192	HDPE	145	0.02
PP-540	45.5	19.841	19.756	-2.87243	J-109	J-66	235.82	-9,180.58	4,810.41	110	0.3	0.97	2.87243	HDPE	145	0.04
PP-541	57.5	20.356	20.204	-1.5512	J-102	J-108	235.34	-9,065.08	4,757.07	110	0.16	0.31	1.5512	HDPE	145	0.02
PP-542	115	19.567	19.189	1.82939	J-67	J-81	236.09	-9,235.61	4,850.73	110	0.19	0.42	1.82939	HDPE	145	0.05
PP-543	28.5	18.589	18.619	0.06795	J-148	PJ-399	236.61	-9,555.92	4,735.76	110	0.01	0	0.06795	HDPE	145	0
PP-544	73	18.431	18.27	0.27731	J-153	J-158	236.72	-9,675.29	4,707.03	110	0.03	0.01	0.27731	HDPE	145	0
PP-545	82.5	18.27	18.557	0.4197	J-158	J-162	236.88	-9,691.47	4,778.25	110	0.04	0.03	0.4197	HDPE	145	0
PP-546	71.5	18.333	18.264	-0.18409	J-159	J-154	236.81	-9,755.81	4,759.23	110	0.02	0.01	0.18409	HDPE	145	0
PP-547	45	18.645	18.746	-1.35565	J-179	J-175	236.5	-9,743.26	4,951.84	110	0.14	0.24	1.35565	HDPE	145	0.01
PP-548	117.5	18.539	18.694	1.26782	J-188	J-210	236.59	-9,808.41	4,981.78	110	0.13	0.21	1.26782	HDPE	145	0.03
PP-549	105.5	18.694	18.712	0.34295	J-210	J-208	236.41	-9,835.60	5,096.06	110	0.04	0.02	0.34295	HDPE	145	0
PP-550	159.5	18.712	19.181	0.01837	J-208	PJ-400	236.39	-9,863.09	5,197.85	110	0	0	0.01837	HDPE	145	0
PP-551	38	19.181	19.022	-0.4525	PJ-400	J-206	235.92	-9,899.50	5,352.94	110	0.05	0.03	0.4525	HDPE	145	0
PP-552	138	18.958	18.998	-1.4895	J-205	J-201	236.15	-9,826.17	5,360.72	110	0.16	0.29	1.4895	HDPE	145	0.04
PP-553	85.5	18.998	18.961	-3.22979	J-201	J-199	236.15	-9,700.73	5,320.76	110	0.34	1.21	3.22979	HDPE	145	0.1
PP-554	174.5	18.961	19.288	-4.42424	J-199	J-195	236.29	-9,623.34	5,284.34	110	0.47	2.16	4.42424	HDPE	145	0.38
PP-555	175.5	19.288	20.016	-5.35092	J-195	J-220	236.34	-9,451.37	5,274.23	110	0.56	3.07	5.35092	HDPE	145	0.54
PP-556	67	20.066	20.106	-2.21293	J-221	J-218	236.15	-9,273.93	5,294.67	110	0.23	0.6	2.21293	HDPE	145	0.04
PP-557	26	19.245	19.411	-2.91609	J-193	J-216	236.44	-9,435.69	5,103.27	110	0.31	1	2.91609	HDPE	145	0.03
PP-558	33	18.625	18.625	0.07868	J-191	PJ-401	236.88	-9,496.39	5,140.69	110	0.01	0	0.07868	HDPE	145	0
PP-559	22	19.119	19.129	0.05245	J-213	PJ-402	236.47	-9,440.55	4,999.35	110	0.01	0	0.05245	HDPE	145	0
PP-560	28	18.424	18.558	-2.70024	J-171	J-141	236.85	-9,539.33	4,917.04	110	0.28	0.87	2.70024	HDPE	145	0.02
PP-561	37	18.558	18.722	-3.20806	J-141	J-135	236.74	-9,511.41	4,916.63	110	0.34	1.19	3.20806	HDPE	145	0.04
PP-562	42.5	18.722	18.809	-3.73324	J-135	J-134	236.62	-9,474.59	4,917.04	110	0.39	1.58	3.73324	HDPE	145	0.07
PP-563	39	18.809	18.897	-5.31053	J-134	J-79	236.6	-9,432.10	4,919.06	110	0.56	3.03	5.31053	HDPE	145	0.12
PP-564	26.5	18.696	18.636	-0.06318	PJ-403	J-168	236.52	-9,628.90	4,926.56	110	0.01	0	0.06318	HDPE	145	0
PP-565	55	19.401	19.78	-4.0188	J-73	J-58	236.45	-9,310.67	4,992.28	110	0.42	1.81	4.0188	HDPE	145	0.1
PP-566	54	19.337	19.725	-3.82259	J-71	J-59	236.44	-9,305.01	4,957.08	110	0.4	1.65	3.82259	HDPE	145	0.09

Distribution Network Design Output: Zone 1

PP-567	22	18.722	18.742	0.05245	J-187	PJ-404	236.42	-9,767.14	5,066.76	110	0.01	0	0.05245	HDPE	145	0
PP-568	63.5	20.316	20.735	-38.41487	J-224	PJ-405	236.39	-9,134.38	5,314.78	225	0.97	3.62	38.41487	HDPE	145	0.23
PP-569	46	20.735	20.785	0.10967	PJ-405	PJ-406	236.2	-9,080.64	5,349.00	110	0.01	0	0.10967	HDPE	145	0
PP-570	37	20.651	20.771	-0.08821	PJ-407	J-25	236.39	-9,105.43	5,312.59	110	0.01	0	0.08821	HDPE	145	0
PP-571	28.5	20.771	20.735	38.85355	J-25	PJ-405	236.27	-9,070.02	5,322.82	225	0.98	3.7	38.85355	HDPE	145	0.11
PP-572	23.5	21.021	21.131	0.05603	J-13	PJ-408	236.36	-8,954.05	5,363.05	110	0.01	0	0.05603	HDPE	145	0
PP-573	21	21.057	21.007	-0.05007	PJ-409	J-14	236.34	-8,917.78	5,399.08	110	0.01	0	0.05007	HDPE	145	0
PP-574	22.5	21.053	21.083	0.05364	J-15	PJ-410	236.38	-8,886.63	5,309.75	110	0.01	0	0.05364	HDPE	145	0
PP-575	34.5	19.866	19.743	3.70034	J-227	PJ-411	236.01	-9,050.32	5,439.42	110	0.39	1.55	3.70034	HDPE	145	0.05
PP-576	21	19.743	19.753	0.05007	PJ-411	PJ-412	236.08	-9,036.13	5,408.18	110	0.01	0	0.05007	HDPE	145	0
PP-577	24	19.743	19.72	3.46073	PJ-411	PJ-413	236.08	-9,036.13	5,408.18	110	0.36	1.37	3.46073	HDPE	145	0.03
PP-578	34	19.72	19.738	3.25808	PJ-413	J-228	236.07	-9,014.89	5,419.82	110	0.34	1.23	3.25808	HDPE	145	0.04
PP-579	13.5	19.72	19.71	0.03219	PJ-413	PJ-414	236.07	-9,014.89	5,419.82	110	0	0	0.03219	HDPE	145	0
PP-580	31	19.408	19.299	0.07391	J-320	PJ-415	235.98	-8,953.97	5,491.99	110	0.01	0	0.07391	HDPE	145	0
PP-581	64	21.554	21.354	10.45755	J-2	J-9	236.03	-8,964.65	5,193.52	160	0.52	1.71	10.45755	HDPE	145	0.11
PP-582	22.5	20.827	20.777	0.05364	J-16	PJ-416	236.57	-8,859.41	5,230.58	110	0.01	0	0.05364	HDPE	145	0
PP-583	23	21.165	21.195	0.05484	J-17	PJ-417	235.9	-8,814.63	5,097.83	160	0	0	0.05484	HDPE	145	0
PP-584	83	21.116	21.839	7.64086	J-19	J-112	235.48	-8,949.00	4,999.47	125	0.62	3.19	7.64086	HDPE	145	0.26
PP-585	33	21.199	21.119	-0.07868	PJ-418	J-113	235.31	-8,843.61	4,970.54	110	0.01	0	0.07868	HDPE	145	0
PP-586	58	21.119	21.081	-21.99429	J-113	J-5	235.39	-8,875.44	4,961.69	180	0.86	3.83	21.99429	HDPE	145	0.22
PP-587	45	21.321	21.184	6.85057	J-114	PJ-419	235.01	-8,860.77	4,918.70	125	0.56	2.61	6.85057	HDPE	145	0.12
PP-588	34	21.184	21.144	0.08106	PJ-419	PJ-420	235.03	-8,817.94	4,932.06	110	0.01	0	0.08106	HDPE	145	0
PP-589	19	21.217	21.215	-1.85612	J-124	PJ-421	234.76	-8,813.55	4,868.24	110	0.2	0.43	1.85612	HDPE	145	0.01
PP-590	52.5	21.215	21.184	-6.456	PJ-421	PJ-419	234.77	-8,801.11	4,882.53	110	0.68	4.35	6.456	HDPE	145	0.23
PP-591	27	21.215	21.069	4.36504	PJ-421	PJ-422	234.77	-8,801.11	4,882.53	110	0.46	2.11	4.36504	HDPE	145	0.06
PP-592	25.5	21.069	20.979	0.0608	PJ-422	PJ-423	234.86	-8,782.34	4,902.27	110	0.01	0	0.0608	HDPE	145	0
PP-593	53	21.069	21.042	4.05272	PJ-422	PJ-424	234.86	-8,782.34	4,902.27	110	0.43	1.84	4.05272	HDPE	145	0.1
PP-594	24	21.042	21.091	0.05722	PJ-424	PJ-425	234.79	-8,729.57	4,895.80	110	0.01	0	0.05722	HDPE	145	0
PP-595	17	21.102	21.093	2.18402	J-126	PJ-426	234.68	-8,750.10	4,860.98	110	0.23	0.58	2.18402	HDPE	145	0.01
PP-596	37.5	21.093	21.042	-3.72251	PJ-426	PJ-424	234.68	-8,733.13	4,858.57	110	0.39	1.57	3.72251	HDPE	145	0.06
PP-597	25.5	21.093	21.093	-0.0608	PJ-427	PJ-426	234.68	-8,707.88	4,856.31	110	0.01	0	0.0608	HDPE	145	0
PP-598	78	21.093	20.714	5.46905	PJ-426	J-122	234.68	-8,733.13	4,858.57	110	0.58	3.2	5.46905	HDPE	145	0.25
PP-599	69.5	17.73	17.7	-0.1657	PJ-428	J-263	235.79	-8,336.32	5,432.70	110	0.02	0	0.1657	HDPE	145	0
PP-600	64	17.773	17.733	-0.15258	PJ-429	J-264	235.74	-8,315.46	5,399.19	110	0.02	0	0.15258	HDPE	145	0
PP-601	12	18.519	18.499	0.02861	J-328	PJ-430	235.37	-8,336.14	5,011.42	110	0	0	0.02861	HDPE	145	0
PP-602	8	18.7	18.69	0.01907	J-330	PJ-431	235.4	-8,380.00	4,931.18	110	0	0	0.01907	HDPE	145	0
PP-603	19	18.982	19.002	0.0453	J-239	PJ-432	235.68	-8,945.52	5,733.59	110	0	0	0.0453	HDPE	145	0
	37247															

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-1	T-1	J-1	14.5	110	PVC	355	HDPE	Replacement
P-10	J-9	J-10	48	110	PVC	110	uPVC	Retained
P-100	J-60	J-69	55.5	110	PVC	110	uPVC	Retained
P-101	J-69	J-70	22	110	PVC	110	uPVC	Retained
P-102	J-70	J-71	13	110	PVC	110	uPVC	Retained
P-103	J-71	J-72	14	110	PVC	110	uPVC	Retained
P-104	J-72	J-73	21.5	110	PVC	110	uPVC	Retained
P-105	J-73	J-74	23	110	PVC	110	uPVC	Retained
P-106	J-74	J-57	54.5	110	PVC	110	uPVC	Retained
P-107	J-74	J-51	44.5	110	PVC	110	uPVC	Retained
P-108	J-51	J-75	84.5	110	PVC	110	uPVC	Retained
P-109	J-75	J-76	45	110	PVC	110	uPVC	Retained
P-11	J-10	J-1	64.5	110	PVC	160	HDPE	Replacement
P-110	J-76	J-74	84	110	PVC	110	uPVC	Retained
P-111	J-76	J-77	45	110	PVC	110	uPVC	Retained
P-112	J-77	J-72	84	110	PVC	110	uPVC	Retained
P-113	J-77	J-78	25.5	110	PVC	110	uPVC	Retained
P-114	J-78	J-70	84	110	PVC	110	uPVC	Retained
P-115	J-78	J-79	15.5	110	PVC	110	uPVC	Retained
P-116	J-79	J-80	81.5	110	PVC	110	uPVC	Retained
P-117	J-80	J-81	37	110	PVC	110	uPVC	Retained
P-118	J-81	J-82	35.5	110	PVC	110	uPVC	Retained
P-119	J-82	J-83	36.5	110	PVC	110	uPVC	Retained
P-12	J-1	J-11	35	110	PVC	250	HDPE	Replacement
P-120	J-83	J-69	58.5	110	PVC	110	uPVC	Retained
P-121	J-82	J-68	114	110	PVC	110	uPVC	Retained
P-122	J-67	J-84	24.5	110	PVC	110	uPVC	Retained
P-123	J-84	J-85	17	110	PVC	110	uPVC	Retained
P-124	J-85	J-86	6	110	PVC	110	uPVC	Retained
P-125	J-86	J-87	25	110	PVC	110	uPVC	Retained
P-126	J-87	J-88	85	110	PVC	110	uPVC	Retained
P-127	J-88	J-89	41	110	PVC	110	uPVC	Retained
P-128	J-89	J-90	25.5	110	PVC	110	uPVC	Retained
P-129	J-90	J-91	27.5	110	PVC	110	uPVC	Retained
P-13	J-11	J-12	65	110	PVC	110	uPVC	Retained
P-130	J-91	J-84	128	110	PVC	110	uPVC	Retained
P-131	J-90	J-86	126.5	110	PVC	110	uPVC	Retained
P-132	J-89	J-92	51.5	110	PVC	110	uPVC	Retained
P-133	J-87	J-93	25.5	110	PVC	110	uPVC	Retained
P-134	J-93	J-94	32.5	110	PVC	110	uPVC	Retained
P-135	J-94	J-95	33.5	110	PVC	110	uPVC	Retained
P-136	J-95	J-96	27.5	110	PVC	110	uPVC	Retained
P-137	J-96	J-97	8	110	PVC	110	uPVC	Retained
P-138	J-93	J-98	48.5	110	PVC	110	uPVC	Retained
P-139	J-98	J-99	65.5	110	PVC	110	uPVC	Retained
P-14	J-12	J-10	35	110	PVC	125	HDPE	Replacement
P-140	J-99	J-100	54	110	PVC	110	uPVC	Retained
P-141	J-100	J-101	45.5	110	PVC	110	uPVC	Retained
P-142	J-101	J-102	54.5	110	PVC	110	uPVC	Retained
P-143	J-102	J-99	45.5	110	PVC	110	uPVC	Retained
P-144	J-102	J-103	88	110	PVC	110	uPVC	Retained
P-145	J-103	J-104	53.5	110	PVC	110	uPVC	Retained
P-146	J-104	J-101	94	110	PVC	110	uPVC	Retained
P-147	J-104	J-105	40	110	PVC	110	uPVC	Retained
P-148	J-105	J-106	50.5	110	PVC	110	uPVC	Retained
P-149	J-106	J-103	41	110	PVC	110	uPVC	Retained
P-15	J-12	J-13	72.5	110	PVC	110	uPVC	Retained
P-150	J-103	J-107	57.5	110	PVC	110	uPVC	Retained
P-151	J-107	J-108	82.5	110	PVC	110	uPVC	Retained
P-152	J-108	J-109	116	110	PVC	110	uPVC	Retained
P-153	J-109	J-85	49.5	110	PVC	110	uPVC	Retained
P-154	J-63	J-107	53	110	PVC	125	HDPE	Replacement
P-155	J-33	J-106	101.5	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-156	J-106	J-110	31	110	PVC	110	uPVC	Retained
P-157	J-110	J-111	93.5	110	PVC	125	HDPE	Replacement
P-158	J-111	J-112	61	110	PVC	160	HDPE	Replacement
P-159	J-112	J-113	63	110	PVC	110	uPVC	Retained
P-16	J-13	J-14	46	110	PVC	110	uPVC	Retained
P-160	J-113	J-114	45.5	110	PVC	160	HDPE	Replacement
P-161	J-114	J-115	56	110	PVC	125	HDPE	Replacement
P-162	J-115	J-116	13.5	110	PVC	110	uPVC	Retained
P-163	J-116	J-111	54	110	PVC	110	uPVC	Retained
P-164	J-116	J-117	96.5	110	PVC	110	uPVC	Retained
P-165	J-117	J-110	27	110	PVC	110	uPVC	Retained
P-166	J-117	J-118	5	110	PVC	125	HDPE	Replacement
P-167	J-118	J-119	42.5	110	PVC	110	uPVC	Retained
P-168	J-119	J-105	63.5	110	PVC	110	uPVC	Retained
P-169	J-118	J-120	42.5	110	PVC	110	uPVC	Retained
P-17	J-14	J-15	73.5	110	PVC	110	uPVC	Retained
P-170	J-120	J-121	48	110	PVC	110	uPVC	Retained
P-171	J-121	J-122	43.5	110	PVC	125	HDPE	Replacement
P-172	J-122	J-123	26	110	PVC	160	HDPE	Replacement
P-173	J-123	J-119	130.5	110	PVC	110	uPVC	Retained
P-174	J-120	J-124	96.5	110	PVC	110	uPVC	Retained
P-175	J-124	J-115	29	110	PVC	125	HDPE	Replacement
P-176	J-124	J-125	50.5	110	PVC	110	uPVC	Retained
P-177	J-125	J-121	88	110	PVC	110	uPVC	Retained
P-178	J-125	J-126	13.5	110	PVC	110	uPVC	Retained
P-179	J-80	J-127	21.5	110	PVC	110	uPVC	Retained
P-18	J-15	J-12	47.5	110	PVC	110	uPVC	Retained
P-180	J-127	J-128	65.5	110	PVC	110	uPVC	Retained
P-181	J-128	J-129	40.5	110	PVC	110	uPVC	Retained
P-182	J-129	J-130	67.5	110	PVC	110	uPVC	Retained
P-183	J-130	J-127	40	110	PVC	110	uPVC	Retained
P-184	J-129	J-131	41	110	PVC	110	uPVC	Retained
P-185	J-131	J-132	21.5	110	PVC	110	uPVC	Retained
P-186	J-131	J-133	65.5	110	PVC	110	uPVC	Retained
P-187	J-133	J-130	42	110	PVC	110	uPVC	Retained
P-188	J-130	J-134	104	110	PVC	110	uPVC	Retained
P-189	J-135	J-133	104.5	110	PVC	110	uPVC	Retained
P-19	J-15	J-16	83.5	110	PVC	110	uPVC	Retained
P-190	J-133	J-136	40	110	PVC	110	uPVC	Retained
P-191	J-136	J-137	28.5	110	PVC	110	uPVC	Retained
P-192	J-137	J-138	11.5	110	PVC	110	uPVC	Retained
P-193	J-138	J-139	81	110	PVC	110	uPVC	Retained
P-194	J-140	J-141	74	110	PVC	110	uPVC	Retained
P-195	J-136	J-142	34.5	110	PVC	110	uPVC	Retained
P-196	J-142	J-143	25.5	110	PVC	110	uPVC	Retained
P-197	J-143	J-137	40	110	PVC	110	uPVC	Retained
P-198	J-143	J-144	31	110	PVC	110	uPVC	Retained
P-199	J-144	J-145	31	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	50	110	PVC	315	HDPE	Replacement
P-20	J-16	J-9	47.5	110	PVC	125	HDPE	Replacement
P-200	J-145	J-146	15	110	PVC	110	uPVC	Retained
P-201	J-146	J-138	23	110	PVC	110	uPVC	Retained
P-202	J-147	J-145	66	110	PVC	110	uPVC	Retained
P-203	J-144	J-148	26.5	110	PVC	110	uPVC	Retained
P-204	J-148	J-149	61.5	110	PVC	110	uPVC	Retained
P-205	J-148	J-150	43.5	110	PVC	110	uPVC	Retained
P-206	J-150	J-151	62.5	110	PVC	110	uPVC	Retained
P-207	J-150	J-152	40.5	110	PVC	110	uPVC	Retained
P-208	J-152	J-153	38.5	110	PVC	110	uPVC	Retained
P-209	J-153	J-154	87	110	PVC	110	uPVC	Retained
P-21	J-16	J-17	140	110	PVC	125	HDPE	Replacement
P-210	J-154	J-155	34.5	110	PVC	110	uPVC	Retained
P-211	J-155	J-156	148	110	PVC	110	uPVC	Retained
P-212	J-152	J-157	80.5	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-213	J-157	J-158	40.5	110	PVC	110	uPVC	Retained
P-214	J-158	J-159	67	110	PVC	110	uPVC	Retained
P-215	J-159	J-160	86.5	110	PVC	110	uPVC	Retained
P-216	J-160	J-161	56	110	PVC	110	uPVC	Retained
P-217	J-161	J-162	9.5	110	PVC	110	uPVC	Retained
P-218	J-162	J-163	34.5	110	PVC	110	uPVC	Retained
P-219	J-163	J-164	23.5	110	PVC	110	uPVC	Retained
P-22	J-17	J-8	49	110	PVC	110	uPVC	Retained
P-220	J-164	J-165	72	110	PVC	110	uPVC	Retained
P-221	J-165	J-166	108	110	PVC	110	uPVC	Retained
P-222	J-166	J-157	12.5	110	PVC	110	uPVC	Retained
P-223	J-166	J-139	128.5	110	PVC	110	uPVC	Retained
P-224	J-139	J-167	24	110	PVC	110	uPVC	Retained
P-225	J-167	J-168	62.5	110	PVC	110	uPVC	Retained
P-226	J-168	J-165	34	110	PVC	110	uPVC	Retained
P-227	J-168	J-169	46.5	110	PVC	110	uPVC	Retained
P-228	J-169	J-170	79	110	PVC	110	uPVC	Retained
P-229	J-170	J-171	45.5	110	PVC	110	uPVC	Retained
P-23	J-7	J-18	49.5	110	PVC	125	HDPE	Replacement
P-230	J-171	J-167	6	110	PVC	110	uPVC	Retained
P-231	J-170	J-172	36.5	110	PVC	110	uPVC	Retained
P-232	J-172	J-173	18.5	110	PVC	110	uPVC	Retained
P-233	J-173	J-174	97	110	PVC	110	uPVC	Retained
P-234	J-174	J-169	47.5	110	PVC	110	uPVC	Retained
P-235	J-169	J-175	101	110	PVC	110	uPVC	Retained
P-236	J-175	J-164	73	110	PVC	110	uPVC	Retained
P-237	J-175	J-176	56.5	110	PVC	110	uPVC	Retained
P-238	J-176	J-177	46.5	110	PVC	110	uPVC	Retained
P-239	J-177	J-178	15	110	PVC	110	uPVC	Retained
P-24	J-18	J-17	37.5	110	PVC	125	HDPE	Replacement
P-240	J-178	J-179	41	110	PVC	110	uPVC	Retained
P-241	J-179	J-161	97	110	PVC	110	uPVC	Retained
P-242	J-176	J-180	70	110	PVC	110	uPVC	Retained
P-243	J-180	J-174	46	110	PVC	110	uPVC	Retained
P-244	J-180	J-181	77	110	PVC	110	uPVC	Retained
P-245	J-181	J-182	54	110	PVC	110	uPVC	Retained
P-246	J-182	J-183	52	110	PVC	110	uPVC	Retained
P-247	J-183	J-184	32.5	110	PVC	110	uPVC	Retained
P-248	J-184	J-185	51	110	PVC	110	uPVC	Retained
P-249	J-185	J-182	35.5	110	PVC	110	uPVC	Retained
P-25	J-4	J-19	52	110	PVC	140	HDPE	Replacement
P-250	J-185	J-186	31	110	PVC	110	uPVC	Retained
P-251	J-184	J-187	25	110	PVC	110	uPVC	Retained
P-252	J-187	J-177	61.5	110	PVC	110	uPVC	Retained
P-253	J-178	J-188	57	110	PVC	110	uPVC	Retained
P-254	J-188	J-160	142	110	PVC	110	uPVC	Retained
P-255	J-183	J-189	34	110	PVC	110	uPVC	Retained
P-256	J-189	J-190	52	110	PVC	110	uPVC	Retained
P-257	J-190	J-182	35	110	PVC	110	uPVC	Retained
P-258	J-190	J-191	194.5	110	PVC	110	uPVC	Retained
P-259	J-191	J-192	57.5	110	PVC	110	uPVC	Retained
P-26	J-19	J-20	89	110	PVC	140	HDPE	Replacement
P-260	J-192	J-55	97	110	PVC	110	uPVC	Retained
P-261	J-192	J-193	42	110	PVC	110	uPVC	Retained
P-262	J-192	J-194	55.5	110	PVC	110	uPVC	Retained
P-263	J-194	J-195	74	110	PVC	110	uPVC	Retained
P-264	J-196	J-194	109.5	110	PVC	110	uPVC	Retained
P-265	J-194	J-197	157	110	PVC	110	uPVC	Retained
P-266	J-198	J-199	120.5	110	PVC	110	uPVC	Retained
P-267	J-190	J-200	100.5	110	PVC	110	uPVC	Retained
P-268	J-200	J-201	85	110	PVC	110	uPVC	Retained
P-269	J-189	J-202	86.5	110	PVC	110	uPVC	Retained
P-27	J-20	J-3	54.5	110	PVC	180	HDPE	Replacement
P-270	J-202	J-203	36	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-271	J-203	J-204	106	110	PVC	110	uPVC	Retained
P-272	J-204	J-205	45.5	110	PVC	110	uPVC	Retained
P-273	J-205	J-206	36	110	PVC	110	uPVC	Retained
P-274	J-206	J-207	156	110	PVC	110	uPVC	Retained
P-275	J-207	J-208	36.5	110	PVC	110	uPVC	Retained
P-276	J-207	J-209	13	110	PVC	110	uPVC	Retained
P-277	J-209	J-203	21.5	110	PVC	110	uPVC	Retained
P-278	J-209	J-210	146.5	110	PVC	110	uPVC	Retained
P-279	J-204	J-200	144.5	110	PVC	110	uPVC	Retained
P-28	J-20	J-21	101.5	110	PVC	160	HDPE	Replacement
P-280	J-77	J-211	84	110	PVC	110	uPVC	Retained
P-281	J-211	J-212	43.5	110	PVC	110	uPVC	Retained
P-282	J-212	J-172	23.5	110	PVC	110	uPVC	Retained
P-283	J-212	J-213	40	110	PVC	110	uPVC	Retained
P-284	J-213	J-76	43.5	110	PVC	110	uPVC	Retained
P-285	J-173	J-214	40.5	110	PVC	110	uPVC	Retained
P-286	J-214	J-75	70	110	PVC	110	uPVC	Retained
P-287	J-214	J-215	46.5	110	PVC	110	uPVC	Retained
P-288	J-215	J-216	38	110	PVC	110	uPVC	Retained
P-289	J-216	J-54	68.5	110	PVC	110	uPVC	Retained
P-29	J-21	J-2	57	110	PVC	225	HDPE	Replacement
P-290	J-215	J-52	113.5	110	PVC	110	uPVC	Retained
P-291	J-46	J-217	27.5	110	PVC	160	HDPE	Replacement
P-292	J-217	J-218	23.5	110	PVC	160	HDPE	Replacement
P-293	J-218	J-219	21.5	110	PVC	140	HDPE	Replacement
P-294	J-220	J-221	24.5	110	PVC	110	uPVC	Retained
P-295	J-221	J-222	42	110	PVC	110	uPVC	Retained
P-296	J-222	J-217	73.5	110	PVC	110	uPVC	Retained
P-297	J-222	J-223	25	110	PVC	110	uPVC	Retained
P-298	J-47	J-224	4.5	110	PVC	110	uPVC	Retained
P-299	J-224	J-225	70	110	PVC	225	HDPE	Replacement
P-3	J-2	J-3	99	110	PVC	225	HDPE	Replacement
P-30	J-2	J-22	11.5	110	PVC	110	uPVC	Retained
P-300	J-225	J-226	58	110	PVC	140	HDPE	Replacement
P-301	J-225	J-227	130.5	110	PVC	200	HDPE	Replacement
P-302	J-227	J-228	25	110	PVC	180	HDPE	Replacement
P-303	J-228	J-229	55.5	110	PVC	200	HDPE	Replacement
P-304	J-229	J-230	55.5	110	PVC	125	HDPE	Replacement
P-305	J-230	J-231	236.5	110	PVC	125	HDPE	Replacement
P-306	J-231	J-232	197.5	110	PVC	125	HDPE	Replacement
P-307	J-232	J-230	50	110	PVC	110	uPVC	Retained
P-308	J-230	J-233	90.5	110	PVC	160	HDPE	Replacement
P-309	J-233	J-234	142.5	110	PVC	110	uPVC	Retained
P-31	J-21	J-23	83	110	PVC	110	uPVC	Retained
P-310	J-234	J-235	15	110	PVC	125	HDPE	Replacement
P-311	J-235	J-236	56	110	PVC	110	uPVC	Retained
P-312	J-236	J-237	57.5	110	PVC	110	uPVC	Retained
P-313	J-237	J-233	87	110	PVC	125	HDPE	Replacement
P-314	J-232	J-238	56.5	110	PVC	110	uPVC	Retained
P-315	J-234	J-239	53	110	PVC	110	uPVC	Retained
P-316	J-239	J-240	42	110	PVC	110	uPVC	Retained
P-317	J-235	J-241	135	110	PVC	110	uPVC	Retained
P-318	J-241	J-242	57.5	110	PVC	110	uPVC	Retained
P-319	J-242	J-243	58	110	PVC	110	uPVC	Retained
P-32	J-23	J-11	57	110	PVC	225	HDPE	Replacement
P-320	J-243	J-244	115.5	110	PVC	110	uPVC	Retained
P-321	J-244	J-245	62.5	110	PVC	110	uPVC	Retained
P-322	J-245	J-241	54	110	PVC	110	uPVC	Retained
P-323	J-236	J-245	136	110	PVC	110	uPVC	Retained
P-324	J-237	J-244	137.5	110	PVC	110	uPVC	Retained
P-325	J-244	J-246	57	110	PVC	110	uPVC	Retained
P-326	J-246	J-247	149.5	110	PVC	110	uPVC	Retained
P-327	J-247	J-248	49.5	110	PVC	110	uPVC	Retained
P-328	J-248	J-243	52	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-329	J-248	J-249	66.5	110	PVC	110	uPVC	Retained
P-33	J-11	J-24	71.5	110	PVC	160	HDPE	Replacement
P-330	J-249	J-250	21	110	PVC	110	uPVC	Retained
P-331	J-250	J-251	45	110	PVC	110	uPVC	Retained
P-332	J-249	J-252	64.5	110	PVC	110	uPVC	Retained
P-333	J-252	J-253	86.5	110	PVC	110	uPVC	Retained
P-334	J-253	J-254	63	110	PVC	110	uPVC	Retained
P-335	J-254	J-255	69.5	110	PVC	110	uPVC	Retained
P-336	J-252	J-256	69	110	PVC	110	uPVC	Retained
P-337	J-256	J-257	97.5	110	PVC	110	uPVC	Retained
P-338	J-257	J-258	80	110	PVC	110	uPVC	Retained
P-339	J-258	J-254	177	110	PVC	110	uPVC	Retained
P-34	J-24	J-13	68.5	110	PVC	125	HDPE	Replacement
P-340	J-258	J-259	110.5	110	PVC	110	uPVC	Retained
P-341	J-259	J-260	37	110	PVC	110	uPVC	Retained
P-342	J-260	J-261	59.5	110	PVC	110	uPVC	Retained
P-343	J-261	J-262	86.5	110	PVC	110	uPVC	Retained
P-344	J-262	J-263	61.5	110	PVC	110	uPVC	Retained
P-345	J-263	J-264	40.5	110	PVC	110	uPVC	Retained
P-346	J-264	J-265	85.5	110	PVC	110	uPVC	Retained
P-347	J-265	J-266	100.5	110	PVC	110	uPVC	Retained
P-348	J-266	J-267	82.5	110	PVC	110	uPVC	Retained
P-349	J-267	J-268	82.5	110	PVC	110	uPVC	Retained
P-35	J-24	J-25	54	110	PVC	180	HDPE	Replacement
P-350	J-266	J-269	41.5	110	PVC	110	uPVC	Retained
P-351	J-269	J-270	61.5	110	PVC	110	uPVC	Retained
P-352	J-270	J-271	80.5	110	PVC	110	uPVC	Retained
P-353	J-271	J-272	36	110	PVC	110	uPVC	Retained
P-354	J-272	J-273	46	110	PVC	110	uPVC	Retained
P-355	J-273	J-274	56.5	110	PVC	110	uPVC	Retained
P-356	J-274	J-275	67	110	PVC	110	uPVC	Retained
P-357	J-275	J-276	6.5	110	PVC	110	uPVC	Retained
P-358	J-276	J-277	28.5	110	PVC	110	uPVC	Retained
P-359	J-277	J-278	30.5	110	PVC	110	uPVC	Retained
P-36	J-25	J-23	71.5	110	PVC	160	HDPE	Replacement
P-360	J-278	J-265	117	110	PVC	110	uPVC	Retained
P-361	J-278	J-279	185.5	110	PVC	110	uPVC	Retained
P-362	J-277	J-280	218.5	110	PVC	110	uPVC	Retained
P-363	J-280	J-281	31	110	PVC	110	uPVC	Retained
P-364	J-281	J-262	105.5	110	PVC	110	uPVC	Retained
P-365	J-281	J-282	73.5	110	PVC	110	uPVC	Retained
P-366	J-282	J-283	32	110	PVC	110	uPVC	Retained
P-367	J-283	J-284	77	110	PVC	110	uPVC	Retained
P-368	J-284	J-280	6.5	110	PVC	110	uPVC	Retained
P-369	J-285	J-286	26.5	110	PVC	110	uPVC	Retained
P-37	J-23	J-26	64.5	110	PVC	180	HDPE	Replacement
P-370	J-286	J-287	24.5	110	PVC	110	uPVC	Retained
P-371	J-287	J-261	30.5	110	PVC	110	uPVC	Retained
P-372	J-287	J-288	54.5	110	PVC	110	uPVC	Retained
P-373	J-288	J-260	34.5	110	PVC	110	uPVC	Retained
P-374	J-288	J-289	8.5	110	PVC	110	uPVC	Retained
P-375	J-289	J-290	48	110	PVC	110	uPVC	Retained
P-376	J-290	J-291	47.5	110	PVC	110	uPVC	Retained
P-377	J-291	J-283	73	110	PVC	110	uPVC	Retained
P-378	J-291	J-292	37.5	110	PVC	110	uPVC	Retained
P-379	J-292	J-293	150.5	110	PVC	110	uPVC	Retained
P-38	J-26	J-27	81	110	PVC	110	uPVC	Retained
P-380	J-293	J-284	36.5	110	PVC	110	uPVC	Retained
P-381	J-294	J-293	64	110	PVC	110	uPVC	Retained
P-382	J-293	J-295	38	110	PVC	110	uPVC	Retained
P-383	J-295	J-296	154	110	PVC	110	uPVC	Retained
P-384	J-296	J-292	40.5	110	PVC	110	uPVC	Retained
P-385	J-296	J-297	15.5	110	PVC	110	uPVC	Retained
P-386	J-297	J-298	16.5	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-387	J-298	J-299	110	110	PVC	110	uPVC	Retained
P-388	J-299	J-300	170	110	PVC	110	uPVC	Retained
P-389	J-300	J-301	92	110	PVC	110	uPVC	Retained
P-39	J-27	J-21	67	110	PVC	200	HDPE	Replacement
P-390	J-301	J-275	73	110	PVC	110	uPVC	Retained
P-391	J-301	J-302	38	110	PVC	110	uPVC	Retained
P-392	J-302	J-303	86	110	PVC	110	uPVC	Retained
P-393	J-303	J-300	37	110	PVC	110	uPVC	Retained
P-394	J-303	J-304	170	110	PVC	110	uPVC	Retained
P-395	J-304	J-305	56.5	110	PVC	110	uPVC	Retained
P-396	J-305	J-306	52.5	110	PVC	110	uPVC	Retained
P-397	J-306	J-298	36	110	PVC	110	uPVC	Retained
P-398	J-295	J-307	62	110	PVC	110	uPVC	Retained
P-399	J-304	J-308	35.5	110	PVC	110	uPVC	Retained
P-4	J-3	J-4	91.5	110	PVC	160	HDPE	Replacement
P-40	J-27	J-28	53.5	110	PVC	160	HDPE	Replacement
P-400	J-308	J-309	245	110	PVC	110	uPVC	Retained
P-401	J-309	J-302	40	110	PVC	110	uPVC	Retained
P-402	J-309	J-310	40.5	110	PVC	110	uPVC	Retained
P-403	J-308	J-311	33.5	110	PVC	110	uPVC	Retained
P-404	J-311	J-312	62	110	PVC	110	uPVC	Retained
P-405	J-312	J-305	75	110	PVC	110	uPVC	Retained
P-406	J-312	J-313	60	110	PVC	110	uPVC	Retained
P-407	J-313	J-306	91.5	110	PVC	110	uPVC	Retained
P-408	J-313	J-314	110	110	PVC	140	HDPE	Replacement
P-409	J-314	J-246	69	110	PVC	110	uPVC	Retained
P-41	J-28	J-29	48.5	110	PVC	125	HDPE	Replacement
P-410	J-246	J-315	138	110	PVC	110	uPVC	Retained
P-411	J-315	J-297	61.5	110	PVC	110	uPVC	Retained
P-412	J-315	J-316	94	110	PVC	110	uPVC	Retained
P-413	J-316	J-317	151.5	110	PVC	110	uPVC	Retained
P-414	J-317	J-318	72.5	110	PVC	110	uPVC	Retained
P-415	J-318	J-319	59	110	PVC	110	uPVC	Retained
P-416	J-319	J-317	98.5	110	PVC	110	uPVC	Retained
P-417	J-247	J-318	56	110	PVC	110	uPVC	Retained
P-418	J-319	J-315	77	110	PVC	110	uPVC	Retained
P-419	J-229	J-320	29	110	PVC	160	HDPE	Replacement
P-42	J-29	J-30	4	110	PVC	110	uPVC	Retained
P-420	J-320	J-321	114.5	110	PVC	160	HDPE	Replacement
P-421	J-321	J-314	101	110	PVC	160	HDPE	Replacement
P-422	J-321	J-322	86	110	PVC	110	uPVC	Retained
P-423	J-274	J-323	17	110	PVC	110	uPVC	Retained
P-424	J-323	J-324	31.5	110	PVC	110	uPVC	Retained
P-425	J-324	J-325	52.5	110	PVC	110	uPVC	Retained
P-426	J-325	J-272	8.5	110	PVC	110	uPVC	Retained
P-427	J-325	J-326	102	110	PVC	110	uPVC	Retained
P-428	J-326	J-327	48.5	110	PVC	110	uPVC	Retained
P-429	J-327	J-324	107	110	PVC	110	uPVC	Retained
P-43	J-30	J-31	39	110	PVC	160	HDPE	Replacement
P-430	J-326	J-328	16.5	110	PVC	110	uPVC	Retained
P-431	J-328	J-329	78	110	PVC	110	uPVC	Retained
P-432	J-329	J-330	35.5	110	PVC	110	uPVC	Retained
P-433	J-330	J-331	9	110	PVC	110	uPVC	Retained
P-434	J-331	J-332	30.5	110	PVC	110	uPVC	Retained
P-435	J-332	J-333	36	110	PVC	110	uPVC	Retained
P-436	J-333	J-327	52	110	PVC	110	uPVC	Retained
P-437	J-329	J-333	39	110	PVC	110	uPVC	Retained
P-438	J-332	J-334	37	110	PVC	140	HDPE	Replacement
P-439	J-334	J-335	15	110	PVC	110	uPVC	Retained
P-44	J-31	J-20	27	110	PVC	200	HDPE	Replacement
P-440	J-335	J-336	22.5	110	PVC	110	uPVC	Retained
P-441	J-336	J-337	119	110	PVC	110	uPVC	Retained
P-442	J-338	J-339	47	110	PVC	110	uPVC	Retained
P-443	J-339	J-335	70.5	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-444	J-334	J-340	69	110	PVC	110	uPVC	Retained
P-445	J-340	J-341	8.5	110	PVC	110	uPVC	Retained
P-446	J-341	J-342	47	110	PVC	110	uPVC	Retained
P-447	J-343	J-344	52	110	PVC	110	uPVC	Retained
P-448	J-344	J-345	26	110	PVC	110	uPVC	Retained
P-449	J-344	J-331	67	110	PVC	110	uPVC	Retained
P-45	J-31	J-32	89.5	110	PVC	140	HDPE	Replacement
P-450	J-231	J-346	54.5	110	PVC	160	HDPE	Replacement
P-46	J-32	J-19	26.5	110	PVC	160	HDPE	Replacement
P-47	J-32	J-33	131	110	PVC	140	HDPE	Replacement
P-48	J-33	J-34	37.5	110	PVC	110	uPVC	Retained
P-49	J-34	J-35	99.5	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	4.5	110	PVC	125	HDPE	Replacement
P-50	J-35	J-36	15.5	110	PVC	160	HDPE	Replacement
P-51	J-36	J-32	44	110	PVC	160	HDPE	Replacement
P-52	J-36	J-37	21	110	PVC	110	uPVC	Retained
P-53	J-37	J-38	34	110	PVC	125	HDPE	Replacement
P-54	J-38	J-30	33.5	110	PVC	160	HDPE	Replacement
P-55	J-29	J-39	213	110	PVC	125	HDPE	Replacement
P-56	J-39	J-40	25	110	PVC	110	uPVC	Retained
P-57	J-40	J-41	9	110	PVC	160	HDPE	Replacement
P-58	J-41	J-42	37.5	110	PVC	160	HDPE	Replacement
P-59	J-42	J-43	32	110	PVC	140	HDPE	Replacement
P-6	J-5	J-6	51.5	110	PVC	160	HDPE	Replacement
P-60	J-43	J-28	136	110	PVC	125	HDPE	Replacement
P-61	J-43	J-44	57.5	110	PVC	110	uPVC	Retained
P-62	J-44	J-27	124	110	PVC	180	HDPE	Replacement
P-63	J-44	J-45	101.5	110	PVC	110	uPVC	Retained
P-64	J-45	J-46	42	110	PVC	110	uPVC	Retained
P-65	J-46	J-47	67	110	PVC	160	HDPE	Replacement
P-66	J-47	J-26	79.5	110	PVC	180	HDPE	Replacement
P-67	J-42	J-48	59	110	PVC	110	uPVC	Retained
P-68	J-48	J-44	33	110	PVC	125	HDPE	Replacement
P-69	J-48	J-49	81.5	110	PVC	110	uPVC	Retained
P-7	J-6	J-7	15	110	PVC	160	HDPE	Replacement
P-70	J-49	J-45	39.5	110	PVC	110	uPVC	Retained
P-71	J-49	J-50	44.5	110	PVC	125	HDPE	Replacement
P-73	J-40	J-51	54.5	110	PVC	125	HDPE	Replacement
P-74	J-51	J-52	29.5	110	PVC	110	uPVC	Retained
P-75	J-52	J-53	22	110	PVC	110	uPVC	Retained
P-76	J-53	J-54	38.5	110	PVC	110	uPVC	Retained
P-77	J-54	J-55	20	110	PVC	110	uPVC	Retained
P-78	J-55	J-50	70	110	PVC	110	uPVC	Retained
P-79	J-50	J-56	79	110	PVC	110	uPVC	Retained
P-8	J-7	J-8	37.5	110	PVC	140	HDPE	Replacement
P-80	J-56	J-41	40	110	PVC	110	uPVC	Retained
P-81	J-53	J-56	60.5	110	PVC	110	uPVC	Retained
P-82	J-39	J-57	20	110	PVC	125	HDPE	Replacement
P-83	J-57	J-58	25.5	110	PVC	110	uPVC	Retained
P-84	J-58	J-38	223.5	110	PVC	110	uPVC	Retained
P-85	J-58	J-59	35.5	110	PVC	110	uPVC	Retained
P-86	J-59	J-37	231	110	PVC	110	uPVC	Retained
P-87	J-59	J-60	34.5	110	PVC	110	uPVC	Retained
P-88	J-60	J-61	69	110	PVC	110	uPVC	Retained
P-89	J-61	J-62	126.5	110	PVC	110	uPVC	Retained
P-9	J-8	J-9	140	110	PVC	140	HDPE	Replacement
P-90	J-62	J-35	42.5	110	PVC	140	HDPE	Replacement
P-91	J-34	J-63	6.5	110	PVC	140	HDPE	Replacement
P-92	J-63	J-64	58.5	110	PVC	110	uPVC	Retained
P-93	J-64	J-62	87	110	PVC	110	uPVC	Retained
P-94	J-64	J-65	124	110	PVC	110	uPVC	Retained
P-95	J-65	J-61	80.5	110	PVC	110	uPVC	Retained
P-96	J-65	J-66	20	110	PVC	110	uPVC	Retained
P-97	J-66	J-67	48.5	110	PVC	110	uPVC	Retained

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
P-98	J-67	J-68	39.5	110	PVC	110	uPVC	Retained
P-99	J-68	J-60	39	110	PVC	110	uPVC	Retained
PP-451	J-220	J-219	63	#N/A	#N/A	110	HDPE	New
PP-452	J-219	J-226	18	#N/A	#N/A	160	HDPE	New
PP-453	J-226	J-346	117	#N/A	#N/A	180	HDPE	New
PP-454	J-346	PJ-347	47.5	#N/A	#N/A	125	HDPE	New
PP-455	PJ-347	J-238	242.5	#N/A	#N/A	125	HDPE	New
PP-456	J-238	J-240	195.5	#N/A	#N/A	140	HDPE	New
PP-457	J-240	J-251	285.5	#N/A	#N/A	110	HDPE	New
PP-458	J-251	J-255	222.5	#N/A	#N/A	110	HDPE	New
PP-459	J-253	J-257	115.5	#N/A	#N/A	110	HDPE	New
PP-460	J-256	PJ-348	38	#N/A	#N/A	110	HDPE	New
PP-461	J-242	J-250	103	#N/A	#N/A	110	HDPE	New
PP-462	J-291	J-316	62	#N/A	#N/A	110	HDPE	New
PP-463	PJ-349	J-259	70	#N/A	#N/A	110	HDPE	New
PP-464	J-290	PJ-350	23.5	#N/A	#N/A	110	HDPE	New
PP-465	J-289	PJ-351	23.5	#N/A	#N/A	110	HDPE	New
PP-466	J-286	PJ-352	37	#N/A	#N/A	110	HDPE	New
PP-467	J-304	J-299	38.5	#N/A	#N/A	110	HDPE	New
PP-468	J-311	J-310	231	#N/A	#N/A	110	HDPE	New
PP-469	PJ-353	J-323	23.5	#N/A	#N/A	110	HDPE	New
PP-470	J-276	PJ-354	42.5	#N/A	#N/A	110	HDPE	New
PP-471	J-270	PJ-355	73	#N/A	#N/A	110	HDPE	New
PP-472	PJ-355	PJ-356	25	#N/A	#N/A	110	HDPE	New
PP-473	PJ-355	PJ-357	43.5	#N/A	#N/A	110	HDPE	New
PP-474	PJ-357	J-269	76.5	#N/A	#N/A	110	HDPE	New
PP-475	J-267	PJ-357	37.5	#N/A	#N/A	110	HDPE	New
PP-476	PJ-357	PJ-358	40.5	#N/A	#N/A	110	HDPE	New
PP-477	PJ-358	PJ-359	25.5	#N/A	#N/A	110	HDPE	New
PP-478	PJ-358	PJ-360	34.5	#N/A	#N/A	110	HDPE	New
PP-479	PJ-360	PJ-361	28	#N/A	#N/A	110	HDPE	New
PP-480	PJ-360	PJ-362	88	#N/A	#N/A	110	HDPE	New
PP-481	J-268	PJ-363	58.5	#N/A	#N/A	110	HDPE	New
PP-482	PJ-363	PJ-364	37	#N/A	#N/A	110	HDPE	New
PP-483	PJ-364	PJ-365	39	#N/A	#N/A	110	HDPE	New
PP-484	PJ-365	PJ-366	29	#N/A	#N/A	110	HDPE	New
PP-485	PJ-366	PJ-367	34.5	#N/A	#N/A	110	HDPE	New
PP-486	PJ-367	J-268	95.5	#N/A	#N/A	110	HDPE	New

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
PP-487	PJ-363	PJ-366	59	#N/A	#N/A	110	HDPE	New
PP-488	PJ-365	PJ-368	90	#N/A	#N/A	110	HDPE	New
PP-489	PJ-368	PJ-369	48	#N/A	#N/A	110	HDPE	New
PP-490	PJ-369	PJ-370	40	#N/A	#N/A	110	HDPE	New
PP-491	PJ-370	PJ-367	149	#N/A	#N/A	110	HDPE	New
PP-492	PJ-371	PJ-372	45.5	#N/A	#N/A	110	HDPE	New
PP-493	PJ-372	PJ-368	46	#N/A	#N/A	110	HDPE	New
PP-494	PJ-372	PJ-373	37.5	#N/A	#N/A	110	HDPE	New
PP-495	PJ-373	PJ-369	49.5	#N/A	#N/A	110	HDPE	New
PP-496	PJ-373	PJ-374	303.5	#N/A	#N/A	110	HDPE	New
PP-497	PJ-374	J-343	9.5	#N/A	#N/A	110	HDPE	New
PP-498	PJ-374	PJ-375	33	#N/A	#N/A	140	HDPE	New
PP-499	PJ-375	J-342	7	#N/A	#N/A	110	HDPE	New
PP-500	PJ-375	PJ-376	21.5	#N/A	#N/A	140	HDPE	New
PP-501	PJ-376	J-338	8.5	#N/A	#N/A	110	HDPE	New
PP-502	PJ-376	PJ-377	25.5	#N/A	#N/A	160	HDPE	New
PP-503	PJ-377	J-337	8	#N/A	#N/A	110	HDPE	New
PP-504	J-339	J-340	12.5	#N/A	#N/A	110	HDPE	New
PP-505	J-341	PJ-378	13	#N/A	#N/A	110	HDPE	New
PP-506	PJ-377	PJ-379	294	#N/A	#N/A	180	HDPE	New
PP-507	PJ-379	J-123	27	#N/A	#N/A	180	HDPE	New
PP-508	J-105	PJ-380	27	#N/A	#N/A	110	HDPE	New
PP-509	PJ-380	PJ-379	189.5	#N/A	#N/A	110	HDPE	New
PP-510	PJ-380	PJ-381	40.5	#N/A	#N/A	110	HDPE	New
PP-511	PJ-381	J-104	28	#N/A	#N/A	110	HDPE	New
PP-512	PJ-381	PJ-382	98.5	#N/A	#N/A	110	HDPE	New
PP-513	PJ-382	J-101	45.5	#N/A	#N/A	110	HDPE	New
PP-514	PJ-382	PJ-383	47	#N/A	#N/A	110	HDPE	New
PP-515	PJ-383	J-100	54.5	#N/A	#N/A	110	HDPE	New
PP-516	J-100	PJ-384	30.5	#N/A	#N/A	110	HDPE	New
PP-517	PJ-383	PJ-385	105	#N/A	#N/A	110	HDPE	New
PP-518	PJ-385	J-97	27.5	#N/A	#N/A	110	HDPE	New
PP-519	J-97	PJ-386	26.5	#N/A	#N/A	110	HDPE	New
PP-520	PJ-386	PJ-387	21	#N/A	#N/A	110	HDPE	New
PP-521	PJ-387	PJ-388	37	#N/A	#N/A	110	HDPE	New
PP-522	PJ-388	PJ-389	33	#N/A	#N/A	110	HDPE	New
PP-523	PJ-389	PJ-390	19	#N/A	#N/A	110	HDPE	New
PP-524	PJ-390	PJ-386	70	#N/A	#N/A	110	HDPE	New
PP-525	PJ-390	J-94	29	#N/A	#N/A	110	HDPE	New
PP-526	J-94	PJ-391	66.5	#N/A	#N/A	110	HDPE	New
PP-527	PJ-391	PJ-392	33	#N/A	#N/A	110	HDPE	New
PP-528	PJ-392	J-95	66.5	#N/A	#N/A	110	HDPE	New
PP-529	PJ-392	PJ-393	26.5	#N/A	#N/A	110	HDPE	New
PP-530	PJ-393	J-96	68.5	#N/A	#N/A	110	HDPE	New
PP-531	PJ-385	PJ-394	123.5	#N/A	#N/A	110	HDPE	New
PP-532	PJ-394	PJ-395	451.5	#N/A	#N/A	110	HDPE	New
PP-533	PJ-395	J-155	152.5	#N/A	#N/A	110	HDPE	New
PP-534	PJ-394	PJ-396	78	#N/A	#N/A	110	HDPE	New
PP-535	PJ-396	J-88	90	#N/A	#N/A	110	HDPE	New
PP-536	J-92	PJ-397	24.5	#N/A	#N/A	110	HDPE	New
PP-537	PJ-396	PJ-388	56.5	#N/A	#N/A	110	HDPE	New
PP-538	J-128	PJ-398	14	#N/A	#N/A	110	HDPE	New
PP-539	J-98	J-109	55	#N/A	#N/A	110	HDPE	New
PP-540	J-109	J-66	45.5	#N/A	#N/A	110	HDPE	New
PP-541	J-102	J-108	57.5	#N/A	#N/A	110	HDPE	New
PP-542	J-67	J-81	115	#N/A	#N/A	110	HDPE	New
PP-543	J-148	PJ-399	28.5	#N/A	#N/A	110	HDPE	New
PP-544	J-153	J-158	73	#N/A	#N/A	110	HDPE	New
PP-545	J-158	J-162	82.5	#N/A	#N/A	110	HDPE	New
PP-546	J-159	J-154	71.5	#N/A	#N/A	110	HDPE	New
PP-547	J-179	J-175	45	#N/A	#N/A	110	HDPE	New
PP-548	J-188	J-210	117.5	#N/A	#N/A	110	HDPE	New
PP-549	J-210	J-208	105.5	#N/A	#N/A	110	HDPE	New
PP-550	J-208	PJ-400	159.5	#N/A	#N/A	110	HDPE	New

BOQ for Z1								
				Existing		2041 Requirement as per Desig		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Action Required
PP-551	PJ-400	J-206	38	#N/A	#N/A	110	HDPE	New
PP-552	J-205	J-201	138	#N/A	#N/A	110	HDPE	New
PP-553	J-201	J-199	85.5	#N/A	#N/A	110	HDPE	New
PP-554	J-199	J-195	174.5	#N/A	#N/A	110	HDPE	New
PP-555	J-195	J-220	175.5	#N/A	#N/A	110	HDPE	New
PP-556	J-221	J-218	67	#N/A	#N/A	110	HDPE	New
PP-557	J-193	J-216	26	#N/A	#N/A	110	HDPE	New
PP-558	J-191	PJ-401	33	#N/A	#N/A	110	HDPE	New
PP-559	J-213	PJ-402	22	#N/A	#N/A	110	HDPE	New
PP-560	J-171	J-141	28	#N/A	#N/A	110	HDPE	New
PP-561	J-141	J-135	37	#N/A	#N/A	110	HDPE	New
PP-562	J-135	J-134	42.5	#N/A	#N/A	110	HDPE	New
PP-563	J-134	J-79	39	#N/A	#N/A	110	HDPE	New
PP-564	PJ-403	J-168	26.5	#N/A	#N/A	110	HDPE	New
PP-565	J-73	J-58	55	#N/A	#N/A	110	HDPE	New
PP-566	J-71	J-59	54	#N/A	#N/A	110	HDPE	New
PP-567	J-187	PJ-404	22	#N/A	#N/A	110	HDPE	New
PP-568	J-224	PJ-405	63.5	#N/A	#N/A	225	HDPE	New
PP-569	PJ-405	PJ-406	46	#N/A	#N/A	110	HDPE	New
PP-570	PJ-407	J-25	37	#N/A	#N/A	110	HDPE	New
PP-571	J-25	PJ-405	28.5	#N/A	#N/A	225	HDPE	New
PP-572	J-13	PJ-408	23.5	#N/A	#N/A	110	HDPE	New
PP-573	PJ-409	J-14	21	#N/A	#N/A	110	HDPE	New
PP-574	J-15	PJ-410	22.5	#N/A	#N/A	110	HDPE	New
PP-575	J-227	PJ-411	34.5	#N/A	#N/A	110	HDPE	New
PP-576	PJ-411	PJ-412	21	#N/A	#N/A	110	HDPE	New
PP-577	PJ-411	PJ-413	24	#N/A	#N/A	110	HDPE	New
PP-578	PJ-413	J-228	34	#N/A	#N/A	110	HDPE	New
PP-579	PJ-413	PJ-414	13.5	#N/A	#N/A	110	HDPE	New
PP-580	J-320	PJ-415	31	#N/A	#N/A	110	HDPE	New
PP-581	J-2	J-9	64	#N/A	#N/A	160	HDPE	New
PP-582	J-16	PJ-416	22.5	#N/A	#N/A	110	HDPE	New
PP-583	J-17	PJ-417	23	#N/A	#N/A	160	HDPE	New
PP-584	J-19	J-112	83	#N/A	#N/A	125	HDPE	New
PP-585	PJ-418	J-113	33	#N/A	#N/A	110	HDPE	New
PP-586	J-113	J-5	58	#N/A	#N/A	180	HDPE	New
PP-587	J-114	PJ-419	45	#N/A	#N/A	125	HDPE	New
PP-588	PJ-419	PJ-420	34	#N/A	#N/A	110	HDPE	New
PP-589	J-124	PJ-421	19	#N/A	#N/A	110	HDPE	New
PP-590	PJ-421	PJ-419	52.5	#N/A	#N/A	110	HDPE	New
PP-591	PJ-421	PJ-422	27	#N/A	#N/A	110	HDPE	New
PP-592	PJ-422	PJ-423	25.5	#N/A	#N/A	110	HDPE	New
PP-593	PJ-422	PJ-424	53	#N/A	#N/A	110	HDPE	New
PP-594	PJ-424	PJ-425	24	#N/A	#N/A	110	HDPE	New
PP-595	J-126	PJ-426	17	#N/A	#N/A	110	HDPE	New
PP-596	PJ-426	PJ-424	37.5	#N/A	#N/A	110	HDPE	New
PP-597	PJ-427	PJ-426	25.5	#N/A	#N/A	110	HDPE	New
PP-598	PJ-426	J-122	78	#N/A	#N/A	110	HDPE	New
PP-599	PJ-428	J-263	69.5	#N/A	#N/A	110	HDPE	New
PP-600	PJ-429	J-264	64	#N/A	#N/A	110	HDPE	New
PP-601	J-328	PJ-430	12	#N/A	#N/A	110	HDPE	New
PP-602	J-330	PJ-431	8	#N/A	#N/A	110	HDPE	New
PP-603	J-239	PJ-432	19	#N/A	#N/A	110	HDPE	New
			37247.00					

Zone -2

Distribution Network Design Output: Zone 2

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	40	1.796	21.521	165.79749	T-1	J-1	235.88	-9,145.13	5,957.48	355	1.68	5.9	165.7975	HDPE	145	0.24
P-10	65.5	20.164	19.805	9.50004	J-9	J-10	235.9	-9,226.31	6,187.07	140	0.62	2.75	9.50004	HDPE	145	0.18
P-100	52.5	19.603	19.617	-0.71529	J-85	J-86	234.44	-9,953.65	5,965.00	110	0.08	0.07	0.71529	uPVC	145	0
P-101	57.5	19.603	19.392	0.39186	J-85	J-87	234.44	-9,953.65	5,965.00	110	0.04	0.02	0.39186	uPVC	145	0
P-102	52.5	19.392	19.255	-0.59873	J-87	J-84	234.65	-9,955.75	6,022.28	110	0.06	0.05	0.59873	uPVC	145	0
P-103	32	19.392	19.421	0.53671	J-87	J-57	234.65	-9,955.75	6,022.28	110	0.06	0.04	0.53671	uPVC	145	0
P-104	59.5	18.83	18.551	-0.17706	J-83	J-88	235.59	-9,905.97	5,861.49	110	0.02	0.01	0.17706	uPVC	145	0
P-105	61.5	18.551	18.471	0.19623	J-88	J-89	235.87	-9,909.32	5,802.24	160	0.01	0	0.19623	uPVC	145	0
P-106	200.5	18.471	18.228	1.28421	J-89	J-90	235.95	-9,902.90	5,741.31	110	0.14	0.22	1.28421	uPVC	145	0.04
P-107	57	18.228	18.229	-0.32387	J-90	J-91	236.15	-9,876.45	5,542.46	110	0.03	0.02	0.32387	uPVC	145	0
P-108	110	18.229	18.231	0.69502	J-91	J-92	236.15	-9,866.02	5,486.33	110	0.07	0.07	0.69502	uPVC	145	0.01
P-109	228	18.231	18.254	-1.99361	J-92	J-93	236.14	-9,852.39	5,377.29	110	0.21	0.49	1.99361	uPVC	145	0.11
P-11	56	19.805	19.571	7.53528	J-10	J-11	236.08	-9,291.33	6,178.86	125	0.61	3.11	7.53528	HDPE	145	0.17
P-110	58.5	18.254	18.345	-1.22141	J-93	J-94	236.23	-9,644.42	5,307.86	110	0.13	0.2	1.22141	uPVC	145	0.01
P-111	217	18.345	18.267	1.67887	J-94	J-95	236.15	-9,617.33	5,359.59	110	0.18	0.36	1.67887	uPVC	145	0.08
P-112	90.5	18.267	18.229	1.84152	J-95	J-91	236.15	-9,776.20	5,498.35	110	0.19	0.43	1.84152	uPVC	145	0.04
P-113	93	18.228	18.267	-1.82319	J-90	J-96	236.15	-9,876.45	5,542.46	110	0.19	0.42	1.82319	uPVC	145	0.04
P-114	55.5	18.267	18.267	-0.26128	J-96	J-95	236.15	-9,784.00	5,553.36	110	0.03	0.01	0.26128	uPVC	145	0
P-115	88	18.267	18.306	-1.86431	J-95	J-97	236.15	-9,776.20	5,498.35	110	0.2	0.44	1.86431	uPVC	145	0.04
P-116	144.5	18.306	18.38	-2.03317	J-97	J-98	236.15	-9,688.76	5,509.02	110	0.21	0.51	2.03317	uPVC	145	0.07
P-117	55	18.38	18.345	2.26602	J-98	J-94	236.15	-9,591.06	5,408.03	110	0.24	0.63	2.26602	uPVC	145	0.03
P-118	279.5	18.345	18.568	-2.58227	J-94	J-99	236.15	-9,617.33	5,359.59	110	0.27	0.8	2.58227	uPVC	145	0.22
P-119	232	18.568	18.38	2.60812	J-99	J-98	236.15	-9,370.60	5,396.54	110	0.27	0.81	2.60812	uPVC	145	0.19
P-12	237.5	19.571	19.131	9.64168	J-11	J-12	236.14	-9,296.26	6,234.69	140	0.63	2.83	9.64168	HDPE	145	0.67
P-120	61.5	18.38	18.455	-3.26554	J-98	J-100	236.15	-9,591.06	5,408.03	110	0.34	1.23	3.26554	uPVC	145	0.08
P-121	146	18.455	18.455	1.81493	J-100	J-101	236.15	-9,562.73	5,462.63	110	0.19	0.41	1.81493	HDPE	145	0.06
P-122	61.5	18.455	18.376	3.34626	J-101	J-102	236.09	-9,636.11	5,573.99	110	0.35	1.29	3.34626	uPVC	145	0.08
P-123	4.5	18.376	18.36	3.2238	J-102	J-103	236.09	-9,697.18	5,568.34	110	0.34	1.2	3.2238	uPVC	145	0.01
P-124	55.5	18.36	18.306	0.75115	J-103	J-97	236.1	-9,696.96	5,563.76	110	0.08	0.08	0.75115	uPVC	145	0
P-125	87.5	18.36	18.267	2.00121	J-103	J-96	236.1	-9,696.96	5,563.76	110	0.21	0.5	2.00121	uPVC	145	0.04
P-126	57.5	18.267	18.269	-0.49826	J-96	J-104	236.15	-9,784.00	5,553.36	110	0.05	0.04	0.49826	uPVC	145	0

Distribution Network Design Output: Zone 2

P-127	161	18.269	18.336	-0.55253	J-104	J-105	236.15	-9,792.39	5,610.01	110	0.06	0.05	0.55253	uPVC	145	0.01
P-128	83.5	18.336	18.296	-3.59384	J-105	J-106	236.09	-9,850.22	5,742.51	160	0.18	0.24	3.59384	uPVC	145	0.02
P-129	155	18.296	18.269	1.13869	J-106	J-104	236.15	-9,766.57	5,744.04	110	0.12	0.17	1.13869	uPVC	145	0.03
P-13	56.5	19.131	19.301	-5.29255	J-12	J-13	235.91	-9,533.38	6,218.60	110	0.56	3.01	5.29255	uPVC	145	0.17
P-130	52.5	18.336	18.471	2.09258	J-105	J-89	236.09	-9,850.22	5,742.51	160	0.1	0.09	2.09258	uPVC	145	0
P-131	56.5	18.296	18.327	-5.67488	J-106	J-107	236.15	-9,766.57	5,744.04	160	0.28	0.55	5.67488	uPVC	145	0.03
P-132	57	18.327	18.626	-7.27589	J-107	J-79	236.15	-9,710.12	5,747.64	160	0.36	0.88	7.27589	uPVC	145	0.05
P-133	194	18.626	18.551	5.62409	J-79	J-88	235.9	-9,715.29	5,804.33	160	0.28	0.54	5.62409	uPVC	145	0.11
P-134	180	18.327	18.376	0.66345	J-107	J-102	236.15	-9,710.12	5,747.64	110	0.07	0.06	0.66345	uPVC	145	0.01
P-135	112	18.455	18.572	-2.5519	J-101	J-108	236.09	-9,636.11	5,573.99	110	0.27	0.78	2.5519	uPVC	145	0.09
P-136	122.5	18.572	18.759	-1.31886	J-108	J-78	236.06	-9,641.71	5,685.77	110	0.14	0.23	1.31886	uPVC	145	0.03
P-137	57.5	18.759	18.842	-9.49852	J-78	J-109	235.9	-9,654.59	5,807.75	160	0.47	1.43	9.49852	uPVC	145	0.08
P-138	116.5	18.842	18.699	2.43074	J-109	J-110	235.9	-9,597.02	5,804.44	110	0.26	0.71	2.43074	uPVC	145	0.08
P-139	49	18.699	18.572	2.13867	J-110	J-108	235.96	-9,592.92	5,687.95	110	0.23	0.56	2.13867	uPVC	145	0.03
P-14	51.5	19.131	19.067	8.60279	J-12	J-14	235.91	-9,533.38	6,218.60	125	0.7	3.97	8.60279	HDPE	145	0.2
P-140	82	18.699	18.582	-0.49863	J-110	J-111	235.96	-9,592.92	5,687.95	110	0.05	0.04	0.49863	uPVC	145	0
P-141	111	18.582	18.497	1.00202	J-111	J-112	236.08	-9,584.84	5,607.08	110	0.11	0.14	1.00202	uPVC	145	0.02
P-142	53.5	18.497	18.455	2.56451	J-112	J-100	236.15	-9,541.74	5,511.84	110	0.27	0.79	2.56451	uPVC	145	0.04
P-143	177.5	18.455	18.761	-3.91644	J-100	J-113	236.15	-9,562.73	5,462.63	110	0.41	1.72	3.91644	uPVC	145	0.31
P-144	113.5	18.761	19.169	-8.15944	J-113	J-114	236.15	-9,386.11	5,473.10	125	0.66	3.6	8.15944	HDPE	145	0.41
P-145	70.5	19.169	19.023	11.27874	J-114	J-115	236.15	-9,278.72	5,509.56	140	0.73	3.78	11.27874	HDPE	145	0.27
P-146	51	19.023	18.779	5.83006	J-115	J-116	236.03	-9,260.32	5,441.25	110	0.61	3.6	5.83006	uPVC	145	0.18
P-147	51	18.779	18.688	2.626	J-116	J-117	236.09	-9,246.20	5,392.31	110	0.28	0.82	2.626	uPVC	145	0.04
P-148	105	18.688	18.579	2.12742	J-117	J-118	236.14	-9,227.02	5,345.07	110	0.22	0.56	2.12742	uPVC	145	0.06
P-149	54	18.579	18.62	-2.14331	J-118	J-119	236.19	-9,326.23	5,311.23	110	0.23	0.56	2.14331	uPVC	145	0.03
P-15	40.5	19.067	19.031	6.50419	J-14	J-15	235.77	-9,537.98	6,269.83	125	0.53	2.37	6.50419	HDPE	145	0.1
P-150	40.5	18.62	18.65	-0.11999	J-119	J-120	236.18	-9,328.33	5,365.25	110	0.01	0	0.11999	uPVC	145	0
P-151	10.5	18.65	18.681	-7.30521	J-120	J-121	236.15	-9,340.52	5,403.92	125	0.6	2.93	7.30521	HDPE	145	0.03
P-152	89.5	18.681	19.023	-4.77451	J-121	J-115	236.15	-9,345.36	5,413.38	110	0.5	2.49	4.77451	uPVC	145	0.22
P-153	86.5	18.62	18.779	-2.60172	J-119	J-116	236.18	-9,328.33	5,365.25	110	0.27	0.81	2.60172	uPVC	145	0.07
P-154	31	18.568	18.65	-6.92289	J-99	J-120	236.15	-9,370.60	5,396.54	125	0.56	2.66	6.92289	HDPE	145	0.08
P-155	72.5	18.681	18.761	-3.08196	J-121	J-113	236.15	-9,345.36	5,413.38	110	0.32	1.11	3.08196	uPVC	145	0.08
P-156	325	18.254	18.579	-2.72499	J-93	J-118	236.23	-9,644.42	5,307.86	110	0.29	0.88	2.72499	uPVC	145	0.29
P-157	299.5	18.497	19.07	-3.04438	J-112	J-122	236.15	-9,541.74	5,511.84	110	0.32	1.08	3.04438	uPVC	145	0.32
P-158	60.5	19.07	18.945	11.59262	J-122	J-123	235.9	-9,494.13	5,804.34	160	0.58	2.07	11.59262	uPVC	145	0.13
P-159	42.5	18.945	18.842	12.62099	J-123	J-109	235.9	-9,554.68	5,804.85	160	0.63	2.43	12.62099	uPVC	145	0.1
P-16	69.5	19.031	18.669	5.98271	J-15	J-16	235.71	-9,578.37	6,267.86	110	0.63	3.78	5.98271	uPVC	145	0.26
P-160	202.5	18.582	18.945	-2.76385	J-111	J-123	236.08	-9,584.84	5,607.08	110	0.29	0.9	2.76385	uPVC	145	0.18

Distribution Network Design Output: Zone 2

P-161	119.5	18.945	19.286	-5.1496	J-123	J-124	235.9	-9,554.68	5,804.85	110	0.54	2.86	5.1496	uPVC	145	0.34
P-162	43	19.286	19.063	9.95252	J-124	J-77	235.9	-9,563.91	5,923.90	125	0.81	5.2	9.95252	HDPE	145	0.22
P-163	60.5	19.286	19.509	-15.8146	J-124	J-125	235.9	-9,563.91	5,923.90	160	0.79	3.69	15.8146	HDPE	145	0.22
P-164	37	19.509	19.429	4.42637	J-125	J-126	235.9	-9,504.39	5,935.70	110	0.47	2.16	4.42637	HDPE	145	0.08
P-165	94.5	19.429	19.07	16.08856	J-126	J-122	235.9	-9,500.28	5,898.76	160	0.8	3.81	16.08856	HDPE	145	0.36
P-166	193	19.509	20.593	-19.6791	J-125	J-127	235.9	-9,504.39	5,935.70	160	0.98	5.53	19.6791	HDPE	145	1.07
P-167	32.5	20.593	21.026	-28.92611	J-127	J-128	235.88	-9,311.95	5,951.10	200	0.92	3.8	28.92611	HDPE	145	0.12
P-168	101	21.026	21.421	-36.34347	J-128	J-3	235.57	-9,279.63	5,951.61	200	1.16	5.8	36.34347	HDPE	145	0.59
P-169	102.5	19.429	19.82	-12.40979	J-126	J-129	235.9	-9,500.28	5,898.76	140	0.81	4.51	12.40979	HDPE	145	0.46
P-17	110.5	18.669	18.786	5.11964	J-16	J-17	235.81	-9,647.67	6,263.27	110	0.54	2.83	5.11964	HDPE	145	0.31
P-170	61.5	19.82	19.725	-1.34741	J-129	J-130	235.97	-9,421.26	5,855.14	110	0.14	0.24	1.34741	HDPE	145	0.01
P-171	77	19.725	19.594	2.5735	J-130	J-131	236.08	-9,396.63	5,798.69	110	0.27	0.79	2.5735	HDPE	145	0.06
P-172	17	19.594	19.595	-0.42821	J-131	J-132	236.15	-9,378.15	5,723.77	110	0.05	0.03	0.42821	HDPE	145	0
P-173	62.5	19.595	19.602	-0.90339	J-132	J-133	236.15	-9,361.22	5,722.74	110	0.1	0.11	0.90339	HDPE	145	0.01
P-174	58.5	19.602	19.507	3.79245	J-133	J-134	236.15	-9,298.61	5,718.64	110	0.4	1.62	3.79245	HDPE	145	0.1
P-175	76.5	19.507	19.547	-2.05084	J-134	J-135	236.15	-9,296.05	5,660.14	110	0.22	0.52	2.05084	HDPE	145	0.04
P-176	63.5	19.547	19.594	-2.49834	J-135	J-131	236.15	-9,372.51	5,660.65	110	0.26	0.75	2.49834	HDPE	145	0.05
P-177	151.5	19.507	19.169	4.5093	J-134	J-114	236.15	-9,296.05	5,660.14	110	0.47	2.24	4.5093	HDPE	145	0.34
P-178	138	19.169	20.053	-16.44109	J-114	J-136	236.15	-9,278.72	5,509.56	160	0.82	3.96	16.44109	HDPE	145	0.55
P-179	80.5	20.053	20.356	-8.94025	J-136	J-137	235.81	-9,155.45	5,571.45	125	0.73	4.27	8.94025	HDPE	145	0.34
P-18	54	18.786	19.035	1.22607	J-17	J-18	235.38	-9,753.09	6,235.35	110	0.13	0.2	1.22607	uPVC	145	0.01
P-180	48.5	20.356	20.39	-4.40405	J-137	J-138	235.85	-9,193.94	5,642.12	110	0.46	2.14	4.40405	uPVC	145	0.1
P-181	31.5	20.39	20.515	-4.66	J-138	J-139	235.92	-9,213.18	5,686.38	110	0.49	2.38	4.66	uPVC	145	0.07
P-182	79	20.515	20.566	-2.97284	J-139	J-140	235.87	-9,188.81	5,706.26	110	0.31	1.03	2.97284	uPVC	145	0.08
P-183	65	20.566	20.603	2.88661	J-140	J-141	235.9	-9,177.90	5,784.52	110	0.3	0.98	2.88661	uPVC	145	0.06
P-184	32	20.603	20.515	2.14264	J-141	J-139	235.8	-9,160.58	5,721.66	110	0.23	0.56	2.14264	uPVC	145	0.02
P-185	65.5	19.507	19.686	0.20966	J-134	J-142	236.15	-9,296.05	5,660.14	110	0.02	0.01	0.20966	uPVC	145	0
P-186	65	19.602	19.751	0.20806	J-133	J-143	236.15	-9,298.61	5,718.64	110	0.02	0.01	0.20806	uPVC	145	0
P-187	99	19.725	19.892	-4.67969	J-130	J-144	236.08	-9,396.63	5,798.69	110	0.49	2.4	4.67969	uPVC	145	0.24
P-188	82.5	19.892	19.602	5.76165	J-144	J-133	236.15	-9,297.85	5,801.20	110	0.61	3.52	5.76165	uPVC	145	0.29
P-189	76	20.081	19.892	-0.24318	J-145	J-144	235.96	-9,222.16	5,805.05	110	0.03	0.01	0.24318	uPVC	145	0
P-19	13.5	19.035	19.062	6.58869	J-18	J-19	235.12	-9,802.36	6,213.67	125	0.54	2.42	6.58869	HDPE	145	0.03
P-190	59	19.892	20.14	-11.6955	J-144	J-146	236.15	-9,297.85	5,801.20	140	0.76	4.04	11.6955	HDPE	145	0.24
P-191	116.5	20.14	19.82	11.95844	J-146	J-129	236.14	-9,304.91	5,859.57	140	0.78	4.21	11.95844	HDPE	145	0.49
P-192	92	20.14	20.593	-8.23283	J-146	J-127	236.14	-9,304.91	5,859.57	140	0.53	2.11	8.23283	HDPE	145	0.19
P-193	113.5	20.14	20.908	-16.63802	J-146	J-147	236.14	-9,304.91	5,859.57	160	0.83	4.05	16.63802	HDPE	145	0.46
P-194	61.5	20.908	20.566	6.51606	J-147	J-140	235.83	-9,192.66	5,844.17	110	0.69	4.43	6.51606	HDPE	145	0.27
P-195	33.5	20.908	21.106	-23.82027	J-147	J-148	235.83	-9,192.66	5,844.17	180	0.94	4.43	23.82027	HDPE	145	0.15

Distribution Network Design Output: Zone 2

P-196	84.5	21.106	21.486	-33.89277	J-148	J-2	235.78	-9,159.26	5,845.54	200	1.08	5.1	33.89277	HDPE	145	0.43
P-197	52	21.521	21.341	16.59328	J-1	J-149	235.88	-9,128.98	5,920.83	160	0.83	4.03	16.59328	HDPE	145	0.21
P-198	104	21.341	20.931	15.55461	J-149	J-150	235.85	-9,085.33	5,892.85	160	0.77	3.57	15.55461	HDPE	145	0.37
P-199	74	20.931	20.814	3.55756	J-150	J-151	235.89	-9,029.83	5,805.16	110	0.37	1.44	3.55756	uPVC	145	0.11
P-2	21.5	21.521	21.486	133.02391	J-1	J-2	235.88	-9,128.98	5,920.83	355	1.34	3.92	133.0239	HDPE	145	0.08
P-20	5.5	19.062	19.079	6.33858	J-19	J-20	235.06	-9,815.82	6,212.03	125	0.52	2.26	6.33858	HDPE	145	0.01
P-200	91.5	20.814	21.106	-4.11304	J-151	J-148	235.9	-9,099.78	5,781.19	110	0.43	1.89	4.11304	uPVC	145	0.17
P-201	162.5	21.106	20.773	4.77129	J-148	J-152	235.78	-9,159.26	5,845.54	110	0.5	2.49	4.77129	uPVC	145	0.4
P-202	88.5	20.773	20.814	-6.85915	J-152	J-151	235.71	-9,102.38	5,694.71	125	0.56	2.61	6.85915	HDPE	145	0.23
P-203	45.5	20.206	20.356	-0.14581	J-153	J-137	236	-9,236.62	5,625.74	110	0.02	0	0.14581	uPVC	145	0
P-204	62	20.356	20.672	-5.4376	J-137	J-154	235.85	-9,193.94	5,642.12	110	0.57	3.17	5.4376	uPVC	145	0.2
P-205	44	20.672	20.773	-5.6876	J-154	J-152	235.73	-9,139.73	5,671.72	125	0.46	1.85	5.6876	HDPE	145	0.08
P-206	75.5	20.773	20.636	4.75945	J-152	J-155	235.71	-9,102.38	5,694.71	110	0.5	2.47	4.75945	uPVC	145	0.19
P-207	110.5	20.636	20.053	8.55173	J-155	J-136	235.66	-9,062.55	5,630.67	125	0.7	3.93	8.55173	HDPE	145	0.43
P-208	54	20.603	20.672	0.26135	J-141	J-154	235.8	-9,160.58	5,721.66	110	0.03	0.01	0.26135	uPVC	145	0
P-209	148.5	20.636	20.908	-4.86074	J-155	J-156	235.66	-9,062.55	5,630.67	110	0.51	2.57	4.86074	uPVC	145	0.38
P-21	35.5	19.079	19.213	4.98297	J-20	J-21	235.03	-9,821.08	6,211.70	110	0.52	2.69	4.98297	uPVC	145	0.1
P-210	38.5	20.908	20.931	-11.1643	J-156	J-150	235.77	-9,015.95	5,769.37	140	0.73	3.71	11.1643	HDPE	145	0.14
P-211	55.5	20.908	20.807	5.52882	J-156	J-157	235.77	-9,015.95	5,769.37	110	0.58	3.27	5.52882	uPVC	145	0.18
P-212	281.5	20.807	20.534	4.03681	J-157	J-158	235.69	-8,962.59	5,783.74	110	0.42	1.82	4.03681	uPVC	145	0.51
P-213	89.5	20.534	20.301	-0.73192	J-158	J-159	235.45	-8,714.22	5,915.62	110	0.08	0.08	0.73192	uPVC	145	0.01
P-214	112.5	20.301	20.403	-3.04187	J-159	J-160	235.69	-8,755.78	5,995.16	110	0.32	1.08	3.04187	uPVC	145	0.12
P-215	103	20.403	20.27	-1.42245	J-160	J-161	235.71	-8,854.82	5,941.28	110	0.15	0.26	1.42245	uPVC	145	0.03
P-216	239	20.27	20.351	-2.51485	J-161	J-162	235.87	-8,945.65	5,893.04	110	0.26	0.76	2.51485	uPVC	145	0.18
P-217	242.5	20.351	20.301	3.44725	J-162	J-159	235.97	-8,931.80	6,093.69	110	0.36	1.36	3.44725	uPVC	145	0.33
P-218	64	20.351	20.656	4.18946	J-162	J-163	235.97	-8,931.80	6,093.69	110	0.44	1.95	4.18946	uPVC	145	0.13
P-219	100	20.656	20.97	1.67009	J-163	J-164	235.54	-8,903.57	6,036.21	110	0.18	0.36	1.67009	uPVC	145	0.04
P-22	13.5	19.213	19.301	2.73924	J-21	J-22	234.8	-9,856.22	6,207.11	110	0.29	0.89	2.73924	uPVC	145	0.01
P-220	63.5	20.97	20.403	2.51068	J-164	J-160	235.19	-8,882.02	5,998.75	110	0.26	0.76	2.51068	uPVC	145	0.05
P-221	99	20.97	20.656	-1.67918	J-164	J-163	235.19	-8,882.02	5,998.75	110	0.18	0.36	1.67918	uPVC	145	0.04
P-222	92.5	20.301	20.222	4.04226	J-159	J-165	235.69	-8,755.78	5,995.16	110	0.43	1.83	4.04226	uPVC	145	0.17
P-224	94	20.198	20.208	-0.01985	J-166	J-167	235.6	-8,600.45	6,082.63	110	0	0	0.01985	uPVC	145	0
P-225	49	20.208	20.104	1.98943	J-167	J-168	235.59	-8,559.92	5,997.96	110	0.21	0.49	1.98943	uPVC	145	0.02
P-226	175	20.534	20.208	3.02505	J-158	J-167	235.45	-8,714.22	5,915.62	110	0.32	1.07	3.02505	uPVC	145	0.19
P-227	261.5	20.198	20.142	-0.29754	J-166	J-169	235.6	-8,600.45	6,082.63	110	0.03	0.01	0.29754	uPVC	145	0
P-228	74	20.142	19.792	-0.13691	J-169	J-170	235.66	-8,779.03	6,239.14	110	0.01	0	0.13691	uPVC	145	0
P-229	148.5	19.792	20.222	-1.01029	J-170	J-165	236.01	-8,750.81	6,170.89	110	0.11	0.14	1.01029	uPVC	145	0.02
P-23	55	19.301	19.153	2.05335	J-22	J-23	234.7	-9,869.68	6,204.81	110	0.22	0.52	2.05335	uPVC	145	0.03

Distribution Network Design Output: Zone 2

P-230	25.5	20.142	20.147	-1.31368	J-169	J-171	235.66	-8,779.03	6,239.14	110	0.14	0.23	1.31368	uPVC	145	0.01
P-231	247.5	20.147	20.434	-4.38924	J-171	J-7	235.66	-8,804.69	6,237.09	110	0.46	2.13	4.38924	uPVC	145	0.53
P-232	240	20.303	19.571	3.81017	J-172	J-11	235.8	-9,058.19	6,261.72	110	0.4	1.64	3.81017	uPVC	145	0.39
P-233	282.5	19.067	18.655	0.90244	J-14	J-173	235.77	-9,537.98	6,269.83	110	0.09	0.11	0.90244	uPVC	145	0.03
P-234	189.5	19.365	19.805	-7.04991	J-174	J-10	236	-9,480.00	6,163.19	125	0.57	2.75	7.04991	HDPE	145	0.52
P-235	54	19.805	20.096	-6.25097	J-10	J-175	236.08	-9,291.33	6,178.86	110	0.66	4.1	6.25097	uPVC	145	0.22
P-236	31	20.096	20.228	-16.45373	J-175	J-176	236.01	-9,289.62	6,124.71	160	0.82	3.97	16.45373	HDPE	145	0.12
P-237	127	20.228	20.688	-9.67306	J-176	J-177	236	-9,258.83	6,123.68	140	0.63	2.84	9.67306	HDPE	145	0.36
P-238	45	20.688	20.529	10.91222	J-177	J-178	235.9	-9,139.78	6,098.54	140	0.71	3.55	10.91222	HDPE	145	0.16
P-239	152	20.529	20.164	6.55838	J-178	J-9	235.9	-9,098.73	6,116.50	125	0.53	2.4	6.55838	HDPE	145	0.37
P-24	44	19.153	19.31	0.68054	J-23	J-24	234.82	-9,924.53	6,203.82	110	0.07	0.07	0.68054	uPVC	145	0
P-240	79	20.529	20.42	3.47215	J-178	J-8	235.9	-9,098.73	6,116.50	110	0.37	1.38	3.47215	uPVC	145	0.11
P-241	22.5	20.874	20.79	15.91523	J-5	J-179	235.9	-9,108.40	6,059.64	160	0.79	3.73	15.91523	HDPE	145	0.08
P-242	28.5	20.79	20.688	21.22593	J-179	J-177	235.9	-9,126.12	6,073.38	180	0.83	3.58	21.22593	HDPE	145	0.1
P-243	21	20.952	20.883	26.77255	J-4	J-180	235.9	-9,124.17	6,038.30	200	0.85	3.3	26.77255	HDPE	145	0.07
P-244	28	20.883	20.79	5.56346	J-180	J-179	235.9	-9,141.52	6,049.78	110	0.59	3.3	5.56346	uPVC	145	0.09
P-245	28.5	20.883	20.783	20.96112	J-180	J-181	235.9	-9,141.52	6,049.78	180	0.82	3.5	20.96112	HDPE	145	0.1
P-246	95	20.783	20.457	9.9848	J-181	J-182	235.9	-9,170.25	6,049.78	140	0.65	3.01	9.9848	HDPE	145	0.29
P-247	55.5	20.457	20.228	7.46282	J-182	J-176	235.94	-9,253.39	6,068.25	125	0.61	3.05	7.46282	HDPE	145	0.17
P-248	97.5	20.783	20.474	10.27022	J-181	J-183	235.9	-9,170.25	6,049.78	140	0.67	3.18	10.27022	HDPE	145	0.31
P-249	53	20.474	20.457	-1.87175	J-183	J-182	235.9	-9,249.28	6,015.39	110	0.2	0.44	1.87175	uPVC	145	0.02
P-25	43.5	19.31	19.536	-1.04705	J-24	J-25	234.66	-9,968.54	6,203.49	110	0.11	0.15	1.04705	uPVC	145	0.01
P-250	33.5	20.474	20.365	11.554	J-183	J-184	235.9	-9,249.28	6,015.39	160	0.57	2.06	11.554	HDPE	145	0.07
P-251	31	20.365	20.221	17.94866	J-184	J-185	235.94	-9,282.64	6,012.31	160	0.89	4.66	17.94866	HDPE	145	0.14
P-252	51.5	20.221	19.989	5.78581	J-185	J-186	235.94	-9,313.43	6,009.75	110	0.61	3.55	5.78581	uPVC	145	0.18
P-253	58.5	19.989	19.982	-1.78684	J-186	J-187	235.99	-9,320.61	6,060.55	110	0.19	0.4	1.78684	uPVC	145	0.02
P-254	35.5	19.982	20.096	-9.81751	J-187	J-175	236.02	-9,324.67	6,119.00	140	0.64	2.92	9.81751	HDPE	145	0.1
P-255	142.5	19.982	19.578	7.27508	J-187	J-188	236.02	-9,324.67	6,119.00	125	0.59	2.91	7.27508	HDPE	145	0.42
P-256	58.5	19.578	19.365	8.41904	J-188	J-174	236.01	-9,466.55	6,106.19	125	0.69	3.82	8.41904	HDPE	145	0.22
P-257	57	19.578	19.665	-1.96818	J-188	J-189	236.01	-9,466.55	6,106.19	110	0.21	0.48	1.96818	uPVC	145	0.03
P-258	143	19.665	19.989	-6.76439	J-189	J-186	235.95	-9,463.26	6,049.38	125	0.55	2.55	6.76439	HDPE	145	0.36
P-259	154.5	20.221	19.656	11.40567	J-185	J-190	235.94	-9,313.43	6,009.75	140	0.74	3.86	11.40567	HDPE	145	0.6
P-26	13.5	19.536	19.3	-1.51743	J-25	J-26	234.44	-9,961.31	6,160.47	110	0.16	0.3	1.51743	uPVC	145	0
P-260	51	19.656	19.665	-3.99434	J-190	J-189	235.91	-9,467.41	5,998.45	125	0.33	0.96	3.99434	HDPE	145	0.05
P-261	43	19.656	19.53	14.60611	J-190	J-191	235.91	-9,467.41	5,998.45	160	0.73	3.18	14.60611	HDPE	145	0.14
P-262	45	19.53	19.326	12.45804	J-191	J-76	235.9	-9,510.43	5,994.51	140	0.81	4.54	12.45804	HDPE	145	0.2
P-263	125.5	19.936	19.397	0.02651	J-192	J-193	235.8	-8,612.07	6,225.15	110	0	0	0.02651	uPVC	145	0
P-264	64	19.397	18.368	0.42269	J-193	J-194	236.34	-8,671.60	6,335.48	110	0.04	0.03	0.42269	uPVC	145	0

Distribution Network Design Output: Zone 2

P-265	13.5	18.368	18.278	0.28796	J-194	J-195	237.37	-8,701.36	6,391.92	110	0.03	0.01	0.28796	uPVC	145	0
P-27	8	19.3	19.164	-1.78829	J-26	J-27	234.68	-9,960.33	6,147.00	110	0.19	0.4	1.78829	uPVC	145	0
P-274	30	20.222	20.205	2.16625	J-165	J-200	235.6	-8,676.40	6,042.60	110	0.23	0.58	2.16625	uPVC	145	0.02
P-275	55.5	20.205	20.198	0.9953	J-200	J-166	235.6	-8,649.71	6,056.70	110	0.1	0.14	0.9953	uPVC	145	0.01
P-28	24.5	19.164	18.826	-1.99211	J-27	J-28	234.82	-9,960.33	6,139.12	110	0.21	0.49	1.99211	uPVC	145	0.01
P-29	10.5	18.826	18.973	1.4768	J-28	J-29	235.17	-9,962.62	6,114.49	110	0.16	0.28	1.4768	uPVC	145	0
P-3	33.5	21.486	21.421	98.68524	J-2	J-3	235.83	-9,149.16	5,928.56	315	1.27	4.04	98.68524	HDPE	145	0.14
P-30	49	18.973	19.616	0.91139	J-29	J-30	235.02	-9,972.81	6,116.46	110	0.1	0.12	0.91139	uPVC	145	0.01
P-31	31.5	19.3	19.43	0.10111	J-26	J-31	234.68	-9,960.33	6,147.00	110	0.01	0	0.10111	uPVC	145	0
P-32	67	19.641	18.973	-0.16101	J-32	J-29	234.35	-10,020.43	6,092.82	110	0.02	0	0.16101	uPVC	145	0
P-33	120	19.277	18.796	0.27151	J-33	J-34	234.69	-9,975.10	6,214.33	110	0.03	0.01	0.27151	uPVC	145	0
P-34	65.5	18.796	19.314	0.31018	J-34	J-35	235.17	-9,911.39	6,315.48	110	0.03	0.02	0.31018	uPVC	145	0
P-35	105.5	19.314	18.866	-0.23629	J-35	J-36	234.65	-9,976.75	6,317.78	110	0.02	0.01	0.23629	uPVC	145	0
P-36	52.5	18.866	18.796	-0.07234	J-36	J-34	235.1	-9,892.67	6,364.42	110	0.01	0	0.07234	uPVC	145	0
P-37	6.5	18.796	18.737	-0.89213	J-34	J-37	235.17	-9,911.39	6,315.48	110	0.09	0.11	0.89213	uPVC	145	0
P-38	64	18.737	18.528	-0.27171	J-37	J-38	235.23	-9,908.24	6,310.00	110	0.03	0.01	0.27171	uPVC	145	0
P-39	12	18.528	18.349	-0.51489	J-38	J-39	235.44	-9,927.49	6,251.51	110	0.05	0.04	0.51489	uPVC	145	0
P-4	110.5	21.421	20.952	61.55905	J-3	J-4	235.76	-9,179.60	5,943.02	280	1	2.99	61.55905	HDPE	145	0.33
P-40	47	18.349	18.439	0.04218	J-39	J-40	235.62	-9,915.51	6,251.51	110	0	0	0.04218	uPVC	145	0
P-41	28	18.439	18.629	-0.1978	J-40	J-41	235.53	-9,895.96	6,281.77	110	0.02	0.01	0.1978	uPVC	145	0
P-42	13	18.629	18.737	0.88755	J-41	J-37	235.34	-9,895.54	6,307.63	110	0.09	0.11	0.88755	uPVC	145	0
P-43	35.5	18.629	18.507	-1.33013	J-41	J-42	235.34	-9,895.54	6,307.63	110	0.14	0.23	1.33013	uPVC	145	0.01
P-44	23	18.507	18.447	-0.02769	J-42	J-43	235.47	-9,860.65	6,300.69	110	0	0	0.02769	uPVC	145	0
P-45	62.5	18.447	18.788	1.00947	J-43	J-44	235.53	-9,861.70	6,323.81	110	0.11	0.14	1.00947	uPVC	145	0.01
P-46	22	18.788	18.866	0.73916	J-44	J-36	235.18	-9,876.62	6,373.84	110	0.08	0.08	0.73916	uPVC	145	0
P-47	45	18.447	18.33	-1.45434	J-43	J-45	235.53	-9,861.70	6,323.81	110	0.15	0.28	1.45434	HDPE	145	0.01
P-48	10.5	18.33	18.334	-1.74116	J-45	J-46	235.66	-9,816.51	6,324.86	110	0.18	0.38	1.74116	HDPE	145	0
P-49	21.5	18.334	18.345	-2.0232	J-46	J-47	235.66	-9,806.21	6,324.23	110	0.21	0.51	2.0232	HDPE	145	0.01
P-5	26.5	20.952	20.874	34.28153	J-4	J-5	235.9	-9,124.17	6,038.30	225	0.86	2.94	34.28153	HDPE	145	0.08
P-50	46.5	18.345	18.378	-2.42016	J-47	J-48	235.66	-9,784.98	6,325.49	110	0.25	0.71	2.42016	HDPE	145	0.03
P-51	115	18.378	18.703	-2.93631	J-48	J-49	235.66	-9,753.03	6,355.34	110	0.31	1.01	2.93631	uPVC	145	0.12
P-52	28	18.384	18.334	-0.08994	J-50	J-46	235.61	-9,805.07	6,296.11	110	0.01	0	0.08994	HDPE	145	0
P-53	28	18.345	18.345	0.08994	J-47	J-51	235.66	-9,784.98	6,325.49	110	0.01	0	0.08994	HDPE	145	0
P-54	93.5	18.507	19.213	-1.78825	J-42	J-21	235.47	-9,860.65	6,300.69	110	0.19	0.4	1.78825	uPVC	145	0.04
P-55	37.5	18.349	18.902	-0.8657	J-39	J-52	235.62	-9,915.51	6,251.51	110	0.09	0.11	0.8657	uPVC	145	0
P-56	73	19.301	19.171	0.2336	J-22	J-53	234.7	-9,869.68	6,204.81	110	0.02	0.01	0.2336	uPVC	145	0
P-57	122	19.079	18.928	0.83467	J-20	J-54	235.03	-9,821.08	6,211.70	110	0.09	0.1	0.83467	uPVC	145	0.01
P-58	32.5	18.928	18.912	3.08428	J-54	J-55	235.17	-9,872.33	6,101.08	110	0.32	1.11	3.08428	uPVC	145	0.04

Distribution Network Design Output: Zone 2

P-59	38.5	18.912	18.897	2.74797	J-55	J-56	235.15	-9,904.38	6,105.55	110	0.29	0.89	2.74797	uPVC	145	0.03
P-6	109	20.874	20.591	17.86133	J-5	J-6	235.9	-9,108.40	6,059.64	180	0.7	2.6	17.86133	HDPE	145	0.28
P-60	20.5	18.897	18.826	3.64665	J-56	J-28	235.13	-9,942.48	6,110.02	110	0.38	1.51	3.64665	uPVC	145	0.03
P-61	66	18.897	19.421	-1.29829	J-56	J-57	235.13	-9,942.48	6,110.02	110	0.14	0.22	1.29829	uPVC	145	0.01
P-62	49	19.421	19.221	-1.23143	J-57	J-58	234.62	-9,944.91	6,044.70	110	0.13	0.2	1.23143	uPVC	145	0.01
P-63	19	19.221	19.121	-2.94662	J-58	J-59	234.83	-9,895.78	6,044.70	110	0.31	1.02	2.94662	uPVC	145	0.02
P-64	30	19.121	19.009	-3.31166	J-59	J-60	234.95	-9,888.16	6,062.04	110	0.35	1.26	3.31166	uPVC	145	0.04
P-65	12.5	19.009	18.928	2.78331	J-60	J-54	235.1	-9,876.08	6,089.37	110	0.29	0.92	2.78331	uPVC	145	0.01
P-66	67.5	19.009	18.842	-6.44669	J-60	J-61	235.1	-9,876.08	6,089.37	110	0.68	4.34	6.44669	uPVC	145	0.29
P-67	5	18.842	18.824	-6.5531	J-61	J-62	235.56	-9,823.00	6,047.85	125	0.53	2.4	6.5531	HDPE	145	0.01
P-68	63.5	18.824	18.824	-1.94382	J-62	J-63	235.59	-9,819.33	6,051.01	110	0.2	0.47	1.94382	uPVC	145	0.03
P-69	64	18.824	18.701	-2.97318	J-63	J-64	235.62	-9,774.14	6,006.08	110	0.31	1.04	2.97318	uPVC	145	0.07
P-7	55.5	20.591	20.434	18.71437	J-6	J-7	235.9	-9,048.96	6,148.97	180	0.74	2.84	18.71437	HDPE	145	0.16
P-70	66.5	18.701	18.778	-4.80903	J-64	J-65	235.81	-9,728.95	5,960.89	110	0.51	2.52	4.80903	uPVC	145	0.17
P-71	50	18.778	18.938	-10.30612	J-65	J-66	235.9	-9,682.44	5,913.60	140	0.67	3.2	10.30612	HDPE	145	0.16
P-72	64	18.938	18.953	-0.79194	J-66	J-67	235.9	-9,646.97	5,948.54	110	0.08	0.09	0.79194	uPVC	145	0.01
P-73	65.5	18.953	18.904	2.22137	J-67	J-68	235.89	-9,686.12	5,996.88	110	0.23	0.6	2.22137	uPVC	145	0.04
P-74	27	18.904	18.831	5.00522	J-68	J-69	235.9	-9,724.48	6,050.22	110	0.53	2.72	5.00522	uPVC	145	0.07
P-75	31.5	18.831	18.756	4.66412	J-69	J-70	235.9	-9,741.82	6,070.98	110	0.49	2.38	4.66412	uPVC	145	0.08
P-76	37	18.756	18.767	8.3474	J-70	J-71	235.9	-9,759.69	6,096.99	125	0.68	3.76	8.3474	HDPE	145	0.14
P-77	68.5	18.767	19.067	2.9357	J-71	J-72	235.75	-9,790.95	6,076.76	110	0.31	1.01	2.9357	uPVC	145	0.07
P-78	81	19.067	19.035	5.83725	J-72	J-18	235.38	-9,804.35	6,132.46	110	0.61	3.61	5.83725	uPVC	145	0.29
P-79	289.5	19.067	19.131	-4.30363	J-72	J-12	235.38	-9,804.35	6,132.46	110	0.45	2.05	4.30363	uPVC	145	0.59
P-8	50	20.434	20.42	1.45797	J-7	J-8	235.9	-9,049.94	6,203.82	110	0.15	0.28	1.45797	uPVC	145	0.01
P-80	200	18.756	19.208	-4.54103	J-70	J-73	235.9	-9,759.69	6,096.99	110	0.48	2.27	4.54103	uPVC	145	0.45
P-81	58.5	19.208	19.137	3.24571	J-73	J-74	235.9	-9,572.62	6,157.68	110	0.34	1.22	3.24571	uPVC	145	0.07
P-82	159.5	19.137	18.904	3.58892	J-74	J-68	235.9	-9,576.03	6,099.09	110	0.38	1.47	3.58892	uPVC	145	0.23
P-83	125	18.953	19.149	-3.82635	J-67	J-75	235.89	-9,686.12	5,996.88	110	0.4	1.65	3.82635	uPVC	145	0.21
P-84	59.5	19.149	19.137	1.22968	J-75	J-74	235.9	-9,570.52	6,039.97	110	0.13	0.2	1.22968	uPVC	145	0.01
P-85	49.5	19.149	19.326	-5.80364	J-75	J-76	235.9	-9,570.52	6,039.97	110	0.61	3.57	5.80364	uPVC	145	0.18
P-86	101.5	19.326	18.938	6.02812	J-76	J-66	235.9	-9,555.54	5,992.94	110	0.63	3.83	6.02812	uPVC	145	0.39
P-87	59.5	18.938	19.063	-4.36457	J-66	J-77	235.9	-9,646.97	5,948.54	110	0.46	2.11	4.36457	uPVC	145	0.13
P-88	117	19.063	18.759	4.88664	J-77	J-78	235.9	-9,603.89	5,907.59	110	0.51	2.6	4.88664	uPVC	145	0.3
P-89	61	18.759	18.626	11.92283	J-78	J-79	235.9	-9,654.59	5,807.75	160	0.59	2.18	11.92283	uPVC	145	0.13
P-9	138	20.42	20.164	4.07716	J-8	J-9	235.9	-9,095.92	6,184.44	110	0.43	1.86	4.07716	uPVC	145	0.26
P-90	61.5	18.626	18.632	-2.17011	J-79	J-80	235.9	-9,715.29	5,804.33	160	0.11	0.09	2.17011	uPVC	145	0.01
P-91	55	18.632	18.778	-4.94903	J-80	J-65	235.9	-9,709.24	5,865.55	110	0.52	2.66	4.94903	uPVC	145	0.15
P-92	65	18.632	18.594	2.19892	J-80	J-81	235.9	-9,709.24	5,865.55	110	0.23	0.59	2.19892	uPVC	145	0.04

Distribution Network Design Output: Zone 2

P-93	109.5	18.594	18.701	-1.0691	J-81	J-64	235.9	-9,774.14	5,864.76	110	0.11	0.16	1.0691	uPVC	145	0.02
P-94	161.5	18.824	18.504	0.10616	J-63	J-82	235.62	-9,774.14	6,006.08	110	0.01	0	0.10616	uPVC	145	0
P-95	66	18.504	18.594	-2.49967	J-82	J-81	235.94	-9,840.02	5,863.32	110	0.26	0.75	2.49967	uPVC	145	0.05
P-96	66	18.504	18.83	1.66827	J-82	J-83	235.94	-9,840.02	5,863.32	110	0.18	0.35	1.66827	uPVC	145	0.02
P-97	206.5	18.83	18.842	0.78486	J-83	J-61	235.59	-9,905.97	5,861.49	110	0.08	0.09	0.78486	uPVC	145	0.02
P-98	21.5	19.221	19.255	1.42891	J-58	J-84	234.83	-9,895.78	6,044.70	110	0.15	0.27	1.42891	uPVC	145	0.01
P-99	88.5	19.255	19.603	0.31084	J-84	J-85	234.79	-9,903.21	6,024.38	110	0.03	0.02	0.31084	uPVC	145	0
PP-266	59	19.509	19.53	-1.67822	J-125	J-191	235.9	-9,504.39	5,935.70	110	0.18	0.36	1.67822	HDPE	145	0.02
PP-267	61	21.026	20.365	6.79587	J-128	J-184	235.57	-9,279.63	5,951.61	110	0.72	4.79	6.79587	HDPE	145	0.29
PP-268	264.5	21.521	20.581	14.97298	J-1	PJ-196	235.88	-9,128.98	5,920.83	160	0.74	3.33	14.97298	HDPE	145	0.88
PP-269	87	20.581	20.591	1.65651	PJ-196	J-6	235.94	-8,965.98	6,125.33	110	0.17	0.35	1.65651	HDPE	145	0.03
PP-270	47	20.581	20.351	12.04369	PJ-196	J-162	235.94	-8,965.98	6,125.33	140	0.78	4.27	12.04369	HDPE	145	0.2
PP-271	84.5	21.341	21.291	0.27032	J-149	PJ-197	235.85	-9,085.33	5,892.85	110	0.03	0.01	0.27032	HDPE	145	0
PP-272	22	20.931	20.98	0.07078	J-150	PJ-198	235.89	-9,029.83	5,805.16	110	0.01	0	0.07078	HDPE	145	0
PP-273	65	20.657	20.807	-0.20806	PJ-199	J-157	235.84	-8,981.03	5,845.93	110	0.02	0.01	0.20806	HDPE	145	0
PP-274	220	20.104	19.936	1.13009	J-168	J-192	235.67	-8,519.38	6,025.67	110	0.12	0.17	1.13009	HDPE	145	0.04
PP-276	166	20.205	19.792	0.36748	J-200	J-170	235.6	-8,649.71	6,056.70	110	0.04	0.02	0.36748	HDPE	145	0
PP-277	54	20.147	20.12	2.03105	J-171	PJ-201	235.66	-8,804.69	6,237.09	110	0.21	0.51	2.03105	HDPE	145	0.03
PP-278	153	20.12	19.397	1.49017	PJ-201	J-193	235.66	-8,811.80	6,290.56	110	0.16	0.29	1.49017	HDPE	145	0.04
PP-279	47	18.278	18.886	0.09426	J-195	PJ-202	237.46	-8,705.98	6,404.75	110	0.01	0	0.09426	HDPE	145	0
PP-280	76.5	18.886	19.416	-0.30056	PJ-202	PJ-203	236.85	-8,721.89	6,448.20	110	0.03	0.01	0.30056	HDPE	145	0
PP-281	24	19.416	19.268	-0.62196	PJ-203	PJ-204	236.32	-8,793.32	6,424.39	110	0.07	0.06	0.62196	HDPE	145	0
PP-282	40.5	19.268	19.827	-0.02403	PJ-204	PJ-205	236.47	-8,791.27	6,400.58	110	0	0	0.02403	HDPE	145	0
PP-283	89.5	19.827	18.368	0.39897	PJ-205	J-194	235.91	-8,785.11	6,360.76	110	0.04	0.02	0.39897	HDPE	145	0
PP-284	52.5	19.268	19.943	-0.972	PJ-204	PJ-206	236.47	-8,791.27	6,400.58	110	0.1	0.13	0.972	HDPE	145	0.01
PP-285	41	19.943	19.96	-1.08339	PJ-206	PJ-207	235.8	-8,843.00	6,390.73	110	0.11	0.16	1.08339	HDPE	145	0.01
PP-286	50	19.96	20.052	-1.37446	PJ-207	PJ-208	235.79	-8,883.23	6,383.75	110	0.14	0.25	1.37446	HDPE	145	0.01
PP-287	43	20.052	20.084	1.82492	PJ-208	PJ-209	235.71	-8,879.12	6,334.08	110	0.19	0.42	1.82492	HDPE	145	0.02
PP-288	55	20.084	19.827	1.01417	PJ-209	PJ-205	235.66	-8,836.84	6,342.70	110	0.11	0.14	1.01417	HDPE	145	0.01
PP-289	48.5	19.943	20.084	-0.3425	PJ-206	PJ-209	235.8	-8,843.00	6,390.73	110	0.04	0.02	0.3425	HDPE	145	0
PP-290	51.5	20.052	20.121	-1.6958	PJ-208	PJ-210	235.71	-8,879.12	6,334.08	110	0.18	0.37	1.6958	HDPE	145	0.02
PP-291	62	20.121	20.12	0.31846	PJ-210	PJ-201	235.66	-8,873.37	6,282.76	110	0.03	0.02	0.31846	HDPE	145	0
PP-292	148	20.052	20.088	-2.43795	PJ-208	PJ-211	235.71	-8,879.12	6,334.08	110	0.26	0.72	2.43795	HDPE	145	0.11
PP-293	48.5	20.088	20.161	-3.06583	PJ-211	PJ-212	235.78	-9,025.68	6,313.55	110	0.32	1.1	3.06583	HDPE	145	0.05
PP-294	39.5	20.161	20.303	-6.66309	PJ-212	J-172	235.76	-9,019.11	6,265.52	110	0.7	4.61	6.66309	HDPE	145	0.18
PP-295	58.5	20.303	20.434	-11.55289	J-172	J-7	235.8	-9,058.19	6,261.72	140	0.75	3.95	11.55289	HDPE	145	0.23
PP-296	147	20.161	20.121	2.84646	PJ-212	PJ-210	235.76	-9,019.11	6,265.52	110	0.3	0.95	2.84646	HDPE	145	0.14
PP-297	10	18.703	18.786	-3.33592	J-49	J-17	235.45	-9,752.29	6,245.45	110	0.35	1.28	3.33592	HDPE	145	0.01

Distribution Network Design Output: Zone 2

PP-298	29.5	19.062	18.842	0.09473	J-19	PJ-213	235.06	-9,815.82	6,212.03	110	0.01	0	0.09473	HDPE	145	0
PP-299	45	18.669	18.759	0.14421	J-16	PJ-214	235.81	-9,647.67	6,263.27	110	0.02	0	0.14421	HDPE	145	0
PP-300	26.5	19.031	19.091	0.08515	J-15	PJ-215	235.71	-9,578.37	6,267.86	110	0.01	0	0.08515	HDPE	145	0
PP-301	43.5	19.208	19.301	-8.75143	J-73	J-13	235.9	-9,572.62	6,157.68	140	0.57	2.36	8.75143	HDPE	145	0.1
PP-302	49	19.301	19.365	-14.52022	J-13	J-174	235.91	-9,529.11	6,162.11	160	0.72	3.15	14.52022	HDPE	145	0.15
PP-303	24	18.851	18.831	-0.07717	PJ-216	J-69	235.88	-9,761.26	6,056.92	110	0.01	0	0.07717	HDPE	145	0
PP-304	38.5	18.824	18.767	-4.95143	J-62	J-71	235.59	-9,819.33	6,051.01	110	0.52	2.66	4.95143	HDPE	145	0.1
PP-305	32.5	19.171	19.121	-0.1043	PJ-217	J-59	234.9	-9,920.59	6,064.14	110	0.01	0	0.1043	HDPE	145	0
PP-306	17	18.912	19.041	0.05482	J-55	PJ-218	235.15	-9,904.38	6,105.55	110	0.01	0	0.05482	HDPE	145	0
PP-307	15.5	19.164	19.433	0.05003	J-27	PJ-219	234.82	-9,960.33	6,139.12	110	0.01	0	0.05003	HDPE	145	0
PP-308	182.5	19.376	19.794	-0.58319	PJ-220	PJ-221	234.58	-10,051.34	6,391.32	110	0.06	0.05	0.58319	HDPE	145	0.01
PP-309	39	19.794	19.719	-0.9682	PJ-221	PJ-222	234.17	-10,031.75	6,209.99	110	0.1	0.13	0.9682	HDPE	145	0.01
PP-310	25.5	19.719	19.665	-1.31249	PJ-222	PJ-223	234.25	-10,028.35	6,171.07	110	0.14	0.23	1.31249	HDPE	145	0.01
PP-311	13.5	19.665	19.65	-1.57429	PJ-223	PJ-224	234.31	-10,025.83	6,145.68	110	0.17	0.32	1.57429	HDPE	145	0
PP-312	14.5	19.65	19.616	-1.88506	PJ-224	J-30	234.33	-10,024.82	6,132.40	110	0.2	0.45	1.88506	HDPE	145	0.01
PP-313	25.5	19.616	19.641	-1.25835	J-30	J-32	234.37	-10,021.74	6,118.43	110	0.13	0.21	1.25835	HDPE	145	0.01
PP-314	133.5	19.641	19.617	-1.8194	J-32	J-86	234.35	-10,020.43	6,092.82	110	0.19	0.42	1.8194	HDPE	145	0.06
PP-315	158	19.617	19.055	-3.63347	J-86	PJ-225	234.43	-10,005.94	5,960.27	110	0.38	1.5	3.63347	HDPE	145	0.24
PP-316	274	19.055	18.354	-1.24748	PJ-225	PJ-226	235.23	-9,984.13	5,804.04	110	0.13	0.21	1.24748	HDPE	145	0.06
PP-317	167	18.354	18.427	-0.74008	PJ-226	PJ-227	235.99	-9,937.65	5,533.96	110	0.08	0.08	0.74008	HDPE	145	0.01
PP-318	52.5	18.427	18.231	-1.44139	PJ-227	J-92	235.93	-9,904.49	5,370.08	110	0.15	0.27	1.44139	HDPE	145	0.01
PP-319	62	18.354	18.228	-2.1138	PJ-226	J-90	235.99	-9,937.65	5,533.96	110	0.22	0.55	2.1138	HDPE	145	0.03
PP-320	75	19.055	18.551	-4.00516	PJ-225	J-88	235.23	-9,984.13	5,804.04	110	0.42	1.8	4.00516	HDPE	145	0.13
PP-321	54.5	19.794	19.397	-0.49668	PJ-221	PJ-228	234.17	-10,031.75	6,209.99	110	0.05	0.04	0.49668	HDPE	145	0
PP-322	10	19.397	19.277	0.68709	PJ-228	J-33	234.57	-9,977.62	6,204.53	110	0.07	0.07	0.68709	HDPE	145	0
PP-323	9	19.397	19.31	-1.41896	PJ-228	J-24	234.57	-9,977.62	6,204.53	110	0.15	0.26	1.41896	HDPE	145	0
PP-324	11	18.902	19.153	-1.02108	J-52	J-23	235.07	-9,923.41	6,214.77	110	0.11	0.14	1.02108	HDPE	145	0
PP-325	21.5	19.719	19.64	0.06919	PJ-222	PJ-229	234.25	-10,028.35	6,171.07	110	0.01	0	0.06919	HDPE	145	0
PP-326	66.5	19.665	19.536	-0.07556	PJ-223	J-25	234.31	-10,025.83	6,145.68	110	0.01	0	0.07556	HDPE	145	0
PP-327	34.5	19.65	19.48	0.11069	PJ-224	PJ-230	234.33	-10,024.82	6,132.40	110	0.01	0	0.11069	HDPE	145	0
PP-328	17	18.33	18.36	0.05482	J-45	PJ-231	235.66	-9,816.51	6,324.86	110	0.01	0	0.05482	HDPE	145	0
PP-329	34.5	19.595	19.595	0.11069	J-132	PJ-232	236.15	-9,361.22	5,722.74	110	0.01	0	0.11069	HDPE	145	0
	25966.5															

BOQ for Z2								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm	Material	Status
P-1	T-1	J-1	40	110	PVC	355	HDPE	Replacement
P-10	J-9	J-10	65.5	110	PVC	140	HDPE	Replacement
P-100	J-85	J-86	52.5	110	PVC	110	uPVC	Retained
P-101	J-85	J-87	57.5	110	PVC	110	uPVC	Retained
P-102	J-87	J-84	52.5	110	PVC	110	uPVC	Retained
P-103	J-87	J-57	32	110	PVC	110	uPVC	Retained
P-104	J-83	J-88	59.5	110	PVC	110	uPVC	Retained
P-105	J-88	J-89	61.5	160	PVC	160	uPVC	Retained
P-106	J-89	J-90	200.5	110	PVC	110	uPVC	Retained
P-107	J-90	J-91	57	110	PVC	110	uPVC	Retained
P-108	J-91	J-92	110	110	PVC	110	uPVC	Retained
P-109	J-92	J-93	228	110	PVC	110	uPVC	Retained
P-11	J-10	J-11	56	110	PVC	125	HDPE	Replacement
P-110	J-93	J-94	58.5	110	PVC	110	uPVC	Retained
P-111	J-94	J-95	217	110	PVC	110	uPVC	Retained
P-112	J-95	J-91	90.5	110	PVC	110	uPVC	Retained
P-113	J-90	J-96	93	110	PVC	110	uPVC	Retained
P-114	J-96	J-95	55.5	110	PVC	110	uPVC	Retained
P-115	J-95	J-97	88	110	PVC	110	uPVC	Retained
P-116	J-97	J-98	144.5	110	PVC	110	uPVC	Retained
P-117	J-98	J-94	55	110	PVC	110	uPVC	Retained
P-118	J-94	J-99	279.5	110	PVC	110	uPVC	Retained
P-119	J-99	J-98	232	110	PVC	110	uPVC	Retained
P-12	J-11	J-12	237.5	110	PVC	140	HDPE	Replacement
P-120	J-98	J-100	61.5	110	PVC	110	uPVC	Retained
P-121	J-100	J-101	146	50	PVC	110	HDPE	Replacement
P-122	J-101	J-102	61.5	110	PVC	110	uPVC	Retained
P-123	J-102	J-103	4.5	110	PVC	110	uPVC	Retained
P-124	J-103	J-97	55.5	110	PVC	110	uPVC	Retained
P-125	J-103	J-96	87.5	110	PVC	110	uPVC	Retained
P-126	J-96	J-104	57.5	110	PVC	110	uPVC	Retained
P-127	J-104	J-105	161	110	PVC	110	uPVC	Retained
P-128	J-105	J-106	83.5	160	PVC	160	uPVC	Retained
P-129	J-106	J-104	155	110	PVC	110	uPVC	Retained
P-13	J-12	J-13	56.5	110	PVC	110	uPVC	Retained
P-130	J-105	J-89	52.5	160	PVC	160	uPVC	Retained
P-131	J-106	J-107	56.5	160	PVC	160	uPVC	Retained
P-132	J-107	J-79	57	160	PVC	160	uPVC	Retained
P-133	J-79	J-88	194	160	PVC	160	uPVC	Retained
P-134	J-107	J-102	180	110	PVC	110	uPVC	Retained
P-135	J-101	J-108	112	110	PVC	110	uPVC	Retained
P-136	J-108	J-78	122.5	110	PVC	110	uPVC	Retained
P-137	J-78	J-109	57.5	160	PVC	160	uPVC	Retained
P-138	J-109	J-110	116.5	110	PVC	110	uPVC	Retained
P-139	J-110	J-108	49	110	PVC	110	uPVC	Retained
P-14	J-12	J-14	51.5	110	PVC	125	HDPE	Replacement
P-140	J-110	J-111	82	110	PVC	110	uPVC	Retained
P-141	J-111	J-112	111	110	PVC	110	uPVC	Retained
P-142	J-112	J-100	53.5	110	PVC	110	uPVC	Retained
P-143	J-100	J-113	177.5	110	PVC	110	uPVC	Retained
P-144	J-113	J-114	113.5	110	PVC	125	HDPE	Replacement
P-145	J-114	J-115	70.5	110	PVC	140	HDPE	Replacement
P-146	J-115	J-116	51	110	PVC	110	uPVC	Retained
P-147	J-116	J-117	51	110	PVC	110	uPVC	Retained
P-148	J-117	J-118	105	110	PVC	110	uPVC	Retained
P-149	J-118	J-119	54	110	PVC	110	uPVC	Retained
P-15	J-14	J-15	40.5	110	PVC	125	HDPE	Replacement
P-150	J-119	J-120	40.5	110	PVC	110	uPVC	Retained
P-151	J-120	J-121	10.5	110	PVC	125	HDPE	Replacement

BOQ for Z2								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm	Material	Status
P-152	J-121	J-115	89.5	110	PVC	110	uPVC	Retained
P-153	J-119	J-116	86.5	110	PVC	110	uPVC	Retained
P-154	J-99	J-120	31	110	PVC	125	HDPE	Replacement
P-155	J-121	J-113	72.5	110	PVC	110	uPVC	Retained
P-156	J-93	J-118	325	110	PVC	110	uPVC	Retained
P-157	J-112	J-122	299.5	110	PVC	110	uPVC	Retained
P-158	J-122	J-123	60.5	160	PVC	160	uPVC	Retained
P-159	J-123	J-109	42.5	160	PVC	160	uPVC	Retained
P-16	J-15	J-16	69.5	110	PVC	110	uPVC	Retained
P-160	J-111	J-123	202.5	110	PVC	110	uPVC	Retained
P-161	J-123	J-124	119.5	110	PVC	110	uPVC	Retained
P-162	J-124	J-77	43	110	PVC	125	HDPE	Replacement
P-163	J-124	J-125	60.5	110	PVC	160	HDPE	Replacement
P-164	J-125	J-126	37	110	PVC	110	uPVC	Retained
P-165	J-126	J-122	94.5	110	PVC	160	HDPE	Replacement
P-166	J-125	J-127	193	110	PVC	160	HDPE	Replacement
P-167	J-127	J-128	32.5	160	PVC	200	HDPE	Replacement
P-168	J-128	J-3	101	110	PVC	200	HDPE	Replacement
P-169	J-126	J-129	102.5	50	PVC	140	HDPE	Replacement
P-17	J-16	J-17	110.5	110	PVC	110	uPVC	Retained
P-170	J-129	J-130	61.5	50	PVC	110	HDPE	Replacement
P-171	J-130	J-131	77	110	PVC	110	uPVC	Retained
P-172	J-131	J-132	17	110	PVC	110	uPVC	Retained
P-173	J-132	J-133	62.5	110	PVC	110	uPVC	Retained
P-174	J-133	J-134	58.5	110	PVC	110	uPVC	Retained
P-175	J-134	J-135	76.5	75	PVC	110	HDPE	Replacement
P-176	J-135	J-131	63.5	75	PVC	110	HDPE	Replacement
P-177	J-134	J-114	151.5	110	PVC	110	uPVC	Retained
P-178	J-114	J-136	138	110	PVC	160	HDPE	Replacement
P-179	J-136	J-137	80.5	110	PVC	125	HDPE	Replacement
P-18	J-17	J-18	54	110	PVC	110	uPVC	Retained
P-180	J-137	J-138	48.5	110	PVC	110	uPVC	Retained
P-181	J-138	J-139	31.5	110	PVC	110	uPVC	Retained
P-182	J-139	J-140	79	110	PVC	110	uPVC	Retained
P-183	J-140	J-141	65	110	PVC	110	uPVC	Retained
P-184	J-141	J-139	32	110	PVC	110	uPVC	Retained
P-185	J-134	J-142	65.5	110	PVC	110	uPVC	Retained
P-186	J-133	J-143	65	110	PVC	110	uPVC	Retained
P-187	J-130	J-144	99	110	PVC	110	uPVC	Retained
P-188	J-144	J-133	82.5	110	PVC	110	uPVC	Retained
P-189	J-145	J-144	76	110	PVC	110	uPVC	Retained
P-19	J-18	J-19	13.5	110	PVC	125	HDPE	Replacement
P-190	J-144	J-146	59	110	PVC	140	HDPE	Replacement
P-191	J-146	J-129	116.5	110	PVC	140	HDPE	Replacement
P-192	J-146	J-127	92	110	PVC	140	HDPE	Replacement
P-193	J-146	J-147	113.5	110	PVC	160	HDPE	Replacement
P-194	J-147	J-140	61.5	110	PVC	110	uPVC	Retained
P-195	J-147	J-148	33.5	110	PVC	180	HDPE	Replacement
P-196	J-148	J-2	84.5	110	PVC	200	HDPE	Replacement
P-197	J-1	J-149	52	110	PVC	160	HDPE	Replacement
P-198	J-149	J-150	104	110	PVC	160	HDPE	Replacement
P-199	J-150	J-151	74	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	21.5	110	PVC	355	HDPE	Replacement
P-20	J-19	J-20	5.5	110	PVC	125	HDPE	Replacement
P-200	J-151	J-148	91.5	110	PVC	110	uPVC	Retained
P-201	J-148	J-152	162.5	110	PVC	110	uPVC	Retained
P-202	J-152	J-151	88.5	110	PVC	125	HDPE	Replacement
P-203	J-153	J-137	45.5	110	PVC	110	uPVC	Retained
P-204	J-137	J-154	62	110	PVC	110	uPVC	Retained
P-205	J-154	J-152	44	110	PVC	125	HDPE	Replacement

BOQ for Z2								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm	Material	Status
P-206	J-152	J-155	75.5	110	PVC	110	uPVC	Retained
P-207	J-155	J-136	110.5	110	PVC	125	HDPE	Replacement
P-208	J-141	J-154	54	110	PVC	110	uPVC	Retained
P-209	J-155	J-156	148.5	110	PVC	110	uPVC	Retained
P-21	J-20	J-21	35.5	110	PVC	110	uPVC	Retained
P-210	J-156	J-150	38.5	110	PVC	140	HDPE	Replacement
P-211	J-156	J-157	55.5	110	PVC	110	uPVC	Retained
P-212	J-157	J-158	281.5	110	PVC	110	uPVC	Retained
P-213	J-158	J-159	89.5	110	PVC	110	uPVC	Retained
P-214	J-159	J-160	112.5	110	PVC	110	uPVC	Retained
P-215	J-160	J-161	103	110	PVC	110	uPVC	Retained
P-216	J-161	J-162	239	110	PVC	110	uPVC	Retained
P-217	J-162	J-159	242.5	110	PVC	110	uPVC	Retained
P-218	J-162	J-163	64	110	PVC	110	uPVC	Retained
P-219	J-163	J-164	100	110	PVC	110	uPVC	Retained
P-22	J-21	J-22	13.5	110	PVC	110	uPVC	Retained
P-220	J-164	J-160	63.5	110	PVC	110	uPVC	Retained
P-221	J-164	J-163	99	110	PVC	110	uPVC	Retained
P-222	J-159	J-165	92.5	110	PVC	110	uPVC	Retained
P-224	J-166	J-167	94	110	PVC	110	uPVC	Retained
P-225	J-167	J-168	49	110	PVC	110	uPVC	Retained
P-226	J-158	J-167	175	110	PVC	110	uPVC	Retained
P-227	J-166	J-169	261.5	110	PVC	110	uPVC	Retained
P-228	J-169	J-170	74	110	PVC	110	uPVC	Retained
P-229	J-170	J-165	148.5	110	PVC	110	uPVC	Retained
P-23	J-22	J-23	55	110	PVC	110	uPVC	Retained
P-230	J-169	J-171	25.5	110	PVC	110	uPVC	Retained
P-231	J-171	J-7	247.5	110	PVC	110	uPVC	Retained
P-232	J-172	J-11	240	110	PVC	110	uPVC	Retained
P-233	J-14	J-173	282.5	110	PVC	110	uPVC	Retained
P-234	J-174	J-10	189.5	110	PVC	125	HDPE	Replacement
P-235	J-10	J-175	54	110	PVC	110	uPVC	Retained
P-236	J-175	J-176	31	110	PVC	160	HDPE	Replacement
P-237	J-176	J-177	127	110	PVC	140	HDPE	Replacement
P-238	J-177	J-178	45	110	PVC	140	HDPE	Replacement
P-239	J-178	J-9	152	110	PVC	125	HDPE	Replacement
P-24	J-23	J-24	44	110	PVC	110	uPVC	Retained
P-240	J-178	J-8	79	110	PVC	110	uPVC	Retained
P-241	J-5	J-179	22.5	110	PVC	160	HDPE	Replacement
P-242	J-179	J-177	28.5	110	PVC	180	HDPE	Replacement
P-243	J-4	J-180	21	110	PVC	200	HDPE	Replacement
P-244	J-180	J-179	28	110	PVC	110	uPVC	Retained
P-245	J-180	J-181	28.5	110	PVC	180	HDPE	Replacement
P-246	J-181	J-182	95	110	PVC	140	HDPE	Replacement
P-247	J-182	J-176	55.5	110	PVC	125	HDPE	Replacement
P-248	J-181	J-183	97.5	110	PVC	140	HDPE	Replacement
P-249	J-183	J-182	53	110	PVC	110	uPVC	Retained
P-25	J-24	J-25	43.5	110	PVC	110	uPVC	Retained
P-250	J-183	J-184	33.5	110	PVC	160	HDPE	Replacement
P-251	J-184	J-185	31	110	PVC	160	HDPE	Replacement
P-252	J-185	J-186	51.5	110	PVC	110	uPVC	Retained
P-253	J-186	J-187	58.5	110	PVC	110	uPVC	Retained
P-254	J-187	J-175	35.5	110	PVC	140	HDPE	Replacement
P-255	J-187	J-188	142.5	110	PVC	125	HDPE	Replacement
P-256	J-188	J-174	58.5	110	PVC	125	HDPE	Replacement
P-257	J-188	J-189	57	110	PVC	110	uPVC	Retained
P-258	J-189	J-186	143	110	PVC	125	HDPE	Replacement
P-259	J-185	J-190	154.5	110	PVC	140	HDPE	Replacement
P-26	J-25	J-26	13.5	110	PVC	110	uPVC	Retained
P-260	J-190	J-189	51	110	PVC	125	HDPE	Replacement

BOQ for Z2								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm	Material	Status
P-261	J-190	J-191	43	110	PVC	160	HDPE	Replacement
P-262	J-191	J-76	45	110	PVC	140	HDPE	Replacement
P-263	J-192	J-193	125.5	110	PVC	110	uPVC	Retained
P-264	J-193	J-194	64	110	PVC	110	uPVC	Retained
P-265	J-194	J-195	13.5	110	PVC	110	uPVC	Retained
P-27	J-26	J-27	8	110	PVC	110	uPVC	Retained
P-274	J-165	J-200	30	110	PVC	110	uPVC	Retained
P-275	J-200	J-166	55.5	110	PVC	110	uPVC	Retained
P-28	J-27	J-28	24.5	110	PVC	110	uPVC	Retained
P-29	J-28	J-29	10.5	110	PVC	110	uPVC	Retained
P-3	J-2	J-3	33.5	110	PVC	315	HDPE	Replacement
P-30	J-29	J-30	49	110	PVC	110	uPVC	Retained
P-31	J-26	J-31	31.5	110	PVC	110	uPVC	Retained
P-32	J-32	J-29	67	110	PVC	110	uPVC	Retained
P-33	J-33	J-34	120	110	PVC	110	uPVC	Retained
P-34	J-34	J-35	65.5	110	PVC	110	uPVC	Retained
P-35	J-35	J-36	105.5	110	PVC	110	uPVC	Retained
P-36	J-36	J-34	52.5	110	PVC	110	uPVC	Retained
P-37	J-34	J-37	6.5	110	PVC	110	uPVC	Retained
P-38	J-37	J-38	64	110	PVC	110	uPVC	Retained
P-39	J-38	J-39	12	110	PVC	110	uPVC	Retained
P-4	J-3	J-4	110.5	110	PVC	280	HDPE	Replacement
P-40	J-39	J-40	47	110	PVC	110	uPVC	Retained
P-41	J-40	J-41	28	110	PVC	110	uPVC	Retained
P-42	J-41	J-37	13	110	PVC	110	uPVC	Retained
P-43	J-41	J-42	35.5	110	PVC	110	uPVC	Retained
P-44	J-42	J-43	23	110	PVC	110	uPVC	Retained
P-45	J-43	J-44	62.5	110	PVC	110	uPVC	Retained
P-46	J-44	J-36	22	110	PVC	110	uPVC	Retained
P-47	J-43	J-45	45	75	PVC	110	HDPE	Replacement
P-48	J-45	J-46	10.5	75	PVC	110	HDPE	Replacement
P-49	J-46	J-47	21.5	75	PVC	110	HDPE	Replacement
P-5	J-4	J-5	26.5	110	PVC	225	HDPE	Replacement
P-50	J-47	J-48	46.5	75	PVC	110	HDPE	Replacement
P-51	J-48	J-49	115	110	PVC	110	uPVC	Retained
P-52	J-50	J-46	28	75	PVC	110	HDPE	Replacement
P-53	J-47	J-51	28	75	PVC	110	HDPE	Replacement
P-54	J-42	J-21	93.5	110	PVC	110	uPVC	Retained
P-55	J-39	J-52	37.5	110	PVC	110	uPVC	Retained
P-56	J-22	J-53	73	110	PVC	110	uPVC	Retained
P-57	J-20	J-54	122	110	PVC	110	uPVC	Retained
P-58	J-54	J-55	32.5	110	PVC	110	uPVC	Retained
P-59	J-55	J-56	38.5	110	PVC	110	uPVC	Retained
P-6	J-5	J-6	109	110	PVC	180	HDPE	Replacement
P-60	J-56	J-28	20.5	110	PVC	110	uPVC	Retained
P-61	J-56	J-57	66	110	PVC	110	uPVC	Retained
P-62	J-57	J-58	49	110	PVC	110	uPVC	Retained
P-63	J-58	J-59	19	110	PVC	110	uPVC	Retained
P-64	J-59	J-60	30	110	PVC	110	uPVC	Retained
P-65	J-60	J-54	12.5	110	PVC	110	uPVC	Retained
P-66	J-60	J-61	67.5	110	PVC	110	uPVC	Retained
P-67	J-61	J-62	5	110	PVC	125	HDPE	Replacement
P-68	J-62	J-63	63.5	110	PVC	110	uPVC	Retained
P-69	J-63	J-64	64	110	PVC	110	uPVC	Retained
P-7	J-6	J-7	55.5	110	PVC	180	HDPE	Replacement
P-70	J-64	J-65	66.5	110	PVC	110	uPVC	Retained
P-71	J-65	J-66	50	110	PVC	140	HDPE	Replacement
P-72	J-66	J-67	64	110	PVC	110	uPVC	Retained
P-73	J-67	J-68	65.5	110	PVC	110	uPVC	Retained
P-74	J-68	J-69	27	110	PVC	110	uPVC	Retained

BOQ for Z2								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm	Material	Status
P-75	J-69	J-70	31.5	110	PVC	110	uPVC	Retained
P-76	J-70	J-71	37	110	PVC	125	HDPE	Replacement
P-77	J-71	J-72	68.5	110	PVC	110	uPVC	Retained
P-78	J-72	J-18	81	110	PVC	110	uPVC	Retained
P-79	J-72	J-12	289.5	110	PVC	110	uPVC	Retained
P-8	J-7	J-8	50	110	PVC	110	uPVC	Retained
P-80	J-70	J-73	200	110	PVC	110	uPVC	Retained
P-81	J-73	J-74	58.5	110	PVC	110	uPVC	Retained
P-82	J-74	J-68	159.5	110	PVC	110	uPVC	Retained
P-83	J-67	J-75	125	110	PVC	110	uPVC	Retained
P-84	J-75	J-74	59.5	110	PVC	110	uPVC	Retained
P-85	J-75	J-76	49.5	110	PVC	110	uPVC	Retained
P-86	J-76	J-66	101.5	110	PVC	110	uPVC	Retained
P-87	J-66	J-77	59.5	110	PVC	110	uPVC	Retained
P-88	J-77	J-78	117	110	PVC	110	uPVC	Retained
P-89	J-78	J-79	61	160	PVC	160	uPVC	Retained
P-9	J-8	J-9	138	110	PVC	110	uPVC	Retained
P-90	J-79	J-80	61.5	160	PVC	160	uPVC	Retained
P-91	J-80	J-65	55	110	PVC	110	uPVC	Retained
P-92	J-80	J-81	65	110	PVC	110	uPVC	Retained
P-93	J-81	J-64	109.5	110	PVC	110	uPVC	Retained
P-94	J-63	J-82	161.5	110	PVC	110	uPVC	Retained
P-95	J-82	J-81	66	110	PVC	110	uPVC	Retained
P-96	J-82	J-83	66	110	PVC	110	uPVC	Retained
P-97	J-83	J-61	206.5	110	PVC	110	uPVC	Retained
P-98	J-58	J-84	21.5	110	PVC	110	uPVC	Retained
P-99	J-84	J-85	88.5	110	PVC	110	uPVC	Retained
PP-266	J-125	J-191	59	#N/A	#N/A	110	HDPE	New
PP-267	J-128	J-184	61	#N/A	#N/A	110	HDPE	New
PP-268	J-1	PJ-196	264.5	#N/A	#N/A	160	HDPE	New
PP-269	PJ-196	J-6	87	#N/A	#N/A	110	HDPE	New
PP-270	PJ-196	J-162	47	#N/A	#N/A	140	HDPE	New
PP-271	J-149	PJ-197	84.5	#N/A	#N/A	110	HDPE	New
PP-272	J-150	PJ-198	22	#N/A	#N/A	110	HDPE	New
PP-273	PJ-199	J-157	65	#N/A	#N/A	110	HDPE	New
PP-274	J-168	J-192	220	#N/A	#N/A	110	HDPE	New
PP-276	J-200	J-170	166	#N/A	#N/A	110	HDPE	New
PP-277	J-171	PJ-201	54	#N/A	#N/A	110	HDPE	New
PP-278	PJ-201	J-193	153	#N/A	#N/A	110	HDPE	New
PP-279	J-195	PJ-202	47	#N/A	#N/A	110	HDPE	New
PP-280	PJ-202	PJ-203	76.5	#N/A	#N/A	110	HDPE	New
PP-281	PJ-203	PJ-204	24	#N/A	#N/A	110	HDPE	New
PP-282	PJ-204	PJ-205	40.5	#N/A	#N/A	110	HDPE	New
PP-283	PJ-205	J-194	89.5	#N/A	#N/A	110	HDPE	New
PP-284	PJ-204	PJ-206	52.5	#N/A	#N/A	110	HDPE	New
PP-285	PJ-206	PJ-207	41	#N/A	#N/A	110	HDPE	New
PP-286	PJ-207	PJ-208	50	#N/A	#N/A	110	HDPE	New
PP-287	PJ-208	PJ-209	43	#N/A	#N/A	110	HDPE	New
PP-288	PJ-209	PJ-205	55	#N/A	#N/A	110	HDPE	New
PP-289	PJ-206	PJ-209	48.5	#N/A	#N/A	110	HDPE	New
PP-290	PJ-208	PJ-210	51.5	#N/A	#N/A	110	HDPE	New
PP-291	PJ-210	PJ-201	62	#N/A	#N/A	110	HDPE	New
PP-292	PJ-208	PJ-211	148	#N/A	#N/A	110	HDPE	New
PP-293	PJ-211	PJ-212	48.5	#N/A	#N/A	110	HDPE	New
PP-294	PJ-212	J-172	39.5	#N/A	#N/A	110	HDPE	New
PP-295	J-172	J-7	58.5	#N/A	#N/A	140	HDPE	New
PP-296	PJ-212	PJ-210	147	#N/A	#N/A	110	HDPE	New
PP-297	J-49	J-17	10	#N/A	#N/A	110	HDPE	New
PP-298	J-19	PJ-213	29.5	#N/A	#N/A	110	HDPE	New
PP-299	J-16	PJ-214	45	#N/A	#N/A	110	HDPE	New

BOQ for Z2								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm	Material	Status
PP-300	J-15	PJ-215	26.5	#N/A	#N/A	110	HDPE	New
PP-301	J-73	J-13	43.5	#N/A	#N/A	140	HDPE	New
PP-302	J-13	J-174	49	#N/A	#N/A	160	HDPE	New
PP-303	PJ-216	J-69	24	#N/A	#N/A	110	HDPE	New
PP-304	J-62	J-71	38.5	#N/A	#N/A	110	HDPE	New
PP-305	PJ-217	J-59	32.5	#N/A	#N/A	110	HDPE	New
PP-306	J-55	PJ-218	17	#N/A	#N/A	110	HDPE	New
PP-307	J-27	PJ-219	15.5	#N/A	#N/A	110	HDPE	New
PP-308	PJ-220	PJ-221	182.5	#N/A	#N/A	110	HDPE	New
PP-309	PJ-221	PJ-222	39	#N/A	#N/A	110	HDPE	New
PP-310	PJ-222	PJ-223	25.5	#N/A	#N/A	110	HDPE	New
PP-311	PJ-223	PJ-224	13.5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-224	J-30	14.5	#N/A	#N/A	110	HDPE	New
PP-313	J-30	J-32	25.5	#N/A	#N/A	110	HDPE	New
PP-314	J-32	J-86	133.5	#N/A	#N/A	110	HDPE	New
PP-315	J-86	PJ-225	158	#N/A	#N/A	110	HDPE	New
PP-316	PJ-225	PJ-226	274	#N/A	#N/A	110	HDPE	New
PP-317	PJ-226	PJ-227	167	#N/A	#N/A	110	HDPE	New
PP-318	PJ-227	J-92	52.5	#N/A	#N/A	110	HDPE	New
PP-319	PJ-226	J-90	62	#N/A	#N/A	110	HDPE	New
PP-320	PJ-225	J-88	75	#N/A	#N/A	110	HDPE	New
PP-321	PJ-221	PJ-228	54.5	#N/A	#N/A	110	HDPE	New
PP-322	PJ-228	J-33	10	#N/A	#N/A	110	HDPE	New
PP-323	PJ-228	J-24	9	#N/A	#N/A	110	HDPE	New
PP-324	J-52	J-23	11	#N/A	#N/A	110	HDPE	New
PP-325	PJ-222	PJ-229	21.5	#N/A	#N/A	110	HDPE	New
PP-326	PJ-223	J-25	66.5	#N/A	#N/A	110	HDPE	New
PP-327	PJ-224	PJ-230	34.5	#N/A	#N/A	110	HDPE	New
PP-328	J-45	PJ-231	17	#N/A	#N/A	110	HDPE	New
PP-329	J-132	PJ-232	34.5	#N/A	#N/A	110	HDPE	New
			25966.50					

Zone -3

Distribution Network Design Output: Zone 3

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	23.5	1.497	21.347	146.3673	T-1	J-1	233.61	-10,366.90	5,771.28	355	1.48	4.68	146.3673	HDPE	145	0.11
P-10	88	21.274	20.899	41.35798	J-9	J-10	233.44	-10,303.13	5,827.10	225	1.04	4.15	41.35798	HDPE	145	0.37
P-100	33	18.28	18.35	-1.51211	J-78	J-86	233.18	-10,431.83	6,226.88	110	0.16	0.3	1.51211	uPVC	145	0.01
P-101	8.5	18.35	18.355	2.07582	J-86	J-85	233.12	-10,402.64	6,242.25	110	0.22	0.53	2.07582	uPVC	145	0
P-102	9.5	18.35	18.325	-3.72993	J-86	J-87	233.12	-10,402.64	6,242.25	110	0.39	1.58	3.72993	uPVC	145	0.01
P-103	31.5	18.325	18.355	-0.27888	J-87	J-34	233.16	-10,399.87	6,233.35	110	0.03	0.01	0.27888	uPVC	145	0
P-104	32.5	18.325	18.176	-3.70302	J-87	J-88	233.16	-10,399.87	6,233.35	110	0.39	1.55	3.70302	uPVC	145	0.05
P-105	29.5	18.273	18.126	-4.72055	J-77	J-89	233.2	-10,428.45	6,218.68	110	0.5	2.44	4.72055	uPVC	145	0.07
P-106	19	18.126	18.174	-6.68036	J-89	J-90	233.42	-10,411.53	6,194.23	110	0.7	4.64	6.68036	uPVC	145	0.09
P-107	46.5	18.174	18.185	-1.3804	J-90	J-36	233.46	-10,401.45	6,178.22	110	0.15	0.25	1.3804	uPVC	145	0.01
P-108	11.5	18.174	18.215	-5.84707	J-90	J-91	233.46	-10,401.45	6,178.22	110	0.62	3.62	5.84707	HDPE	145	0.04
P-109	13	18.215	18.267	-6.18675	J-91	J-92	233.46	-10,396.31	6,168.14	110	0.65	4.02	6.18675	HDPE	145	0.05
P-11	45.5	20.899	20.701	31.12948	J-10	J-11	233.45	-10,255.41	5,901.12	200	0.99	4.36	31.12948	HDPE	145	0.2
P-110	60	18.267	18.244	-1.47394	J-92	J-44	233.46	-10,390.19	6,156.68	110	0.16	0.28	1.47394	uPVC	145	0.02
P-111	68.5	18.267	18.483	-5.28915	J-92	J-93	233.46	-10,390.19	6,156.68	110	0.56	3.01	5.28915	HDPE	145	0.21
P-112	62.5	18.483	18.507	-3.43604	J-93	J-94	233.45	-10,354.08	6,098.44	110	0.36	1.35	3.43604	uPVC	145	0.08
P-113	59	18.507	18.267	5.80255	J-94	J-43	233.51	-10,293.02	6,111.68	110	0.61	3.57	5.80255	uPVC	145	0.21
P-114	147.5	18.507	18.989	-9.98756	J-94	J-95	233.51	-10,293.02	6,111.68	125	0.81	5.24	9.98756	HDPE	145	0.77
P-115	62	18.989	19.116	-17.87698	J-95	J-14	233.8	-10,148.57	6,142.51	160	0.89	4.63	17.87698	HDPE	145	0.29
P-116	26	18.82	18.989	-7.23372	J-96	J-95	233.83	-10,154.30	6,168.00	110	0.76	5.37	7.23372	uPVC	145	0.14
P-117	138	18.239	18.826	-6.67453	J-76	J-97	233.21	-10,602.13	6,130.87	110	0.7	4.63	6.67453	HDPE	145	0.64
P-118	176.5	18.826	18.483	2.70927	J-97	J-93	233.26	-10,513.58	6,025.01	110	0.29	0.87	2.70927	uPVC	145	0.15
P-119	69	21.274	20.657	42.26779	J-9	J-98	233.44	-10,303.13	5,827.10	225	1.06	4.33	42.26779	HDPE	145	0.3
P-12	69.5	20.701	20.21	23.98676	J-11	J-12	233.45	-10,231.10	5,939.46	180	0.94	4.49	23.98676	HDPE	145	0.31
P-120	18.5	20.657	20.439	41.8766	J-98	J-99	233.76	-10,245.65	5,788.59	225	1.05	4.25	41.8766	HDPE	145	0.08
P-121	61.5	20.439	19.902	25.863	J-99	J-100	233.9	-10,229.44	5,779.32	180	1.02	5.16	25.863	HDPE	145	0.32
P-122	60.5	19.902	19.399	23.11939	J-100	J-101	234.12	-10,181.58	5,740.73	180	0.91	4.2	23.11939	HDPE	145	0.25
P-123	57	19.399	19.099	17.02187	J-101	J-102	234.37	-10,139.89	5,696.73	160	0.85	4.22	17.02187	HDPE	145	0.24
P-124	37.5	19.099	19.146	-5.09058	J-102	J-103	234.43	-10,090.10	5,724.52	125	0.41	1.5	5.09058	HDPE	145	0.06
P-125	65	19.146	18.265	4.45358	J-103	J-104	234.44	-10,058.46	5,744.20	110	0.47	2.19	4.45358	HDPE	145	0.14

P-126	67	19.146	19.488	-10.01609	J-103	J-105	234.44	-10,058.46	5,744.20	140	0.65	3.03	10.01609	HDPE	145	0.2
P-127	25.5	19.488	19.708	-9.50341	J-105	J-106	234.3	-10,065.40	5,810.97	140	0.62	2.75	9.50341	HDPE	145	0.07
P-128	64.5	19.708	20.048	-6.23128	J-106	J-107	234.15	-10,087.79	5,799.01	125	0.51	2.19	6.23128	HDPE	145	0.14
P-129	46	20.048	19.902	-2.05312	J-107	J-100	233.95	-10,143.75	5,766.59	110	0.22	0.52	2.05312	uPVC	145	0.02
P-13	173.5	20.21	19.24	22.49399	J-12	J-13	233.63	-10,193.77	5,998.05	180	0.88	3.99	22.49399	HDPE	145	0.69
P-130	47	20.439	20.189	15.66	J-99	J-108	233.9	-10,229.44	5,779.32	160	0.78	3.62	15.66	HDPE	145	0.17
P-131	41.5	20.189	20.076	3.66391	J-108	J-109	233.98	-10,202.80	5,818.30	110	0.39	1.52	3.66391	uPVC	145	0.06
P-132	15.5	20.076	20.068	12.67569	J-109	J-110	234.03	-10,179.65	5,852.65	160	0.63	2.45	12.67569	HDPE	145	0.04
P-133	54.5	20.068	19.752	6.97955	J-110	J-111	234	-10,171.93	5,866.16	125	0.57	2.7	6.97955	HDPE	145	0.15
P-134	49.5	19.752	19.293	9.24644	J-111	J-112	234.17	-10,117.89	5,860.76	140	0.6	2.61	9.24644	HDPE	145	0.13
P-135	45	19.293	19.488	0.89552	J-112	J-105	234.5	-10,068.88	5,855.74	110	0.09	0.11	0.89552	uPVC	145	0.01
P-136	52.5	19.293	18.499	9.18143	J-112	J-113	234.5	-10,068.88	5,855.74	140	0.6	2.58	9.18143	HDPE	145	0.14
P-137	43.5	20.189	20.109	11.62857	J-108	J-114	233.98	-10,202.80	5,818.30	160	0.58	2.09	11.62857	HDPE	145	0.09
P-138	52	20.109	19.861	6.65132	J-114	J-115	233.97	-10,169.61	5,790.51	125	0.54	2.47	6.65132	HDPE	145	0.13
P-139	35	19.861	19.752	2.64416	J-115	J-111	234.09	-10,138.35	5,832.20	110	0.28	0.83	2.64416	uPVC	145	0.03
P-14	17.5	19.24	19.116	23.38852	J-13	J-14	233.91	-10,098.91	6,143.43	180	0.92	4.29	23.38852	HDPE	145	0.08
P-140	60.5	19.708	19.861	-3.69116	J-106	J-115	234.15	-10,087.79	5,799.01	110	0.39	1.54	3.69116	uPVC	145	0.09
P-141	35	20.048	20.109	-4.58327	J-107	J-114	233.95	-10,143.75	5,766.59	110	0.48	2.31	4.58327	uPVC	145	0.08
P-142	64	19.099	18.662	21.67115	J-102	J-116	234.43	-10,090.10	5,724.52	180	0.85	3.72	21.67115	HDPE	145	0.24
P-143	30.5	18.662	18.369	12.2144	J-116	J-117	234.63	-10,081.61	5,661.09	140	0.79	4.38	12.2144	HDPE	145	0.13
P-144	33.5	18.369	17.978	4.41907	J-117	J-118	234.79	-10,051.51	5,666.88	110	0.47	2.16	4.41907	uPVC	145	0.07
P-145	39	17.978	17.698	-2.95878	J-118	J-119	235.11	-10,018.70	5,674.60	110	0.31	1.03	2.95878	uPVC	145	0.04
P-146	210.5	17.978	16.988	6.31287	J-118	J-120	235.11	-10,018.70	5,674.60	125	0.51	2.24	6.31287	HDPE	145	0.47
P-147	33	16.988	16.892	-0.89595	J-120	J-121	235.63	-9,972.00	5,469.35	110	0.09	0.11	0.89595	uPVC	145	0
P-148	14.5	16.988	16.99	6.88723	J-120	J-122	235.63	-9,972.00	5,469.35	125	0.56	2.63	6.88723	HDPE	145	0.04
P-149	19.5	16.99	17.123	-1.06481	J-122	J-123	235.59	-9,986.67	5,467.80	110	0.11	0.15	1.06481	uPVC	145	0
P-15	102.5	19.116	18.648	5.00481	J-14	J-15	233.96	-10,088.32	6,157.50	110	0.53	2.72	5.00481	uPVC	145	0.28
P-150	65.5	17.123	17.272	-6.37398	J-123	J-124	235.46	-10,005.97	5,464.72	125	0.52	2.28	6.37398	HDPE	145	0.15
P-151	141.5	17.272	18.369	-7.43895	J-124	J-117	235.46	-10,019.86	5,528.78	125	0.61	3.04	7.43895	HDPE	145	0.43
P-152	137.5	18.662	17.769	8.76068	J-116	J-125	234.63	-10,081.61	5,661.09	125	0.71	4.11	8.76068	HDPE	145	0.56
P-153	78.5	17.769	17.272	-0.39813	J-125	J-124	234.96	-10,097.83	5,524.92	110	0.04	0.02	0.39813	uPVC	145	0
P-154	57.5	17.769	17.292	8.59779	J-125	J-126	234.96	-10,097.83	5,524.92	125	0.7	3.97	8.59779	HDPE	145	0.23
P-155	39.5	17.292	17.143	3.26995	J-126	J-127	235.21	-10,117.12	5,470.50	110	0.34	1.23	3.26995	uPVC	145	0.05
P-156	25.5	17.143	17.147	-1.02391	J-127	J-128	235.31	-10,078.53	5,461.24	110	0.11	0.14	1.02391	uPVC	145	0
P-157	47.5	17.147	17.123	-4.94026	J-128	J-123	235.31	-10,053.06	5,458.54	110	0.52	2.65	4.94026	uPVC	145	0.13
P-158	50.5	16.99	16.889	7.12512	J-122	J-129	235.59	-9,986.67	5,467.80	125	0.58	2.8	7.12512	HDPE	145	0.14

P-159	68	16.889	16.628	3.61362	J-129	J-130	235.55	-9,979.72	5,418.01	110	0.38	1.49	3.61362	uPVC	145	0.1
P-16	19.5	18.648	18.694	5.5097	J-15	J-16	234.15	-10,055.38	6,254.41	125	0.45	1.74	5.5097	HDPE	145	0.03
P-160	56.5	16.628	16.463	-0.75578	J-130	J-131	235.71	-9,968.92	5,350.86	110	0.08	0.08	0.75578	uPVC	145	0
P-161	138.5	16.628	16.165	2.49679	J-130	J-132	235.71	-9,968.92	5,350.86	110	0.26	0.75	2.49679	uPVC	145	0.1
P-162	25	16.165	16.056	3.18752	J-132	J-133	236.07	-9,947.69	5,213.84	110	0.34	1.18	3.18752	uPVC	145	0.03
P-163	69	16.056	15.817	0.07022	J-133	J-134	236.15	-9,943.44	5,189.14	110	0.01	0	0.07022	uPVC	145	0
P-164	50	15.796	15.996	-0.12256	J-135	J-136	236.34	-10,048.42	5,127.77	110	0.01	0	0.12256	uPVC	145	0
P-165	118	15.996	16.056	-2.21103	J-136	J-133	236.14	-10,060.77	5,176.40	110	0.23	0.6	2.21103	uPVC	145	0.07
P-166	50.5	15.823	15.962	0.18388	J-137	J-138	236.31	-10,078.91	5,136.65	110	0.02	0.01	0.18388	uPVC	145	0
P-167	13	15.962	15.996	-1.4286	J-138	J-136	236.17	-10,073.51	5,174.86	110	0.15	0.27	1.4286	uPVC	145	0
P-168	64.5	15.962	16.049	1.2561	J-138	J-139	236.17	-10,073.51	5,174.86	110	0.13	0.21	1.2561	uPVC	145	0.01
P-169	7	16.049	16.059	0.0325	J-139	J-140	236.07	-10,050.74	5,235.07	110	0	0	0.0325	uPVC	145	0
P-17	32.5	18.694	18.52	5.20343	J-16	J-17	234.07	-10,075.09	6,253.97	110	0.55	2.92	5.20343	uPVC	145	0.09
P-170	45.5	16.049	15.974	0.89784	J-139	J-141	236.07	-10,050.74	5,235.07	110	0.09	0.11	0.89784	uPVC	145	0.01
P-171	27	15.974	15.734	0.07517	J-141	J-142	236.14	-10,095.90	5,240.47	110	0.01	0	0.07517	uPVC	145	0
P-172	65.5	16.165	16.166	-1.10002	J-132	J-143	236.07	-9,947.69	5,213.84	110	0.12	0.16	1.10002	uPVC	145	0.01
P-173	67	16.166	16.284	-1.42717	J-143	J-144	236.08	-10,013.30	5,211.53	110	0.15	0.27	1.42717	uPVC	145	0.02
P-175	49.5	16.541	16.628	-1.00254	J-145	J-130	235.79	-10,018.32	5,345.45	110	0.11	0.14	1.00254	uPVC	145	0.01
P-176	70.5	16.541	16.812	-2.70262	J-145	J-146	235.79	-10,018.32	5,345.45	110	0.28	0.87	2.70262	uPVC	145	0.06
P-178	41.5	16.812	16.889	-3.11056	J-146	J-129	235.58	-10,021.02	5,415.70	110	0.33	1.13	3.11056	uPVC	145	0.05
P-179	34.5	16.812	16.702	0.00005	J-146	J-147	235.58	-10,021.02	5,415.70	110	0	0	0.00005	uPVC	145	0
P-18	14.5	18.52	18.488	-4.92468	J-17	J-18	234.15	-10,077.66	6,286.38	110	0.52	2.64	4.92468	uPVC	145	0.04
P-180	45.5	16.702	17.147	-3.54744	J-147	J-128	235.69	-10,055.37	5,413.00	110	0.37	1.44	3.54744	uPVC	145	0.07
P-181	99.5	16.702	16.415	3.04771	J-147	J-148	235.69	-10,055.37	5,413.00	110	0.32	1.08	3.04771	uPVC	145	0.11
P-182	25	16.415	16.28	2.9262	J-148	J-149	235.87	-10,066.05	5,314.03	110	0.31	1.01	2.9262	uPVC	145	0.03
P-183	53.5	16.28	16.284	-0.66491	J-149	J-144	235.98	-10,068.46	5,288.94	110	0.07	0.06	0.66491	uPVC	145	0
P-184	43.5	15.974	16.122	0.4997	J-141	J-150	236.14	-10,095.90	5,240.47	110	0.05	0.04	0.4997	uPVC	145	0
P-185	8.5	16.122	16.196	-2.12861	J-150	J-151	235.99	-10,138.90	5,245.52	110	0.22	0.56	2.12861	uPVC	145	0
P-186	47.5	16.196	16.409	-3.69562	J-151	J-152	235.92	-10,137.45	5,253.72	110	0.39	1.55	3.69562	uPVC	145	0.07
P-187	8	16.409	16.396	-6.11697	J-152	J-153	235.78	-10,119.60	5,297.62	125	0.5	2.11	6.11697	HDPE	145	0.02
P-188	44	16.396	16.28	-3.25004	J-153	J-149	235.81	-10,111.88	5,295.69	110	0.34	1.22	3.25004	uPVC	145	0.05
P-189	169	16.396	17.143	-3.59223	J-153	J-127	235.81	-10,111.88	5,295.69	110	0.38	1.47	3.59223	uPVC	145	0.25
P-19	12	18.754	18.694	-0.03341	J-19	J-16	234.01	-10,087.15	6,254.17	110	0	0	0.03341	uPVC	145	0
P-190	162.5	17.292	16.059	4.38258	J-126	J-154	235.21	-10,117.12	5,470.50	110	0.46	2.12	4.38258	uPVC	145	0.35
P-191	58.5	16.059	16.409	-2.07471	J-154	J-152	236.1	-10,174.12	5,318.37	110	0.22	0.53	2.07471	uPVC	145	0.03
P-192	52	16.059	16.004	2.99741	J-154	J-155	236.1	-10,174.12	5,318.37	110	0.32	1.05	2.99741	uPVC	145	0.05

P-193	58	16.004	16.196	-1.25656	J-155	J-151	236.1	-10,192.94	5,270.13	110	0.13	0.21	1.25656	uPVC	145	0.01
P-194	33.5	16.004	15.862	1.71451	J-155	J-156	236.1	-10,192.94	5,270.13	110	0.18	0.37	1.71451	uPVC	145	0.01
P-195	13.5	15.862	15.943	-0.80183	J-156	J-157	236.23	-10,205.48	5,239.25	110	0.08	0.09	0.80183	uPVC	145	0
P-196	45	15.943	15.809	-0.97416	J-157	J-158	236.15	-10,192.45	5,235.87	110	0.1	0.13	0.97416	uPVC	145	0.01
P-197	20.5	15.809	16.122	-2.26496	J-158	J-150	236.29	-10,148.07	5,227.19	110	0.24	0.63	2.26496	uPVC	145	0.01
P-198	43.5	15.809	15.913	0.98592	J-158	J-159	236.29	-10,148.07	5,227.19	110	0.1	0.13	0.98592	uPVC	145	0.01
P-199	21	15.913	15.943	0.13255	J-159	J-157	236.18	-10,187.63	5,215.61	110	0.01	0	0.13255	uPVC	145	0
P-2	137.5	21.347	19.404	61.68769	J-1	J-2	233.61	-10,347.14	5,758.93	250	1.26	5.22	61.68769	HDPE	145	0.72
P-20	36	18.52	18.573	9.89701	J-17	J-20	234.15	-10,077.66	6,286.38	140	0.64	2.97	9.89701	HDPE	145	0.11
P-200	82.5	15.513	15.913	-0.2297	J-160	J-159	236.58	-10,269.16	5,201.62	110	0.02	0.01	0.2297	uPVC	145	0
P-201	38.5	15.913	15.704	0.10719	J-159	J-161	236.18	-10,187.63	5,215.61	110	0.01	0	0.10719	uPVC	145	0
P-202	77	15.862	15.439	2.17109	J-156	J-162	236.23	-10,205.48	5,239.25	110	0.23	0.58	2.17109	uPVC	145	0.04
P-203	40.5	15.439	15.654	0.8613	J-162	J-163	236.61	-10,277.85	5,250.83	110	0.09	0.1	0.8613	uPVC	145	0
P-204	43.5	15.654	15.667	-1.51312	J-163	J-164	236.39	-10,315.96	5,264.34	110	0.16	0.3	1.51312	uPVC	145	0.01
P-205	50	15.667	15.558	-1.84641	J-164	J-165	236.39	-10,303.90	5,306.31	110	0.19	0.43	1.84641	uPVC	145	0.02
P-206	120.5	15.558	16.059	-2.36428	J-165	J-154	236.52	-10,289.43	5,354.07	110	0.25	0.68	2.36428	uPVC	145	0.08
P-207	116.5	15.667	16.004	-1.81556	J-164	J-155	236.39	-10,303.90	5,306.31	110	0.19	0.42	1.81556	uPVC	145	0.05
P-208	77	15.667	15.648	1.34977	J-164	J-166	236.39	-10,303.90	5,306.31	110	0.14	0.24	1.34977	uPVC	145	0.02
P-209	15.5	15.648	15.647	0.62337	J-166	J-167	236.39	-10,377.71	5,328.02	110	0.07	0.06	0.62337	uPVC	145	0
P-21	43	18.573	18.332	5.75557	J-20	J-21	233.99	-10,113.63	6,283.81	110	0.61	3.52	5.75557	uPVC	145	0.15
P-210	41.5	15.647	15.647	0.29762	J-167	J-168	236.39	-10,392.19	5,332.84	110	0.03	0.01	0.29762	uPVC	145	0
P-211	18.5	15.647	15.648	-0.62058	J-168	J-169	236.39	-10,405.70	5,293.77	110	0.07	0.06	0.62058	uPVC	145	0
P-212	76	15.648	15.654	-0.74199	J-169	J-163	236.39	-10,387.85	5,288.94	110	0.08	0.08	0.74199	uPVC	145	0.01
P-213	40.5	15.648	15.648	-0.25446	J-169	J-166	236.39	-10,387.85	5,288.94	110	0.03	0.01	0.25446	uPVC	145	0
P-214	53.5	15.647	15.644	0.60218	J-168	J-170	236.39	-10,405.70	5,293.77	110	0.06	0.05	0.60218	uPVC	145	0
P-215	52.5	15.644	15.404	0.11863	J-170	J-171	236.39	-10,423.55	5,243.11	110	0.01	0	0.11863	uPVC	145	0
P-216	18	15.404	15.504	-0.0707	J-171	J-172	236.63	-10,440.91	5,193.42	110	0.01	0	0.0707	uPVC	145	0
P-217	83.5	15.504	15.646	-0.43412	J-172	J-173	236.53	-10,423.06	5,190.04	110	0.05	0.03	0.43412	uPVC	145	0
P-218	44	15.646	15.648	-0.44806	J-173	J-174	236.39	-10,343.46	5,164.95	110	0.05	0.03	0.44806	uPVC	145	0
P-219	98.5	15.648	15.439	-0.86848	J-174	J-162	236.39	-10,300.52	5,154.82	110	0.09	0.11	0.86848	uPVC	145	0.01
P-22	58.5	18.332	18.439	5.07482	J-21	J-22	234.08	-10,121.92	6,325.99	110	0.53	2.79	5.07482	uPVC	145	0.16
P-220	14.5	15.644	15.644	0.14805	J-170	J-175	236.39	-10,423.55	5,243.11	110	0.02	0	0.14805	uPVC	145	0
P-221	84	15.644	15.646	-0.43657	J-175	J-176	236.39	-10,409.56	5,239.25	110	0.05	0.03	0.43657	uPVC	145	0
P-222	50	15.646	15.654	-1.04774	J-176	J-163	236.39	-10,328.99	5,216.09	110	0.11	0.15	1.04774	uPVC	145	0.01
P-223	51	15.504	15.644	-0.06118	J-172	J-175	236.53	-10,423.06	5,190.04	110	0.01	0	0.06118	uPVC	145	0
P-224	53	15.646	15.646	0.08773	J-176	J-173	236.39	-10,328.99	5,216.09	110	0.01	0	0.08773	uPVC	145	0

P-225	21.5	15.646	15.877	-0.46075	J-173	J-177	236.39	-10,343.46	5,164.95	110	0.05	0.03	0.46075	uPVC	145	0
P-226	96.5	19.399	19.058	5.50169	J-101	J-178	234.37	-10,139.89	5,696.73	110	0.58	3.24	5.50169	uPVC	145	0.31
P-227	93	19.058	18.88	2.6527	J-178	J-179	234.4	-10,216.86	5,639.51	110	0.28	0.84	2.6527	uPVC	145	0.08
P-228	67	18.88	18.664	2.4063	J-179	J-180	234.5	-10,307.56	5,659.29	110	0.25	0.7	2.4063	uPVC	145	0.05
P-229	82	18.664	18.157	1.91905	J-180	J-181	234.67	-10,329.75	5,596.09	110	0.2	0.46	1.91905	uPVC	145	0.04
P-23	113	18.439	18.553	-3.80161	J-22	J-23	233.81	-10,180.20	6,321.36	110	0.4	1.63	3.80161	uPVC	145	0.18
P-230	34	18.157	17.974	0.79421	J-181	J-182	235.14	-10,373.66	5,527.10	110	0.08	0.09	0.79421	uPVC	145	0
P-231	20.5	17.974	17.844	0.55059	J-182	J-183	235.32	-10,395.37	5,501.05	110	0.06	0.05	0.55059	uPVC	145	0
P-232	79	17.844	17.396	-1.45129	J-183	J-184	235.45	-10,381.86	5,485.61	110	0.15	0.27	1.45129	uPVC	145	0.02
P-233	241	17.396	19.058	-2.21696	J-184	J-178	235.92	-10,324.93	5,430.61	110	0.23	0.6	2.21696	uPVC	145	0.14
P-234	77.5	20.853	20.076	9.38626	J-185	J-109	233.46	-10,244.96	5,894.38	140	0.61	2.69	9.38626	HDPE	145	0.21
P-235	31.5	20.068	20.013	5.31887	J-110	J-186	234	-10,171.93	5,866.16	110	0.56	3.04	5.31887	uPVC	145	0.1
P-236	69	20.013	20.672	-6.44109	J-186	J-187	233.96	-10,160.97	5,895.92	125	0.52	2.32	6.44109	HDPE	145	0.16
P-237	15.5	20.013	19.952	11.33675	J-186	J-188	233.96	-10,160.97	5,895.92	160	0.56	1.99	11.33675	HDPE	145	0.03
P-238	57	19.952	20.029	5.61027	J-188	J-189	233.99	-10,156.03	5,910.74	125	0.46	1.8	5.61027	HDPE	145	0.1
P-239	54.5	20.029	20.18	-0.28858	J-189	J-190	233.81	-10,135.65	5,963.85	110	0.03	0.01	0.28858	uPVC	145	0
P-24	100	18.553	18.573	-3.36046	J-23	J-20	233.88	-10,159.75	6,210.20	110	0.35	1.3	3.36046	uPVC	145	0.13
P-240	83	19.952	19.475	5.36453	J-188	J-191	233.99	-10,156.03	5,910.74	125	0.44	1.66	5.36453	HDPE	145	0.14
P-241	49.5	19.475	19.293	1.37762	J-191	J-112	234.33	-10,073.28	5,904.88	110	0.14	0.25	1.37762	uPVC	145	0.01
P-242	60	20.029	19.639	5.42135	J-189	J-192	233.81	-10,135.65	5,963.85	125	0.44	1.69	5.42135	HDPE	145	0.1
P-243	48.5	19.639	19.475	-3.45929	J-192	J-191	234.1	-10,076.99	5,953.04	110	0.36	1.37	3.45929	uPVC	145	0.07
P-244	52	19.639	19.244	8.46579	J-192	J-193	234.1	-10,076.99	5,953.04	140	0.55	2.22	8.46579	HDPE	145	0.12
P-25	54.5	18.553	18.492	5.73873	J-23	J-24	233.88	-10,159.75	6,210.20	110	0.6	3.5	5.73873	uPVC	145	0.19
P-26	68.5	18.492	18.528	5.40323	J-24	J-25	233.75	-10,213.40	6,202.87	110	0.57	3.13	5.40323	uPVC	145	0.21
P-27	48.5	18.528	18.474	-1.6154	J-25	J-26	233.5	-10,226.13	6,270.41	110	0.17	0.33	1.6154	uPVC	145	0.02
P-28	55	18.474	18.439	-8.2987	J-26	J-22	233.57	-10,235.01	6,318.27	125	0.68	3.72	8.2987	HDPE	145	0.2
P-29	155.5	18.474	18.493	5.94965	J-26	J-27	233.57	-10,235.01	6,318.27	110	0.63	3.74	5.94965	uPVC	145	0.58
P-290	30	16.284	16.376	-2.51111	J-144	J-222	235.98	-10,016.00	5,278.30	110	0.26	0.76	2.51111	uPVC	145	0.02
P-291	37	16.376	16.541	-3.26803	J-222	J-145	235.91	-10,017.00	5,308.37	110	0.34	1.23	3.26803	uPVC	145	0.05
P-3	252.5	19.404	17.583	44.01375	J-2	J-3	234.84	-10,407.04	5,635.73	250	0.9	2.79	44.01375	HDPE	145	0.7
P-30	11	18.493	18.477	2.05526	J-27	J-28	232.97	-10,390.17	6,313.64	110	0.22	0.52	2.05526	uPVC	145	0.01
P-31	37.5	18.477	18.426	-1.36627	J-28	J-29	232.98	-10,387.08	6,302.83	110	0.14	0.25	1.36627	uPVC	145	0.01
P-32	28	18.426	18.316	0.35082	J-29	J-30	233.04	-10,375.11	6,267.33	110	0.04	0.02	0.35082	uPVC	145	0
P-33	18.5	18.316	18.316	0.05151	J-30	J-31	233.15	-10,350.80	6,281.61	110	0.01	0	0.05151	uPVC	145	0
P-34	30.5	18.316	18.156	0.08492	J-30	J-32	233.15	-10,350.80	6,281.61	110	0.01	0	0.08492	uPVC	145	0
P-35	12.5	18.426	18.382	-1.93426	J-29	J-33	233.04	-10,375.11	6,267.33	110	0.2	0.47	1.93426	uPVC	145	0.01

P-36	9	18.382	18.355	-3.58182	J-33	J-34	233.09	-10,372.41	6,254.98	110	0.38	1.46	3.58182	uPVC	145	0.01
P-37	36	18.355	18.152	-4.05421	J-34	J-35	233.13	-10,370.87	6,246.10	110	0.43	1.84	4.05421	uPVC	145	0.07
P-38	21	18.152	18.185	-6.52828	J-35	J-36	233.4	-10,362.38	6,211.36	110	0.69	4.44	6.52828	uPVC	145	0.09
P-39	20	18.185	18.227	-8.16762	J-36	J-37	233.46	-10,356.97	6,190.91	125	0.67	3.61	8.16762	HDPE	145	0.07
P-4	112	17.583	17.221	26.88814	J-3	J-4	235.96	-10,588.59	5,471.16	200	0.86	3.32	26.88814	HDPE	145	0.37
P-40	22.5	18.227	18.25	-5.50137	J-37	J-38	233.49	-10,337.67	6,195.54	110	0.58	3.24	5.50137	uPVC	145	0.07
P-41	30	18.25	18.372	-3.04894	J-38	J-39	233.54	-10,316.06	6,201.71	110	0.32	1.08	3.04894	uPVC	145	0.03
P-42	58.5	18.372	18.469	-3.38027	J-39	J-40	233.45	-10,324.17	6,230.66	110	0.36	1.31	3.38027	uPVC	145	0.08
P-43	53	18.469	18.528	-6.60934	J-40	J-25	233.43	-10,277.47	6,258.06	125	0.54	2.44	6.60934	HDPE	145	0.13
P-44	48.5	18.469	18.199	2.63464	J-40	J-41	233.43	-10,277.47	6,258.06	110	0.28	0.83	2.63464	uPVC	145	0.04
P-45	86	18.199	18.256	2.24345	J-41	J-42	233.66	-10,262.41	6,211.75	110	0.24	0.61	2.24345	uPVC	145	0.05
P-46	19.5	18.256	18.25	2.65428	J-42	J-38	233.55	-10,310.66	6,182.80	110	0.28	0.84	2.65428	uPVC	145	0.02
P-47	14	18.256	18.267	-0.66699	J-42	J-43	233.55	-10,310.66	6,182.80	110	0.07	0.06	0.66699	uPVC	145	0
P-48	26.5	18.267	18.244	4.65806	J-43	J-44	233.54	-10,306.80	6,169.29	110	0.49	2.38	4.65806	uPVC	145	0.06
P-49	28	18.244	18.227	2.86533	J-44	J-37	233.5	-10,331.50	6,168.14	110	0.3	0.97	2.86533	uPVC	145	0.03
P-5	109.5	17.221	18.027	19.74788	J-4	J-5	235.95	-10,699.75	5,482.89	180	0.78	3.13	19.74788	HDPE	145	0.34
P-50	54.5	18.493	18.543	3.57699	J-27	J-45	232.97	-10,390.17	6,313.64	110	0.38	1.46	3.57699	uPVC	145	0.08
P-51	19.5	18.543	18.401	6.33349	J-45	J-46	232.84	-10,441.82	6,305.43	110	0.67	4.2	6.33349	uPVC	145	0.08
P-52	30.5	18.401	18.403	4.87459	J-46	J-47	232.9	-10,459.36	6,296.53	110	0.51	2.59	4.87459	uPVC	145	0.08
P-53	34.5	18.403	18.423	2.12918	J-47	J-48	232.82	-10,473.19	6,323.95	110	0.22	0.56	2.12918	uPVC	145	0.02
P-54	20.5	18.423	18.464	1.88417	J-48	J-49	232.78	-10,503.57	6,307.90	110	0.2	0.44	1.88417	uPVC	145	0.01
P-55	28.5	18.464	18.449	-1.0982	J-49	J-50	232.73	-10,521.11	6,297.52	110	0.12	0.16	1.0982	uPVC	145	0
P-56	42	18.449	18.369	-4.66364	J-50	J-51	232.75	-10,507.77	6,272.33	110	0.49	2.38	4.66364	uPVC	145	0.1
P-57	12.5	18.369	18.401	-1.22363	J-51	J-46	232.93	-10,470.22	6,290.85	110	0.13	0.2	1.22363	uPVC	145	0
P-58	4.5	18.464	18.44	2.75128	J-49	J-52	232.73	-10,521.11	6,297.52	110	0.29	0.9	2.75128	uPVC	145	0
P-59	22	18.44	18.32	0.06125	J-52	J-53	232.75	-10,524.07	6,300.98	110	0.01	0	0.06125	uPVC	145	0
P-6	57	18.027	17.701	20.79897	J-5	J-6	234.8	-10,807.82	5,500.49	180	0.82	3.45	20.79897	HDPE	145	0.2
P-60	35	18.44	18.435	2.44083	J-52	J-54	232.75	-10,524.07	6,300.98	110	0.26	0.72	2.44083	uPVC	145	0.03
P-61	21	18.435	18.415	2.85696	J-54	J-55	232.73	-10,551.55	6,286.99	110	0.3	0.96	2.85696	uPVC	145	0.02
P-62	39	18.415	18.274	0.39444	J-55	J-56	232.73	-10,569.19	6,276.02	110	0.04	0.02	0.39444	uPVC	145	0
P-63	26.5	18.415	18.399	2.1841	J-55	J-57	232.73	-10,569.19	6,276.02	110	0.23	0.58	2.1841	uPVC	145	0.02
P-64	14	18.399	18.375	1.51945	J-57	J-58	232.73	-10,591.77	6,261.86	110	0.16	0.3	1.51945	uPVC	145	0
P-65	33.5	18.375	18.243	0.66529	J-58	J-59	232.75	-10,598.41	6,274.35	110	0.07	0.06	0.66529	uPVC	145	0
P-66	14	18.375	18.355	-0.04655	J-58	J-60	232.75	-10,598.41	6,274.35	110	0	0	0.04655	uPVC	145	0
P-67	8	18.355	18.325	0.86365	J-60	J-61	232.77	-10,611.22	6,268.18	110	0.09	0.1	0.86365	uPVC	145	0
P-68	23.5	18.325	18.233	0.71428	J-61	J-62	232.8	-10,615.33	6,274.82	110	0.08	0.07	0.71428	uPVC	145	0

P-69	16	18.355	18.399	-1.3181	J-60	J-63	232.77	-10,611.22	6,268.18	110	0.14	0.23	1.3181	uPVC	145	0
P-7	73.5	17.701	18.161	15.42365	J-6	J-7	234.93	-10,855.37	5,469.31	160	0.77	3.52	15.42365	HDPE	145	0.26
P-70	13.5	18.399	18.399	-0.49342	J-63	J-57	232.73	-10,603.00	6,254.58	110	0.05	0.04	0.49342	uPVC	145	0
P-71	30.5	18.399	18.314	-1.11702	J-63	J-64	232.73	-10,603.00	6,254.58	110	0.12	0.17	1.11702	uPVC	145	0.01
P-72	61	18.314	18.437	-2.09686	J-64	J-65	232.82	-10,587.94	6,227.82	110	0.22	0.54	2.09686	uPVC	145	0.03
P-73	30.5	18.437	18.449	-2.98492	J-65	J-50	232.73	-10,534.53	6,257.23	110	0.31	1.04	2.98492	uPVC	145	0.03
P-74	25	18.325	18.285	-0.00794	J-61	J-66	232.8	-10,615.33	6,274.82	110	0	0	0.00794	uPVC	145	0
P-75	13.5	18.285	18.265	-0.11514	J-66	J-67	232.84	-10,636.34	6,261.66	110	0.01	0	0.11514	uPVC	145	0
P-76	39.5	18.265	18.193	-1.2159	J-67	J-68	232.86	-10,630.61	6,249.21	110	0.13	0.2	1.2159	uPVC	145	0.01
P-77	26.5	18.193	18.314	-0.68749	J-68	J-64	232.94	-10,611.25	6,214.83	110	0.07	0.07	0.68749	uPVC	145	0
P-78	35	18.136	18.113	-1.98884	J-69	J-70	232.97	-10,667.17	6,270.56	110	0.21	0.49	1.98884	uPVC	145	0.02
P-79	40	18.113	18.055	-1.49087	J-70	J-71	233.01	-10,650.37	6,239.73	110	0.16	0.29	1.49087	uPVC	145	0.01
P-8	254	17.221	16.837	6.04466	J-4	J-8	235.95	-10,699.75	5,482.89	125	0.49	2.07	6.04466	HDPE	145	0.52
P-80	23.5	18.055	18.193	0.77342	J-71	J-68	233.08	-10,631.99	6,204.16	110	0.08	0.09	0.77342	uPVC	145	0
P-81	22	18.113	18.265	-0.73602	J-70	J-67	233.01	-10,650.37	6,239.73	110	0.08	0.08	0.73602	uPVC	145	0
P-82	22.5	18.055	17.952	-2.48982	J-71	J-72	233.08	-10,631.99	6,204.16	110	0.26	0.74	2.48982	uPVC	145	0.02
P-83	91.5	17.952	17.933	3.36391	J-72	J-73	233.2	-10,651.76	6,193.29	110	0.35	1.3	3.36391	HDPE	145	0.12
P-84	285.5	17.933	17.895	1.97409	J-73	J-74	233.1	-10,711.83	6,252.38	110	0.21	0.48	1.97409	uPVC	145	0.14
P-85	32	17.952	18.075	-6.30895	J-72	J-75	233.2	-10,651.76	6,193.29	110	0.66	4.17	6.30895	HDPE	145	0.13
P-86	48	18.075	18.239	-5.66173	J-75	J-76	233.21	-10,631.56	6,168.50	110	0.6	3.41	5.66173	HDPE	145	0.16
P-87	194.5	18.239	18.273	-0.96253	J-76	J-77	233.21	-10,602.13	6,130.87	110	0.1	0.13	0.96253	uPVC	145	0.02
P-88	9	18.273	18.28	3.56173	J-77	J-78	233.2	-10,428.45	6,218.68	110	0.37	1.45	3.56173	uPVC	145	0.01
P-89	28	18.28	18.301	4.36246	J-78	J-79	233.18	-10,431.83	6,226.88	110	0.46	2.1	4.36246	uPVC	145	0.06
P-9	81	21.347	21.274	84.00582	J-1	J-9	233.61	-10,347.14	5,758.93	315	1.08	3	84.00582	HDPE	145	0.24
P-90	13.5	18.301	18.29	5.9861	J-79	J-80	233.1	-10,446.22	6,251.02	110	0.63	3.78	5.9861	uPVC	145	0.05
P-91	201	18.29	18.075	1.59526	J-80	J-75	233.06	-10,453.63	6,262.32	110	0.17	0.33	1.59526	uPVC	145	0.07
P-92	33	18.369	18.29	-3.69617	J-51	J-80	232.93	-10,470.22	6,290.85	110	0.39	1.55	3.69617	uPVC	145	0.05
P-93	28.5	18.301	18.343	-1.81853	J-79	J-81	233.1	-10,446.22	6,251.02	110	0.19	0.42	1.81853	uPVC	145	0.01
P-94	15.5	18.343	18.389	-2.958	J-81	J-82	233.07	-10,421.02	6,264.58	110	0.31	1.02	2.958	uPVC	145	0.02
P-95	19	18.389	18.429	0.16259	J-82	J-83	233.04	-10,406.99	6,271.49	110	0.02	0	0.16259	uPVC	145	0
P-96	18	18.429	18.382	2.7739	J-83	J-84	233	-10,414.30	6,289.28	110	0.29	0.91	2.7739	uPVC	145	0.02
P-97	30.5	18.429	18.477	-2.79925	J-83	J-28	233	-10,414.30	6,289.28	110	0.29	0.93	2.79925	uPVC	145	0.03
P-98	28.5	18.389	18.355	-3.33219	J-82	J-85	233.04	-10,406.99	6,271.49	110	0.35	1.28	3.33219	uPVC	145	0.04
P-99	24.5	18.355	18.382	-1.45405	J-85	J-33	233.11	-10,394.93	6,245.61	110	0.15	0.28	1.45405	uPVC	145	0.01
PP-245	34.5	18.437	18.435	0.6333	J-65	J-54	232.73	-10,534.53	6,257.23	110	0.07	0.06	0.6333	HDPE	145	0
PP-246	27	18.543	18.382	-3.03771	J-45	J-84	232.84	-10,441.82	6,305.43	110	0.32	1.08	3.03771	HDPE	145	0.03

Distribution Network Design Output: Zone 3

PP-247	19	18.382	18.343	-0.44479	J-84	J-81	233.03	-10,430.30	6,281.18	110	0.05	0.03	0.44479	HDPE	145	0
PP-248	20.5	18.372	18.392	0.05708	J-39	PJ-194	233.45	-10,324.17	6,230.66	110	0.01	0	0.05708	HDPE	145	0
PP-249	25.5	18.126	18.176	1.72733	J-89	J-88	233.42	-10,411.53	6,194.23	110	0.18	0.38	1.72733	HDPE	145	0.01
PP-250	26.5	18.176	18.152	-2.22767	J-88	J-35	233.36	-10,387.62	6,203.51	110	0.23	0.61	2.22767	HDPE	145	0.02
PP-251	78.5	18.224	18.215	-0.21856	PJ-195	J-91	233.45	-10,470.30	6,141.25	110	0.02	0.01	0.21856	HDPE	145	0
PP-252	9	17.933	17.863	0.50722	J-73	PJ-196	233.1	-10,711.83	6,252.38	110	0.05	0.04	0.50722	HDPE	145	0
PP-253	9.5	17.863	17.863	0.26081	PJ-196	PJ-197	233.17	-10,716.49	6,259.97	110	0.03	0.01	0.26081	HDPE	145	0
PP-254	7.5	17.863	17.863	0.0325	PJ-197	PJ-198	233.17	-10,708.65	6,265.16	110	0	0	0.0325	HDPE	145	0
PP-255	22	17.863	17.952	0.06125	PJ-197	PJ-199	233.17	-10,708.65	6,265.16	110	0.01	0	0.06125	HDPE	145	0
PP-256	28.5	17.863	17.753	0.07935	PJ-196	PJ-200	233.17	-10,716.49	6,259.97	110	0.01	0	0.07935	HDPE	145	0
PP-257	42.5	18.553	18.82	-7.043	J-23	J-96	233.88	-10,159.75	6,210.20	110	0.74	5.11	7.043	HDPE	145	0.22
PP-258	33.5	18.332	18.252	0.09327	J-21	PJ-201	234.08	-10,121.92	6,325.99	110	0.01	0	0.09327	HDPE	145	0
PP-259	38	18.332	18.162	0.1058	J-21	PJ-202	234.08	-10,121.92	6,325.99	110	0.01	0	0.1058	HDPE	145	0
PP-260	65.5	19.24	18.904	-1.24117	J-13	PJ-203	233.91	-10,098.91	6,143.43	110	0.13	0.21	1.24117	HDPE	145	0.01
PP-261	132.5	18.904	18.629	7.07276	PJ-203	PJ-204	234.26	-10,036.40	6,123.09	125	0.58	2.76	7.07276	HDPE	145	0.37
PP-262	5	18.629	18.648	0.86823	PJ-204	J-15	234.17	-10,050.30	6,254.62	110	0.09	0.11	0.86823	HDPE	145	0
PP-263	34.5	18.629	18.471	5.91218	PJ-204	PJ-205	234.17	-10,050.30	6,254.62	125	0.48	1.98	5.91218	HDPE	145	0.07
PP-264	8.5	18.471	18.488	4.95718	PJ-205	J-18	234.26	-10,054.62	6,288.90	110	0.52	2.67	4.95718	HDPE	145	0.02
PP-265	101	18.471	18.22	0.28121	PJ-205	PJ-206	234.26	-10,054.62	6,288.90	110	0.03	0.01	0.28121	HDPE	145	0
PP-266	173	18.904	19.201	-9.1854	PJ-203	PJ-207	234.26	-10,036.40	6,123.09	140	0.6	2.58	9.1854	HDPE	145	0.45
PP-267	6.5	19.201	19.244	-8.13029	PJ-207	J-193	234.41	-10,018.50	5,950.98	140	0.53	2.06	8.13029	HDPE	145	0.01
PP-268	92.5	19.201	18.427	-1.42681	PJ-207	PJ-208	234.41	-10,018.50	5,950.98	110	0.15	0.27	1.42681	HDPE	145	0.02
PP-269	9.5	18.427	18.499	-8.85428	PJ-208	J-113	235.21	-10,006.89	5,859.09	140	0.58	2.41	8.85428	HDPE	145	0.02
PP-270	81.5	18.427	18.204	6.69243	PJ-208	PJ-209	235.21	-10,006.89	5,859.09	125	0.55	2.5	6.69243	HDPE	145	0.2
PP-271	6	18.204	18.265	-4.12643	PJ-209	J-104	235.23	-9,996.02	5,778.32	110	0.43	1.9	4.12643	HDPE	145	0.01
PP-272	96.5	18.204	17.698	10.27593	PJ-209	J-119	235.23	-9,996.02	5,778.32	140	0.67	3.18	10.27593	HDPE	145	0.31
PP-273	213.5	17.698	16.892	6.52085	J-119	J-121	235.43	-9,980.49	5,683.09	125	0.53	2.38	6.52085	HDPE	145	0.51
PP-274	117	16.892	16.463	4.67269	J-121	J-131	235.73	-9,939.20	5,473.59	110	0.49	2.39	4.67269	HDPE	145	0.28
PP-275	165	16.463	15.817	2.64868	J-131	J-134	235.88	-9,912.95	5,359.35	110	0.28	0.84	2.64868	HDPE	145	0.14
PP-276	25.5	15.817	15.802	2.11889	J-134	PJ-210	236.39	-9,875.13	5,198.79	110	0.22	0.55	2.11889	HDPE	145	0.01
PP-277	188	15.802	15.756	1.52445	PJ-210	PJ-211	236.39	-9,867.00	5,174.41	110	0.16	0.3	1.52445	HDPE	145	0.06
PP-278	9	15.756	15.796	0.2213	PJ-211	J-135	236.38	-10,046.58	5,118.83	110	0.02	0.01	0.2213	HDPE	145	0
PP-279	73.5	15.823	15.756	-0.52774	J-137	PJ-211	236.31	-10,078.91	5,136.65	110	0.06	0.04	0.52774	HDPE	145	0
PP-280	78	15.877	15.634	-0.80043	J-177	PJ-212	236.16	-10,350.21	5,144.69	110	0.08	0.09	0.80043	HDPE	145	0.01
PP-281	133.5	15.634	16.147	-1.3893	PJ-212	PJ-213	236.41	-10,390.24	5,082.40	110	0.15	0.25	1.3893	HDPE	145	0.03
PP-282	58.5	16.147	16.323	-6.33826	PJ-213	PJ-214	235.93	-10,522.24	5,087.34	110	0.67	4.21	6.33826	HDPE	145	0.25

PP-283	108.5	16.323	16.735	-11.62347	PJ-214	PJ-215	236	-10,528.57	5,145.64	140	0.76	3.99	11.62347	HDPE	145	0.43
PP-284	222.5	16.735	17.583	-15.49125	PJ-215	J-3	236.02	-10,546.75	5,252.74	160	0.77	3.55	15.49125	HDPE	145	0.79
PP-285	62.5	17.844	17.727	1.46313	J-183	PJ-216	235.45	-10,381.86	5,485.61	110	0.15	0.28	1.46313	HDPE	145	0.02
PP-286	73.5	17.727	17.523	0.60001	PJ-216	PJ-217	235.55	-10,424.49	5,439.62	110	0.06	0.05	0.60001	HDPE	145	0
PP-287	71	17.523	17.044	0.19768	PJ-217	PJ-218	235.75	-10,477.56	5,388.48	110	0.02	0.01	0.19768	HDPE	145	0
PP-288	64	17.137	17.727	-0.17819	PJ-219	PJ-216	236.14	-10,379.62	5,393.79	110	0.02	0.01	0.17819	HDPE	145	0
PP-289	17.5	15.647	15.647	-0.04872	PJ-220	J-167	236.39	-10,387.34	5,349.40	110	0.01	0	0.04872	HDPE	145	0
PP-290	32.5	18.157	18.037	0.09049	J-181	PJ-221	235.14	-10,373.66	5,527.10	110	0.01	0	0.09049	HDPE	145	0
PP-292	49.5	16.415	16.376	-0.36295	J-148	J-222	235.87	-10,066.05	5,314.03	110	0.04	0.02	0.36295	HDPE	145	0
PP-293	40	19.902	19.902	0.11137	J-100	PJ-223	234.12	-10,181.58	5,740.73	110	0.01	0	0.11137	HDPE	145	0
PP-294	26.5	20.567	20.657	-0.07378	PJ-224	J-98	233.85	-10,260.58	5,766.62	110	0.01	0	0.07378	HDPE	145	0
PP-295	12.5	20.899	20.853	9.822	J-10	J-185	233.45	-10,255.41	5,901.12	140	0.64	2.92	9.822	HDPE	145	0.04
PP-296	13.5	20.701	20.672	6.78494	J-11	J-187	233.45	-10,231.10	5,939.46	140	0.44	1.47	6.78494	HDPE	145	0.02
PP-297	13	20.21	20.18	0.63244	J-12	J-190	233.63	-10,193.77	5,998.05	110	0.07	0.06	0.63244	HDPE	145	0
PP-298	20	18.423	18.304	0.05569	J-48	PJ-225	232.78	-10,503.57	6,307.90	110	0.01	0	0.05569	HDPE	145	0
PP-299	17	18.403	18.32	2.51014	J-47	PJ-226	232.82	-10,473.19	6,323.95	110	0.26	0.76	2.51014	HDPE	145	0.01
PP-300	117.5	18.32	18.184	2.13566	PJ-226	PJ-227	232.89	-10,478.77	6,339.82	110	0.22	0.56	2.13566	HDPE	145	0.07
PP-301	20	18.184	18.274	-0.15082	PJ-227	J-56	232.96	-10,595.86	6,328.38	110	0.02	0	0.15082	HDPE	145	0
PP-302	4.5	18.233	18.213	0.63633	J-62	PJ-228	232.89	-10,626.24	6,295.85	110	0.07	0.06	0.63633	HDPE	145	0
PP-303	33.5	18.213	18.061	0.6863	PJ-228	PJ-229	232.91	-10,627.98	6,299.73	110	0.07	0.07	0.6863	HDPE	145	0
PP-304	16.5	18.213	18.243	-0.51633	PJ-228	J-59	232.91	-10,627.98	6,299.73	110	0.05	0.04	0.51633	HDPE	145	0
PP-305	52	18.184	18.061	1.91199	PJ-227	PJ-229	232.96	-10,595.86	6,328.38	110	0.2	0.46	1.91199	HDPE	145	0.02
PP-306	51	18.061	17.821	2.21824	PJ-229	PJ-230	233.06	-10,644.03	6,328.87	110	0.23	0.6	2.21824	HDPE	145	0.03
PP-307	18.5	17.821	17.914	-1.12711	PJ-230	PJ-231	233.27	-10,692.45	6,313.81	110	0.12	0.17	1.12711	HDPE	145	0
PP-308	31.5	17.914	18.136	-1.80368	PJ-231	J-69	233.18	-10,683.80	6,297.50	110	0.19	0.41	1.80368	HDPE	145	0.01
PP-309	11.5	17.874	17.914	-0.03202	PJ-232	PJ-231	233.22	-10,694.42	6,293.30	110	0	0	0.03202	HDPE	145	0
PP-310	32.5	17.914	18.043	0.09049	PJ-231	PJ-233	233.18	-10,683.80	6,297.50	110	0.01	0	0.09049	HDPE	145	0
PP-311	279	17.821	17.451	2.37504	PJ-230	PJ-234	233.27	-10,692.45	6,313.81	110	0.25	0.68	2.37504	HDPE	145	0.19
PP-312	126	17.451	17.545	1.24741	PJ-234	PJ-235	233.45	-10,935.34	6,177.52	110	0.13	0.21	1.24741	HDPE	145	0.03
PP-313	50	17.545	17.557	-1.40859	PJ-235	PJ-236	233.33	-11,022.18	6,086.34	110	0.15	0.26	1.40859	HDPE	145	0.01
PP-314	53.5	17.557	17.895	-1.03022	PJ-236	J-74	233.33	-10,984.55	6,053.53	110	0.11	0.15	1.03022	HDPE	145	0.01
PP-315	254	17.557	17.73	-1.37374	PJ-236	PJ-237	233.33	-10,984.55	6,053.53	110	0.14	0.25	1.37374	HDPE	145	0.06
PP-316	304.5	17.73	17.647	-2.92875	PJ-237	PJ-238	233.22	-11,138.95	5,851.84	110	0.31	1.01	2.92875	HDPE	145	0.31
PP-317	225	17.647	17.994	-5.81895	PJ-238	PJ-239	233.61	-11,225.64	5,563.12	110	0.61	3.59	5.81895	HDPE	145	0.81
PP-318	116.5	17.994	17.718	6.1714	PJ-239	PJ-240	234.07	-11,004.77	5,527.69	110	0.65	4	6.1714	HDPE	145	0.47
PP-319	505.5	17.718	18.232	1.5382	PJ-240	PJ-241	233.88	-10,976.12	5,640.76	110	0.16	0.31	1.5382	HDPE	145	0.15

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PP-320	122.5	18.232	18.239	-0.57485	PJ-241	J-76	233.21	-10,694.94	6,050.85	110	0.06	0.05	0.57485	HDPE	145	0.01
PP-321	70.5	18.232	17.983	0.16825	PJ-241	PJ-242	233.21	-10,694.94	6,050.85	110	0.02	0.01	0.16825	HDPE	145	0
PP-322	456.5	17.983	18.933	-1.29906	PJ-242	PJ-243	233.46	-10,651.97	5,995.06	110	0.14	0.22	1.29906	HDPE	145	0.1
PP-323	59.5	18.933	17.718	-2.73573	PJ-243	PJ-240	232.61	-10,918.83	5,624.93	110	0.29	0.89	2.73573	HDPE	145	0.05
PP-324	92.5	17.994	18.161	-14.96147	PJ-239	J-7	234.07	-11,004.77	5,527.69	160	0.74	3.33	14.96147	HDPE	145	0.31
PP-325	386.5	18.027	19.472	-2.19681	J-5	PJ-244	234.8	-10,807.82	5,500.49	110	0.23	0.59	2.19681	HDPE	145	0.23
PP-326	319.5	19.472	19.404	-15.9143	PJ-244	J-2	233.58	-10,673.68	5,811.97	160	0.79	3.73	15.9143	HDPE	145	1.19
PP-327	268	19.472	18.826	11.00562	PJ-244	J-97	233.58	-10,673.68	5,811.97	140	0.71	3.61	11.00562	HDPE	145	0.97
PP-328	603	17.545	16.575	0.48707	PJ-235	PJ-245	233.33	-11,022.18	6,086.34	110	0.05	0.04	0.48707	HDPE	145	0.02
PP-329	437.5	16.575	15.993	-2.40995	PJ-245	PJ-246	234.28	-11,280.14	5,565.80	110	0.25	0.7	2.40995	HDPE	145	0.31
PP-330	86.5	15.993	15.776	-3.03301	PJ-246	PJ-247	235.17	-11,223.60	5,134.23	110	0.32	1.07	3.03301	HDPE	145	0.09
PP-331	418	15.776	17.647	-0.25212	PJ-247	PJ-238	235.48	-11,140.26	5,155.76	110	0.03	0.01	0.25212	HDPE	145	0
PP-332	139	15.776	16.825	-6.19725	PJ-247	PJ-248	235.48	-11,140.26	5,155.76	110	0.65	4.03	6.19725	HDPE	145	0.56
PP-333	356.5	16.825	17.994	-2.41705	PJ-248	PJ-239	234.99	-11,002.87	5,175.97	110	0.25	0.71	2.41705	HDPE	145	0.25
PP-334	276	17.701	16.763	4.47461	J-6	PJ-249	234.93	-10,855.37	5,469.31	110	0.47	2.21	4.47461	HDPE	145	0.61
PP-335	120.5	16.763	16.825	5.4953	PJ-249	PJ-248	235.26	-10,884.07	5,195.27	125	0.45	1.73	5.4953	HDPE	145	0.21
PP-336	222	16.763	16.837	-7.13653	PJ-249	J-8	235.26	-10,884.07	5,195.27	125	0.58	2.81	7.13653	HDPE	145	0.62
PP-337	120	16.837	16.735	-2.75129	J-8	PJ-215	235.81	-10,665.04	5,231.75	110	0.29	0.9	2.75129	HDPE	145	0.11
PP-338	105.5	16.763	16.66	4.27684	PJ-249	PJ-250	235.26	-10,884.07	5,195.27	110	0.45	2.03	4.27684	HDPE	145	0.21
PP-339	332.5	16.66	16.323	-3.68565	PJ-250	PJ-214	235.15	-10,856.93	5,093.35	110	0.39	1.54	3.68565	HDPE	145	0.51
PP-340	80.5	16.66	16.668	6.51886	PJ-250	PJ-251	235.15	-10,856.93	5,093.35	125	0.53	2.38	6.51886	HDPE	145	0.19
PP-341	102.5	16.668	16.396	1.576	PJ-251	PJ-252	234.95	-10,818.33	5,022.79	110	0.17	0.32	1.576	HDPE	145	0.03
PP-342	315.5	16.396	16.147	-3.70301	PJ-252	PJ-213	235.19	-10,765.27	4,935.35	110	0.39	1.55	3.70301	HDPE	145	0.49
PP-343	206	16.396	15.663	3.54164	PJ-252	PJ-253	235.19	-10,765.27	4,935.35	110	0.37	1.43	3.54164	HDPE	145	0.29
PP-344	110.5	15.663	15.614	1.12079	PJ-253	PJ-254	235.63	-10,943.17	4,831.02	110	0.12	0.17	1.12079	HDPE	145	0.02
PP-345	206.5	15.614	16.668	-3.85839	PJ-254	PJ-251	235.66	-11,000.46	4,925.70	110	0.41	1.68	3.85839	HDPE	145	0.35
PP-346	56	15.614	15.651	1.78059	PJ-254	PJ-255	235.66	-11,000.46	4,925.70	110	0.19	0.4	1.78059	HDPE	145	0.02
PP-347	213	15.651	15.776	-0.37595	PJ-255	PJ-247	235.6	-11,030.01	4,973.34	110	0.04	0.02	0.37595	HDPE	145	0
PP-348	239.5	15.993	15.574	-1.50272	PJ-246	PJ-256	235.17	-11,223.60	5,134.23	110	0.16	0.29	1.50272	HDPE	145	0.07
PP-349	55.5	15.574	15.59	-1.52625	PJ-256	PJ-257	235.66	-11,123.48	4,916.65	110	0.16	0.3	1.52625	HDPE	145	0.02
PP-350	111	15.59	15.608	-1.09382	PJ-257	PJ-258	235.66	-11,102.38	4,865.39	110	0.12	0.16	1.09382	HDPE	145	0.02
PP-351	134	15.608	15.663	-1.16654	PJ-258	PJ-253	235.66	-11,058.96	4,763.48	110	0.12	0.18	1.16654	HDPE	145	0.02
PP-352	109.5	15.574	15.651	-1.1027	PJ-256	PJ-255	235.66	-11,123.48	4,916.65	110	0.12	0.16	1.1027	HDPE	145	0.02
PP-353	118.5	15.59	15.614	-1.22594	PJ-257	PJ-254	235.66	-11,102.38	4,865.39	110	0.13	0.2	1.22594	HDPE	145	0.02

25674.5

BOQ for Z3								
				Existing		Proposal to meet 2041 requirement		
Label	From Nod	To Node	Length (m	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	23.5	110	PVC	355	HDPE	Replacement
P-10	J-9	J-10	88	110	PVC	225	HDPE	Replacement
P-100	J-78	J-86	33	110	PVC	110	uPVC	Retained
P-101	J-86	J-85	8.5	110	PVC	110	uPVC	Retained
P-102	J-86	J-87	9.5	110	PVC	110	uPVC	Retained
P-103	J-87	J-34	31.5	110	PVC	110	uPVC	Retained
P-104	J-87	J-88	32.5	110	PVC	110	uPVC	Retained
P-105	J-77	J-89	29.5	110	PVC	110	uPVC	Retained
P-106	J-89	J-90	19	110	PVC	110	uPVC	Retained
P-107	J-90	J-36	46.5	110	PVC	110	uPVC	Retained
P-108	J-90	J-91	11.5	160	PVC	110	HDPE	Replacement
P-109	J-91	J-92	13	160	PVC	110	HDPE	Replacement
P-11	J-10	J-11	45.5	110	PVC	200	HDPE	Replacement
P-110	J-92	J-44	60	110	PVC	110	uPVC	Retained
P-111	J-92	J-93	68.5	160	PVC	110	HDPE	Replacement
P-112	J-93	J-94	62.5	110	PVC	110	uPVC	Retained
P-113	J-94	J-43	59	110	PVC	110	uPVC	Retained
P-114	J-94	J-95	147.5	110	PVC	125	HDPE	Replacement
P-115	J-95	J-14	62	110	PVC	160	HDPE	Replacement
P-116	J-96	J-95	26	110	PVC	110	uPVC	Retained
P-117	J-76	J-97	138	160	PVC	110	HDPE	Replacement
P-118	J-97	J-93	176.5	110	PVC	110	uPVC	Retained
P-119	J-9	J-98	69	110	PVC	225	HDPE	Replacement
P-12	J-11	J-12	69.5	110	PVC	180	HDPE	Replacement
P-120	J-98	J-99	18.5	110	PVC	225	HDPE	Replacement
P-121	J-99	J-100	61.5	110	PVC	180	HDPE	Replacement
P-122	J-100	J-101	60.5	110	PVC	180	HDPE	Replacement
P-123	J-101	J-102	57	110	PVC	160	HDPE	Replacement
P-124	J-102	J-103	37.5	110	PVC	125	HDPE	Replacement
P-125	J-103	J-104	65	110	PVC	110	uPVC	Retained
P-126	J-103	J-105	67	110	PVC	140	HDPE	Replacement
P-127	J-105	J-106	25.5	110	PVC	140	HDPE	Replacement
P-128	J-106	J-107	64.5	110	PVC	125	HDPE	Replacement
P-129	J-107	J-100	46	110	PVC	110	uPVC	Retained
P-13	J-12	J-13	173.5	110	PVC	180	HDPE	Replacement
P-130	J-99	J-108	47	110	PVC	160	HDPE	Replacement
P-131	J-108	J-109	41.5	110	PVC	110	uPVC	Retained
P-132	J-109	J-110	15.5	110	PVC	160	HDPE	Replacement
P-133	J-110	J-111	54.5	110	PVC	125	HDPE	Replacement
P-134	J-111	J-112	49.5	110	PVC	140	HDPE	Replacement
P-135	J-112	J-105	45	110	PVC	110	uPVC	Retained
P-136	J-112	J-113	52.5	110	PVC	140	HDPE	Replacement
P-137	J-108	J-114	43.5	110	PVC	160	HDPE	Replacement
P-138	J-114	J-115	52	110	PVC	125	HDPE	Replacement
P-139	J-115	J-111	35	110	PVC	110	uPVC	Retained
P-14	J-13	J-14	17.5	110	PVC	180	HDPE	Replacement
P-140	J-106	J-115	60.5	110	PVC	110	uPVC	Retained
P-141	J-107	J-114	35	110	PVC	110	uPVC	Retained
P-142	J-102	J-116	64	110	PVC	180	HDPE	Replacement
P-143	J-116	J-117	30.5	110	PVC	140	HDPE	Replacement
P-144	J-117	J-118	33.5	110	PVC	110	uPVC	Retained
P-145	J-118	J-119	39	110	PVC	110	uPVC	Retained
P-146	J-118	J-120	210.5	110	PVC	125	HDPE	Replacement
P-147	J-120	J-121	33	110	PVC	110	uPVC	Retained
P-148	J-120	J-122	14.5	110	PVC	125	HDPE	Replacement
P-149	J-122	J-123	19.5	110	PVC	110	uPVC	Retained
P-15	J-14	J-15	102.5	110	PVC	110	uPVC	Retained
P-150	J-123	J-124	65.5	110	PVC	125	HDPE	Replacement
P-151	J-124	J-117	141.5	110	PVC	125	HDPE	Replacement

BOQ for Z3								
				Existing		Proposal to meet 2041 requirement		
Label	From Nod	To Node	Length (m	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-116	J-125	137.5	110	PVC	125	HDPE	Replacement
P-153	J-125	J-124	78.5	110	PVC	110	uPVC	Retained
P-154	J-125	J-126	57.5	110	PVC	125	HDPE	Replacement
P-155	J-126	J-127	39.5	110	PVC	110	uPVC	Retained
P-156	J-127	J-128	25.5	110	PVC	110	uPVC	Retained
P-157	J-128	J-123	47.5	110	PVC	110	uPVC	Retained
P-158	J-122	J-129	50.5	110	PVC	125	HDPE	Replacement
P-159	J-129	J-130	68	110	PVC	110	uPVC	Retained
P-16	J-15	J-16	19.5	110	PVC	125	HDPE	Replacement
P-160	J-130	J-131	56.5	110	PVC	110	uPVC	Retained
P-161	J-130	J-132	138.5	110	PVC	110	uPVC	Retained
P-162	J-132	J-133	25	110	PVC	110	uPVC	Retained
P-163	J-133	J-134	69	110	PVC	110	uPVC	Retained
P-164	J-135	J-136	50	110	PVC	110	uPVC	Retained
P-165	J-136	J-133	118	110	PVC	110	uPVC	Retained
P-166	J-137	J-138	50.5	110	PVC	110	uPVC	Retained
P-167	J-138	J-136	13	110	PVC	110	uPVC	Retained
P-168	J-138	J-139	64.5	110	PVC	110	uPVC	Retained
P-169	J-139	J-140	7	110	PVC	110	uPVC	Retained
P-17	J-16	J-17	32.5	110	PVC	110	uPVC	Retained
P-170	J-139	J-141	45.5	110	PVC	110	uPVC	Retained
P-171	J-141	J-142	27	110	PVC	110	uPVC	Retained
P-172	J-132	J-143	65.5	110	PVC	110	uPVC	Retained
P-173	J-143	J-144	67	110	PVC	110	uPVC	Retained
P-175	J-145	J-130	49.5	110	PVC	110	uPVC	Retained
P-176	J-145	J-146	70.5	110	PVC	110	uPVC	Retained
P-178	J-146	J-129	41.5	110	PVC	110	uPVC	Retained
P-179	J-146	J-147	34.5	110	PVC	110	uPVC	Retained
P-18	J-17	J-18	14.5	110	PVC	110	uPVC	Retained
P-180	J-147	J-128	45.5	110	PVC	110	uPVC	Retained
P-181	J-147	J-148	99.5	110	PVC	110	uPVC	Retained
P-182	J-148	J-149	25	110	PVC	110	uPVC	Retained
P-183	J-149	J-144	53.5	110	PVC	110	uPVC	Retained
P-184	J-141	J-150	43.5	110	PVC	110	uPVC	Retained
P-185	J-150	J-151	8.5	110	PVC	110	uPVC	Retained
P-186	J-151	J-152	47.5	110	PVC	110	uPVC	Retained
P-187	J-152	J-153	8	110	PVC	125	HDPE	Replacement
P-188	J-153	J-149	44	110	PVC	110	uPVC	Retained
P-189	J-153	J-127	169	110	PVC	110	uPVC	Retained
P-19	J-19	J-16	12	110	PVC	110	uPVC	Retained
P-190	J-126	J-154	162.5	110	PVC	110	uPVC	Retained
P-191	J-154	J-152	58.5	110	PVC	110	uPVC	Retained
P-192	J-154	J-155	52	110	PVC	110	uPVC	Retained
P-193	J-155	J-151	58	110	PVC	110	uPVC	Retained
P-194	J-155	J-156	33.5	110	PVC	110	uPVC	Retained
P-195	J-156	J-157	13.5	110	PVC	110	uPVC	Retained
P-196	J-157	J-158	45	110	PVC	110	uPVC	Retained
P-197	J-158	J-150	20.5	110	PVC	110	uPVC	Retained
P-198	J-158	J-159	43.5	110	PVC	110	uPVC	Retained
P-199	J-159	J-157	21	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	137.5	110	PVC	250	HDPE	Replacement
P-20	J-17	J-20	36	110	PVC	140	HDPE	Replacement
P-200	J-160	J-159	82.5	110	PVC	110	uPVC	Retained
P-201	J-159	J-161	38.5	110	PVC	110	uPVC	Retained
P-202	J-156	J-162	77	110	PVC	110	uPVC	Retained
P-203	J-162	J-163	40.5	110	PVC	110	uPVC	Retained
P-204	J-163	J-164	43.5	110	PVC	110	uPVC	Retained
P-205	J-164	J-165	50	110	PVC	110	uPVC	Retained
P-206	J-165	J-154	120.5	110	PVC	110	uPVC	Retained
P-207	J-164	J-155	116.5	110	PVC	110	uPVC	Retained

BOQ for Z3								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-208	J-164	J-166	77	110	PVC	110	uPVC	Retained
P-209	J-166	J-167	15.5	110	PVC	110	uPVC	Retained
P-21	J-20	J-21	43	110	PVC	110	uPVC	Retained
P-210	J-167	J-168	41.5	110	PVC	110	uPVC	Retained
P-211	J-168	J-169	18.5	110	PVC	110	uPVC	Retained
P-212	J-169	J-163	76	110	PVC	110	uPVC	Retained
P-213	J-169	J-166	40.5	110	PVC	110	uPVC	Retained
P-214	J-168	J-170	53.5	110	PVC	110	uPVC	Retained
P-215	J-170	J-171	52.5	110	PVC	110	uPVC	Retained
P-216	J-171	J-172	18	110	PVC	110	uPVC	Retained
P-217	J-172	J-173	83.5	110	PVC	110	uPVC	Retained
P-218	J-173	J-174	44	110	PVC	110	uPVC	Retained
P-219	J-174	J-162	98.5	110	PVC	110	uPVC	Retained
P-22	J-21	J-22	58.5	110	PVC	110	uPVC	Retained
P-220	J-170	J-175	14.5	110	PVC	110	uPVC	Retained
P-221	J-175	J-176	84	110	PVC	110	uPVC	Retained
P-222	J-176	J-163	50	110	PVC	110	uPVC	Retained
P-223	J-172	J-175	51	110	PVC	110	uPVC	Retained
P-224	J-176	J-173	53	110	PVC	110	uPVC	Retained
P-225	J-173	J-177	21.5	110	PVC	110	uPVC	Retained
P-226	J-101	J-178	96.5	110	PVC	110	uPVC	Retained
P-227	J-178	J-179	93	110	PVC	110	uPVC	Retained
P-228	J-179	J-180	67	110	PVC	110	uPVC	Retained
P-229	J-180	J-181	82	110	PVC	110	uPVC	Retained
P-23	J-22	J-23	113	110	PVC	110	uPVC	Retained
P-230	J-181	J-182	34	110	PVC	110	uPVC	Retained
P-231	J-182	J-183	20.5	110	PVC	110	uPVC	Retained
P-232	J-183	J-184	79	110	PVC	110	uPVC	Retained
P-233	J-184	J-178	241	110	PVC	110	uPVC	Retained
P-234	J-185	J-109	77.5	110	PVC	140	HDPE	Replacement
P-235	J-110	J-186	31.5	110	PVC	110	uPVC	Retained
P-236	J-186	J-187	69	110	PVC	125	HDPE	Replacement
P-237	J-186	J-188	15.5	110	PVC	160	HDPE	Replacement
P-238	J-188	J-189	57	110	PVC	125	HDPE	Replacement
P-239	J-189	J-190	54.5	110	PVC	110	uPVC	Retained
P-24	J-23	J-20	100	110	PVC	110	uPVC	Retained
P-240	J-188	J-191	83	110	PVC	125	HDPE	Replacement
P-241	J-191	J-112	49.5	110	PVC	110	uPVC	Retained
P-242	J-189	J-192	60	110	PVC	125	HDPE	Replacement
P-243	J-192	J-191	48.5	110	PVC	110	uPVC	Retained
P-244	J-192	J-193	52	110	PVC	140	HDPE	Replacement
P-25	J-23	J-24	54.5	110	PVC	110	uPVC	Retained
P-26	J-24	J-25	68.5	110	PVC	110	uPVC	Retained
P-27	J-25	J-26	48.5	110	PVC	110	uPVC	Retained
P-28	J-26	J-22	55	110	PVC	125	HDPE	Replacement
P-29	J-26	J-27	155.5	110	PVC	110	uPVC	Retained
P-290	J-144	J-222	30	110	PVC	110	uPVC	Retained
P-291	J-222	J-145	37	110	PVC	110	uPVC	Retained
P-3	J-2	J-3	252.5	110	PVC	250	HDPE	Replacement
P-30	J-27	J-28	11	110	PVC	110	uPVC	Retained
P-31	J-28	J-29	37.5	110	PVC	110	uPVC	Retained
P-32	J-29	J-30	28	110	PVC	110	uPVC	Retained
P-33	J-30	J-31	18.5	110	PVC	110	uPVC	Retained
P-34	J-30	J-32	30.5	110	PVC	110	uPVC	Retained
P-35	J-29	J-33	12.5	110	PVC	110	uPVC	Retained
P-36	J-33	J-34	9	110	PVC	110	uPVC	Retained
P-37	J-34	J-35	36	110	PVC	110	uPVC	Retained
P-38	J-35	J-36	21	110	PVC	110	uPVC	Retained
P-39	J-36	J-37	20	110	PVC	125	HDPE	Replacement
P-4	J-3	J-4	112	110	PVC	200	HDPE	Replacement

BOQ for Z3								
				Existing		Proposal to meet 2041 requirement		
Label	From Nod	To Node	Length (m	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-40	J-37	J-38	22.5	110	PVC	110	uPVC	Retained
P-41	J-38	J-39	30	110	PVC	110	uPVC	Retained
P-42	J-39	J-40	58.5	110	PVC	110	uPVC	Retained
P-43	J-40	J-25	53	110	PVC	125	HDPE	Replacement
P-44	J-40	J-41	48.5	110	PVC	110	uPVC	Retained
P-45	J-41	J-42	86	110	PVC	110	uPVC	Retained
P-46	J-42	J-38	19.5	110	PVC	110	uPVC	Retained
P-47	J-42	J-43	14	110	PVC	110	uPVC	Retained
P-48	J-43	J-44	26.5	110	PVC	110	uPVC	Retained
P-49	J-44	J-37	28	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	109.5	110	PVC	180	HDPE	Replacement
P-50	J-27	J-45	54.5	110	PVC	110	uPVC	Retained
P-51	J-45	J-46	19.5	110	PVC	110	uPVC	Retained
P-52	J-46	J-47	30.5	110	PVC	110	uPVC	Retained
P-53	J-47	J-48	34.5	110	PVC	110	uPVC	Retained
P-54	J-48	J-49	20.5	110	PVC	110	uPVC	Retained
P-55	J-49	J-50	28.5	110	PVC	110	uPVC	Retained
P-56	J-50	J-51	42	110	PVC	110	uPVC	Retained
P-57	J-51	J-46	12.5	110	PVC	110	uPVC	Retained
P-58	J-49	J-52	4.5	110	PVC	110	uPVC	Retained
P-59	J-52	J-53	22	110	PVC	110	uPVC	Retained
P-6	J-5	J-6	57	110	PVC	180	HDPE	Replacement
P-60	J-52	J-54	35	110	PVC	110	uPVC	Retained
P-61	J-54	J-55	21	110	PVC	110	uPVC	Retained
P-62	J-55	J-56	39	110	PVC	110	uPVC	Retained
P-63	J-55	J-57	26.5	110	PVC	110	uPVC	Retained
P-64	J-57	J-58	14	110	PVC	110	uPVC	Retained
P-65	J-58	J-59	33.5	110	PVC	110	uPVC	Retained
P-66	J-58	J-60	14	110	PVC	110	uPVC	Retained
P-67	J-60	J-61	8	110	PVC	110	uPVC	Retained
P-68	J-61	J-62	23.5	110	PVC	110	uPVC	Retained
P-69	J-60	J-63	16	110	PVC	110	uPVC	Retained
P-7	J-6	J-7	73.5	110	PVC	160	HDPE	Replacement
P-70	J-63	J-57	13.5	110	PVC	110	uPVC	Retained
P-71	J-63	J-64	30.5	110	PVC	110	uPVC	Retained
P-72	J-64	J-65	61	110	PVC	110	uPVC	Retained
P-73	J-65	J-50	30.5	110	PVC	110	uPVC	Retained
P-74	J-61	J-66	25	110	PVC	110	uPVC	Retained
P-75	J-66	J-67	13.5	110	PVC	110	uPVC	Retained
P-76	J-67	J-68	39.5	110	PVC	110	uPVC	Retained
P-77	J-68	J-64	26.5	110	PVC	110	uPVC	Retained
P-78	J-69	J-70	35	110	PVC	110	uPVC	Retained
P-79	J-70	J-71	40	110	PVC	110	uPVC	Retained
P-8	J-4	J-8	254	110	PVC	125	HDPE	Replacement
P-80	J-71	J-68	23.5	110	PVC	110	uPVC	Retained
P-81	J-70	J-67	22	110	PVC	110	uPVC	Retained
P-82	J-71	J-72	22.5	110	PVC	110	uPVC	Retained
P-83	J-72	J-73	91.5	160	PVC	110	HDPE	Replacement
P-84	J-73	J-74	285.5	110	PVC	110	uPVC	Retained
P-85	J-72	J-75	32	160	PVC	110	HDPE	Replacement
P-86	J-75	J-76	48	160	PVC	110	HDPE	Replacement
P-87	J-76	J-77	194.5	110	PVC	110	uPVC	Retained
P-88	J-77	J-78	9	110	PVC	110	uPVC	Retained
P-89	J-78	J-79	28	110	PVC	110	uPVC	Retained
P-9	J-1	J-9	81	110	PVC	315	HDPE	Replacement
P-90	J-79	J-80	13.5	110	PVC	110	uPVC	Retained
P-91	J-80	J-75	201	110	PVC	110	uPVC	Retained
P-92	J-51	J-80	33	110	PVC	110	uPVC	Retained
P-93	J-79	J-81	28.5	110	PVC	110	uPVC	Retained
P-94	J-81	J-82	15.5	110	PVC	110	uPVC	Retained

BOQ for Z3								
				Existing		Proposal to meet 2041 requirement		
Label	From Nod	To Node	Length (m	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-95	J-82	J-83	19	110	PVC	110	uPVC	Retained
P-96	J-83	J-84	18	110	PVC	110	uPVC	Retained
P-97	J-83	J-28	30.5	110	PVC	110	uPVC	Retained
P-98	J-82	J-85	28.5	110	PVC	110	uPVC	Retained
P-99	J-85	J-33	24.5	110	PVC	110	uPVC	Retained
PP-245	J-65	J-54	34.5	#N/A	#N/A	110	HDPE	New
PP-246	J-45	J-84	27	#N/A	#N/A	110	HDPE	New
PP-247	J-84	J-81	19	#N/A	#N/A	110	HDPE	New
PP-248	J-39	PJ-194	20.5	#N/A	#N/A	110	HDPE	New
PP-249	J-89	J-88	25.5	#N/A	#N/A	110	HDPE	New
PP-250	J-88	J-35	26.5	#N/A	#N/A	110	HDPE	New
PP-251	PJ-195	J-91	78.5	#N/A	#N/A	110	HDPE	New
PP-252	J-73	PJ-196	9	#N/A	#N/A	110	HDPE	New
PP-253	PJ-196	PJ-197	9.5	#N/A	#N/A	110	HDPE	New
PP-254	PJ-197	PJ-198	7.5	#N/A	#N/A	110	HDPE	New
PP-255	PJ-197	PJ-199	22	#N/A	#N/A	110	HDPE	New
PP-256	PJ-196	PJ-200	28.5	#N/A	#N/A	110	HDPE	New
PP-257	J-23	J-96	42.5	#N/A	#N/A	110	HDPE	New
PP-258	J-21	PJ-201	33.5	#N/A	#N/A	110	HDPE	New
PP-259	J-21	PJ-202	38	#N/A	#N/A	110	HDPE	New
PP-260	J-13	PJ-203	65.5	#N/A	#N/A	110	HDPE	New
PP-261	PJ-203	PJ-204	132.5	#N/A	#N/A	125	HDPE	New
PP-262	PJ-204	J-15	5	#N/A	#N/A	110	HDPE	New
PP-263	PJ-204	PJ-205	34.5	#N/A	#N/A	125	HDPE	New
PP-264	PJ-205	J-18	8.5	#N/A	#N/A	110	HDPE	New
PP-265	PJ-205	PJ-206	101	#N/A	#N/A	110	HDPE	New
PP-266	PJ-203	PJ-207	173	#N/A	#N/A	140	HDPE	New
PP-267	PJ-207	J-193	6.5	#N/A	#N/A	140	HDPE	New
PP-268	PJ-207	PJ-208	92.5	#N/A	#N/A	110	HDPE	New
PP-269	PJ-208	J-113	9.5	#N/A	#N/A	140	HDPE	New
PP-270	PJ-208	PJ-209	81.5	#N/A	#N/A	125	HDPE	New
PP-271	PJ-209	J-104	6	#N/A	#N/A	110	HDPE	New
PP-272	PJ-209	J-119	96.5	#N/A	#N/A	140	HDPE	New
PP-273	J-119	J-121	213.5	#N/A	#N/A	125	HDPE	New
PP-274	J-121	J-131	117	#N/A	#N/A	110	HDPE	New
PP-275	J-131	J-134	165	#N/A	#N/A	110	HDPE	New
PP-276	J-134	PJ-210	25.5	#N/A	#N/A	110	HDPE	New
PP-277	PJ-210	PJ-211	188	#N/A	#N/A	110	HDPE	New
PP-278	PJ-211	J-135	9	#N/A	#N/A	110	HDPE	New
PP-279	J-137	PJ-211	73.5	#N/A	#N/A	110	HDPE	New
PP-280	J-177	PJ-212	78	#N/A	#N/A	110	HDPE	New
PP-281	PJ-212	PJ-213	133.5	#N/A	#N/A	110	HDPE	New
PP-282	PJ-213	PJ-214	58.5	#N/A	#N/A	110	HDPE	New
PP-283	PJ-214	PJ-215	108.5	#N/A	#N/A	140	HDPE	New
PP-284	PJ-215	J-3	222.5	#N/A	#N/A	160	HDPE	New
PP-285	J-183	PJ-216	62.5	#N/A	#N/A	110	HDPE	New
PP-286	PJ-216	PJ-217	73.5	#N/A	#N/A	110	HDPE	New
PP-287	PJ-217	PJ-218	71	#N/A	#N/A	110	HDPE	New
PP-288	PJ-219	PJ-216	64	#N/A	#N/A	110	HDPE	New
PP-289	PJ-220	J-167	17.5	#N/A	#N/A	110	HDPE	New
PP-290	J-181	PJ-221	32.5	#N/A	#N/A	110	HDPE	New
PP-292	J-148	J-222	49.5	#N/A	#N/A	110	HDPE	New
PP-293	J-100	PJ-223	40	#N/A	#N/A	110	HDPE	New
PP-294	PJ-224	J-98	26.5	#N/A	#N/A	110	HDPE	New
PP-295	J-10	J-185	12.5	#N/A	#N/A	140	HDPE	New
PP-296	J-11	J-187	13.5	#N/A	#N/A	140	HDPE	New
PP-297	J-12	J-190	13	#N/A	#N/A	110	HDPE	New
PP-298	J-48	PJ-225	20	#N/A	#N/A	110	HDPE	New
PP-299	J-47	PJ-226	17	#N/A	#N/A	110	HDPE	New
PP-300	PJ-226	PJ-227	117.5	#N/A	#N/A	110	HDPE	New

BOQ for Z3								
				Existing		Proposal to meet 2041 requirement		
Label	From Nod	To Node	Length (m	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-301	PJ-227	J-56	20	#N/A	#N/A	110	HDPE	New
PP-302	J-62	PJ-228	4.5	#N/A	#N/A	110	HDPE	New
PP-303	PJ-228	PJ-229	33.5	#N/A	#N/A	110	HDPE	New
PP-304	PJ-228	J-59	16.5	#N/A	#N/A	110	HDPE	New
PP-305	PJ-227	PJ-229	52	#N/A	#N/A	110	HDPE	New
PP-306	PJ-229	PJ-230	51	#N/A	#N/A	110	HDPE	New
PP-307	PJ-230	PJ-231	18.5	#N/A	#N/A	110	HDPE	New
PP-308	PJ-231	J-69	31.5	#N/A	#N/A	110	HDPE	New
PP-309	PJ-232	PJ-231	11.5	#N/A	#N/A	110	HDPE	New
PP-310	PJ-231	PJ-233	32.5	#N/A	#N/A	110	HDPE	New
PP-311	PJ-230	PJ-234	279	#N/A	#N/A	110	HDPE	New
PP-312	PJ-234	PJ-235	126	#N/A	#N/A	110	HDPE	New
PP-313	PJ-235	PJ-236	50	#N/A	#N/A	110	HDPE	New
PP-314	PJ-236	J-74	53.5	#N/A	#N/A	110	HDPE	New
PP-315	PJ-236	PJ-237	254	#N/A	#N/A	110	HDPE	New
PP-316	PJ-237	PJ-238	304.5	#N/A	#N/A	110	HDPE	New
PP-317	PJ-238	PJ-239	225	#N/A	#N/A	110	HDPE	New
PP-318	PJ-239	PJ-240	116.5	#N/A	#N/A	110	HDPE	New
PP-319	PJ-240	PJ-241	505.5	#N/A	#N/A	110	HDPE	New
PP-320	PJ-241	J-76	122.5	#N/A	#N/A	110	HDPE	New
PP-321	PJ-241	PJ-242	70.5	#N/A	#N/A	110	HDPE	New
PP-322	PJ-242	PJ-243	456.5	#N/A	#N/A	110	HDPE	New
PP-323	PJ-243	PJ-240	59.5	#N/A	#N/A	110	HDPE	New
PP-324	PJ-239	J-7	92.5	#N/A	#N/A	160	HDPE	New
PP-325	J-5	PJ-244	386.5	#N/A	#N/A	110	HDPE	New
PP-326	PJ-244	J-2	319.5	#N/A	#N/A	160	HDPE	New
PP-327	PJ-244	J-97	268	#N/A	#N/A	140	HDPE	New
PP-328	PJ-235	PJ-245	603	#N/A	#N/A	110	HDPE	New
PP-329	PJ-245	PJ-246	437.5	#N/A	#N/A	110	HDPE	New
PP-330	PJ-246	PJ-247	86.5	#N/A	#N/A	110	HDPE	New
PP-331	PJ-247	PJ-238	418	#N/A	#N/A	110	HDPE	New
PP-332	PJ-247	PJ-248	139	#N/A	#N/A	110	HDPE	New
PP-333	PJ-248	PJ-239	356.5	#N/A	#N/A	110	HDPE	New
PP-334	J-6	PJ-249	276	#N/A	#N/A	110	HDPE	New
PP-335	PJ-249	PJ-248	120.5	#N/A	#N/A	125	HDPE	New
PP-336	PJ-249	J-8	222	#N/A	#N/A	125	HDPE	New
PP-337	J-8	PJ-215	120	#N/A	#N/A	110	HDPE	New
PP-338	PJ-249	PJ-250	105.5	#N/A	#N/A	110	HDPE	New
PP-339	PJ-250	PJ-214	332.5	#N/A	#N/A	110	HDPE	New
PP-340	PJ-250	PJ-251	80.5	#N/A	#N/A	125	HDPE	New
PP-341	PJ-251	PJ-252	102.5	#N/A	#N/A	110	HDPE	New
PP-342	PJ-252	PJ-213	315.5	#N/A	#N/A	110	HDPE	New
PP-343	PJ-252	PJ-253	206	#N/A	#N/A	110	HDPE	New
PP-344	PJ-253	PJ-254	110.5	#N/A	#N/A	110	HDPE	New
PP-345	PJ-254	PJ-251	206.5	#N/A	#N/A	110	HDPE	New
PP-346	PJ-254	PJ-255	56	#N/A	#N/A	110	HDPE	New
PP-347	PJ-255	PJ-247	213	#N/A	#N/A	110	HDPE	New
PP-348	PJ-246	PJ-256	239.5	#N/A	#N/A	110	HDPE	New
PP-349	PJ-256	PJ-257	55.5	#N/A	#N/A	110	HDPE	New
PP-350	PJ-257	PJ-258	111	#N/A	#N/A	110	HDPE	New
PP-351	PJ-258	PJ-253	134	#N/A	#N/A	110	HDPE	New
PP-352	PJ-256	PJ-255	109.5	#N/A	#N/A	110	HDPE	New
PP-353	PJ-257	PJ-254	118.5	#N/A	#N/A	110	HDPE	New
			25674.50					

Zone -4

Distribution Network Design Output: Zone 4

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	17.5	1.796	21.667	111.865	T-1	J-1	236.44	-10,106.24	4,928.72	315	1.44	5.09	111.865	HDPE	145	0.09
P-10	48.5	21.198	21.318	-3.42595	J-9	J-10	236.39	-10,112.71	5,187.17	160	0.17	0.22	3.42595	uPVC	145	0.01
P-100	39	21.157	21.16	-7.07351	J-48	J-29	236.36	-10,245.22	5,141.29	160	0.35	0.83	7.07351	uPVC	145	0.03
P-101	40.5	21.143	21.201	1.51384	J-11	J-61	236.47	-10,084.61	5,102.80	110	0.16	0.3	1.51384	uPVC	145	0.01
P-102	28	21.133	21.173	3.99653	J-14	J-62	236.63	-10,047.38	4,998.53	110	0.42	1.79	3.99653	uPVC	145	0.05
P-103	41	21.173	21.088	2.67053	J-62	J-63	236.54	-10,022.29	5,010.77	110	0.28	0.85	2.67053	uPVC	145	0.03
P-104	14.5	21.088	21.048	0.04155	J-63	J-64	236.59	-10,039.48	5,048.08	110	0	0	0.04155	uPVC	145	0
P-105	112.5	21.088	21.18	2.23161	J-63	J-65	236.59	-10,039.48	5,048.08	110	0.23	0.61	2.23161	uPVC	145	0.07
P-106	81.5	21.18	21.17	1.97475	J-65	J-66	236.43	-9,931.81	5,080.15	110	0.21	0.49	1.97475	uPVC	145	0.04
P-107	33	21.173	21.118	1.08161	J-62	J-67	236.54	-10,022.29	5,010.77	110	0.11	0.16	1.08161	uPVC	145	0.01
P-108	21.5	21.118	21.074	1.0845	J-67	J-68	236.59	-9,992.79	5,025.97	110	0.11	0.16	1.0845	uPVC	145	0
P-109	39	21.074	21.179	0.93632	J-68	J-69	236.63	-9,991.17	5,047.55	110	0.1	0.12	0.93632	uPVC	145	0
P-11	40.5	21.318	21.143	-4.56447	J-10	J-11	236.28	-10,096.94	5,141.27	160	0.23	0.37	4.56447	uPVC	145	0.01
P-110	21	21.179	21.217	0.7893	J-69	J-70	236.52	-9,952.34	5,048.02	110	0.08	0.09	0.7893	uPVC	145	0
P-111	49	21.217	21.118	-1.24072	J-70	J-67	236.48	-9,943.98	5,028.75	110	0.13	0.21	1.24072	uPVC	145	0.01
P-112	51	21.118	21.194	-1.60968	J-67	J-71	236.59	-9,992.79	5,025.97	110	0.17	0.33	1.60968	uPVC	145	0.02
P-113	34	21.194	21.172	-3.87042	J-71	J-16	236.53	-10,003.30	4,976.20	110	0.41	1.69	3.87042	uPVC	145	0.06
P-114	27.5	21.194	21.281	1.99202	J-71	J-72	236.53	-10,003.30	4,976.20	110	0.21	0.49	1.99202	uPVC	145	0.01
P-115	45.5	21.281	21.282	2.26766	J-72	J-73	236.43	-9,976.27	4,982.43	110	0.24	0.63	2.26766	uPVC	145	0.03
P-116	38	21.282	21.217	-1.77173	J-73	J-70	236.4	-9,931.74	4,992.54	110	0.19	0.4	1.77173	uPVC	145	0.02
P-117	28.5	21.282	21.222	4.76492	J-73	J-74	236.4	-9,931.74	4,992.54	110	0.5	2.48	4.76492	uPVC	145	0.07
P-118	25.5	21.222	21.175	4.03001	J-74	J-75	236.39	-9,903.77	4,998.47	110	0.42	1.82	4.03001	uPVC	145	0.05
P-119	3.5	21.175	21.17	3.6641	J-75	J-76	236.39	-9,878.80	5,003.76	110	0.39	1.52	3.6641	uPVC	145	0.01
P-12	36	21.143	21.077	-4.89046	J-11	J-12	236.47	-10,084.61	5,102.80	110	0.51	2.6	4.89046	uPVC	145	0.09
P-120	43.5	21.17	20.983	3.0409	J-76	J-77	236.39	-9,875.27	5,004.50	110	0.32	1.08	3.0409	uPVC	145	0.05
P-121	107.5	21.17	20.929	0.25713	J-76	J-78	236.39	-9,875.27	5,004.50	110	0.03	0.01	0.25713	uPVC	145	0
P-122	61	21.175	21.175	0.14934	J-75	J-79	236.39	-9,878.80	5,003.76	110	0.02	0	0.14934	uPVC	145	0
P-123	24	21.282	21.296	-1.04873	J-73	J-80	236.4	-9,931.74	4,992.54	110	0.11	0.15	1.04873	uPVC	145	0
P-124	27	21.296	21.192	-1.32655	J-80	J-81	236.39	-9,924.06	4,969.68	110	0.14	0.23	1.32655	uPVC	145	0.01
P-125	7	21.192	21.182	0.26221	J-81	J-82	236.5	-9,916.25	4,943.98	110	0.03	0.01	0.26221	uPVC	145	0

P-126	13	21.182	21.162	0.14667	J-82	J-83	236.51	-9,909.37	4,943.98	110	0.02	0	0.14667	uPVC	145	0
P-127	8.5	21.162	21.202	0.02764	J-83	J-84	236.53	-9,896.51	4,945.35	110	0	0	0.02764	uPVC	145	0
P-128	11.5	21.182	21.142	0.03459	J-82	J-85	236.51	-9,909.37	4,943.98	110	0	0	0.03459	uPVC	145	0
P-129	11.5	21.162	21.122	0.03459	J-83	J-86	236.53	-9,896.51	4,945.35	110	0	0	0.03459	uPVC	145	0
P-13	40	21.077	21.131	-3.44981	J-12	J-13	236.63	-10,073.87	5,068.34	110	0.36	1.36	3.44981	uPVC	145	0.05
P-130	31	21.296	21.226	0.0798	J-80	J-87	236.39	-9,924.06	4,969.68	110	0.01	0	0.0798	uPVC	145	0
P-131	51	21.192	21.233	-1.79373	J-81	J-88	236.5	-9,916.25	4,943.98	110	0.19	0.41	1.79373	uPVC	145	0.02
P-132	44.5	21.233	21.281	0.55595	J-88	J-72	236.48	-9,966.98	4,939.16	110	0.06	0.05	0.55595	uPVC	145	0
P-133	57	21.173	21.233	2.71112	J-18	J-88	236.59	-10,023.51	4,933.89	110	0.29	0.87	2.71112	uPVC	145	0.05
P-134	42.5	20.982	20.727	7.93786	J-20	J-89	236.57	-9,993.01	4,852.44	125	0.65	3.42	7.93786	HDPE	145	0.15
P-135	9	20.727	20.759	4.23602	J-89	J-90	236.68	-9,952.51	4,864.89	110	0.45	1.99	4.23602	uPVC	145	0.02
P-136	38.5	20.759	20.621	2.45524	J-90	J-91	236.63	-9,944.25	4,868.56	110	0.26	0.73	2.45524	uPVC	145	0.03
P-137	28.5	20.621	20.726	-1.21386	J-91	J-92	236.74	-9,907.30	4,880.04	110	0.13	0.2	1.21386	uPVC	145	0.01
P-138	48	20.726	20.827	-1.29452	J-92	J-93	236.64	-9,908.22	4,908.04	110	0.14	0.22	1.29452	uPVC	145	0.01
P-139	36.5	20.827	20.759	-1.57813	J-93	J-90	236.55	-9,955.96	4,903.22	110	0.17	0.32	1.57813	uPVC	145	0.01
P-14	34.5	21.131	21.133	-0.52904	J-13	J-14	236.63	-10,059.71	5,030.71	110	0.06	0.04	0.52904	uPVC	145	0
P-140	15.5	20.807	20.827	-0.04387	J-94	J-93	236.57	-9,971.10	4,900.46	110	0	0	0.04387	uPVC	145	0
P-141	34.5	20.621	20.445	3.42588	J-91	J-95	236.74	-9,907.30	4,880.04	110	0.36	1.35	3.42588	uPVC	145	0.05
P-142	46	20.445	20.657	-2.78421	J-95	J-96	236.87	-9,898.81	4,846.53	110	0.29	0.92	2.78421	uPVC	145	0.04
P-143	36	20.657	20.727	-3.49107	J-96	J-89	236.7	-9,941.95	4,830.46	110	0.37	1.39	3.49107	uPVC	145	0.05
P-144	45	20.982	20.755	9.05874	J-20	J-97	236.57	-9,993.01	4,852.44	125	0.74	4.37	9.05874	HDPE	145	0.2
P-145	39.5	20.755	20.657	-0.41728	J-97	J-96	236.6	-9,976.15	4,810.49	110	0.04	0.03	0.41728	uPVC	145	0
P-146	5	20.755	20.743	9.26061	J-97	J-98	236.6	-9,976.15	4,810.49	125	0.75	4.55	9.26061	HDPE	145	0.02
P-147	27.5	20.743	20.674	4.78067	J-98	J-99	236.59	-9,974.78	4,805.90	110	0.5	2.49	4.78067	uPVC	145	0.07
P-148	136.5	20.674	20.297	3.56706	J-99	J-100	236.59	-9,964.91	4,779.97	110	0.38	1.45	3.56706	uPVC	145	0.2
P-149	21.5	20.297	20.209	-5.57431	J-100	J-101	236.77	-9,834.54	4,820.59	160	0.28	0.53	5.57431	uPVC	145	0.01
P-15	13	21.133	21.174	-4.70852	J-14	J-15	236.63	-10,047.38	4,998.53	110	0.5	2.42	4.70852	uPVC	145	0.03
P-150	65	20.209	20.445	-5.86488	J-101	J-95	236.87	-9,834.54	4,842.16	110	0.62	3.64	5.86488	uPVC	145	0.24
P-151	27	20.674	20.652	0.76292	J-99	J-102	236.59	-9,964.91	4,779.97	110	0.08	0.08	0.76292	uPVC	145	0
P-152	35.5	20.652	20.651	0.41672	J-102	J-103	236.61	-9,985.10	4,767.11	110	0.04	0.03	0.41672	uPVC	145	0
P-153	36	20.651	20.641	0.09139	J-103	J-104	236.61	-10,018.61	4,755.41	110	0.01	0	0.09139	uPVC	145	0
P-154	31	20.651	20.581	0.0798	J-103	J-105	236.61	-10,018.61	4,755.41	110	0.01	0	0.0798	uPVC	145	0
P-155	40	20.652	20.582	0.10066	J-102	J-106	236.61	-9,985.10	4,767.11	110	0.01	0	0.10066	uPVC	145	0
P-156	43.5	20.297	20.344	8.66635	J-100	J-107	236.77	-9,834.54	4,820.59	160	0.43	1.21	8.66635	uPVC	145	0.05
P-157	53.5	20.344	20.384	0.31451	J-107	J-108	236.67	-9,834.83	4,777.04	160	0.02	0	0.31451	uPVC	145	0
P-158	26.5	20.384	20.306	4.01054	J-108	J-109	236.63	-9,782.61	4,788.23	110	0.42	1.8	4.01054	uPVC	145	0.05

Distribution Network Design Output: Zone 4

P-159	18	20.306	20.178	3.77097	J-109	J-110	236.66	-9,776.87	4,762.41	110	0.4	1.61	3.77097	uPVC	145	0.03
P-16	18.5	21.174	21.172	2.37197	J-15	J-16	236.62	-10,043.34	4,986.22	110	0.25	0.68	2.37197	uPVC	145	0.01
P-160	40	20.3	20.28	-0.10066	J-111	J-112	236.66	-9,945.57	4,749.21	160	0.01	0	0.10066	uPVC	145	0
P-161	42.5	20.28	20.261	-5.33551	J-112	J-113	236.68	-9,906.55	4,757.82	160	0.27	0.49	5.33551	uPVC	145	0.02
P-162	31.5	20.261	20.344	-8.04603	J-113	J-107	236.72	-9,865.53	4,769.01	160	0.4	1.05	8.04603	uPVC	145	0.03
P-163	57	20.261	20.272	2.39892	J-113	J-114	236.72	-9,865.53	4,769.01	110	0.25	0.7	2.39892	uPVC	145	0.04
P-164	58.5	20.213	20.31	-1.94115	J-115	J-116	236.7	-9,957.05	4,721.09	110	0.2	0.47	1.94115	uPVC	145	0.03
P-165	47	20.31	20.28	-4.92673	J-116	J-112	236.63	-9,899.09	4,711.63	160	0.25	0.43	4.92673	uPVC	145	0.02
P-166	23.5	20.31	20.29	2.6786	J-116	J-117	236.63	-9,899.09	4,711.63	110	0.28	0.85	2.6786	uPVC	145	0.02
P-167	63.5	21.132	20.507	4.57626	J-118	J-119	236.15	-10,347.86	5,128.89	110	0.48	2.3	4.57626	uPVC	145	0.15
P-168	59	20.507	20.789	1.94697	J-119	J-120	236.63	-10,360.20	5,066.34	110	0.2	0.47	1.94697	uPVC	145	0.03
P-169	29.5	20.789	20.729	2.37437	J-120	J-121	236.32	-10,380.57	5,011.26	110	0.25	0.68	2.37437	uPVC	145	0.02
P-17	26	21.172	21.191	-1.68835	J-16	J-17	236.61	-10,036.55	4,968.78	110	0.18	0.36	1.68835	uPVC	145	0.01
P-170	13.5	20.729	20.733	-1.52926	J-121	J-122	236.36	-10,408.97	5,019.58	110	0.16	0.3	1.52926	uPVC	145	0
P-171	48	20.733	20.639	-2.08373	J-122	J-123	236.36	-10,405.81	5,032.49	110	0.22	0.54	2.08373	uPVC	145	0.03
P-172	40.5	20.802	20.712	-0.10182	J-124	J-125	236.29	-10,419.30	5,080.97	110	0.01	0	0.10182	uPVC	145	0
P-173	25.5	20.712	20.733	-0.34486	J-125	J-122	236.38	-10,429.63	5,041.96	110	0.04	0.02	0.34486	uPVC	145	0
P-174	16	20.782	20.712	-0.04503	J-126	J-125	236.31	-10,444.26	5,047.98	110	0	0	0.04503	uPVC	145	0
P-175	47.5	20.789	20.945	-4.02712	J-120	J-127	236.32	-10,380.57	5,011.26	110	0.42	1.82	4.02712	uPVC	145	0.09
P-176	28.5	20.945	21.02	-3.26737	J-127	J-128	236.25	-10,336.03	4,994.74	110	0.34	1.23	3.26737	uPVC	145	0.04
P-177	37.5	21.02	21.026	4.5412	J-128	J-129	236.21	-10,309.49	4,984.70	160	0.23	0.37	4.5412	uPVC	145	0.01
P-178	44	21.026	21.229	-6.13181	J-129	J-130	236.19	-10,295.86	4,949.55	110	0.65	3.96	6.13181	uPVC	145	0.17
P-179	30	21.229	21.337	-7.72635	J-130	J-54	236.16	-10,256.77	4,969.63	125	0.63	3.26	7.72635	HDPE	145	0.1
P-18	11	21.191	21.173	6.83663	J-17	J-18	236.6	-10,027.55	4,944.36	125	0.56	2.6	6.83663	HDPE	145	0.03
P-180	98	21.229	20.922	1.1879	J-130	J-131	236.16	-10,256.77	4,969.63	110	0.12	0.19	1.1879	uPVC	145	0.02
P-181	82.5	20.922	20.601	3.90273	J-131	J-132	236.45	-10,223.42	4,877.47	110	0.41	1.71	3.90273	uPVC	145	0.14
P-182	31	20.601	20.761	-13.07995	J-132	J-59	236.63	-10,196.17	4,799.65	160	0.65	2.59	13.07995	uPVC	145	0.08
P-183	30	21.086	20.922	10.24997	J-57	J-131	236.45	-10,195.09	4,886.80	125	0.84	5.5	10.24997	HDPE	145	0.16
P-184	43.5	20.922	20.736	6.93841	J-131	J-133	236.45	-10,223.42	4,877.47	110	0.73	4.97	6.93841	uPVC	145	0.22
P-185	48.5	20.736	20.546	0.12036	J-133	J-134	236.42	-10,264.66	4,863.48	110	0.01	0	0.12036	uPVC	145	0
P-186	91.5	20.736	21.026	-2.34079	J-133	J-129	236.42	-10,264.66	4,863.48	110	0.25	0.66	2.34079	uPVC	145	0.06
P-187	102	21.026	20.728	7.6868	J-129	J-135	236.19	-10,295.86	4,949.55	160	0.38	0.97	7.6868	uPVC	145	0.1
P-188	45	20.728	20.736	-2.66438	J-135	J-133	236.39	-10,308.06	4,851.29	110	0.28	0.85	2.66438	uPVC	145	0.04
P-189	52	20.728	20.747	3.44715	J-135	J-136	236.39	-10,308.06	4,851.29	110	0.36	1.36	3.44715	uPVC	145	0.07
P-19	43	21.173	21.121	3.86026	J-18	J-19	236.59	-10,023.51	4,933.89	110	0.41	1.68	3.86026	uPVC	145	0.07
P-190	123	20.747	20.945	-3.22734	J-136	J-127	236.3	-10,355.39	4,873.16	110	0.34	1.2	3.22734	uPVC	145	0.15

Distribution Network Design Output: Zone 4

P-191	105	20.729	20.628	3.55262	J-121	J-137	236.36	-10,408.97	5,019.58	110	0.37	1.44	3.55262	uPVC	145	0.15
P-192	49	20.628	20.626	-2.89159	J-137	J-138	236.31	-10,460.83	4,928.39	110	0.3	0.98	2.89159	uPVC	145	0.05
P-193	70.5	20.626	20.668	-0.44012	J-138	J-139	236.36	-10,419.95	4,901.50	110	0.05	0.03	0.44012	uPVC	145	0
P-194	14.5	20.668	20.747	-6.22727	J-139	J-136	236.32	-10,362.57	4,860.61	110	0.66	4.07	6.22727	uPVC	145	0.06
P-195	116.5	20.626	20.789	-3.00647	J-138	J-120	236.36	-10,419.95	4,901.50	110	0.32	1.06	3.00647	uPVC	145	0.12
P-196	34.5	20.628	20.427	5.99932	J-137	J-140	236.31	-10,460.83	4,928.39	110	0.63	3.8	5.99932	uPVC	145	0.13
P-197	120.5	20.427	20.531	-2.40585	J-140	J-141	236.38	-10,480.55	4,900.06	110	0.25	0.7	2.40585	uPVC	145	0.08
P-198	14.5	20.531	20.596	-5.34957	J-141	J-142	236.36	-10,379.42	4,834.79	110	0.56	3.07	5.34957	uPVC	145	0.04
P-199	16	20.596	20.668	-5.54509	J-142	J-139	236.34	-10,371.17	4,846.99	110	0.58	3.28	5.54509	uPVC	145	0.05
P-2	45	21.667	21.56	46.14152	J-1	J-2	236.44	-10,089.97	4,922.32	250	0.94	3.05	46.14152	HDPE	145	0.14
P-20	44	21.121	20.982	7.60913	J-19	J-20	236.57	-10,008.64	4,893.68	125	0.62	3.16	7.60913	HDPE	145	0.14
P-200	23.5	20.596	20.546	0.06241	J-142	J-143	236.34	-10,371.17	4,846.99	110	0.01	0	0.06241	uPVC	145	0
P-201	56	20.427	20.187	7.90811	J-140	J-144	236.38	-10,480.55	4,900.06	125	0.64	3.4	7.90811	HDPE	145	0.19
P-202	191.5	20.187	20.524	-2.23953	J-144	J-145	236.43	-10,510.68	4,853.08	110	0.24	0.61	2.23953	uPVC	145	0.12
P-203	28.5	20.524	20.571	-8.35544	J-145	J-146	236.21	-10,351.09	4,766.65	125	0.68	3.76	8.35544	HDPE	145	0.11
P-204	68.5	20.571	20.531	-2.46406	J-146	J-141	236.27	-10,341.77	4,793.55	110	0.26	0.73	2.46406	uPVC	145	0.05
P-205	67	20.728	20.571	6.27949	J-135	J-146	236.39	-10,308.06	4,851.29	110	0.66	4.13	6.27949	uPVC	145	0.28
P-206	61.5	20.187	19.909	9.42342	J-144	J-147	236.43	-10,510.68	4,853.08	125	0.77	4.7	9.42342	HDPE	145	0.29
P-207	60.5	19.909	19.503	7.00712	J-147	J-148	236.42	-10,544.39	4,801.80	110	0.74	5.06	7.00712	uPVC	145	0.31
P-208	12	19.503	19.471	9.91835	J-148	J-149	236.52	-10,571.64	4,748.01	125	0.81	5.17	9.91835	HDPE	145	0.06
P-209	59	19.471	19.27	5.66058	J-149	J-150	236.49	-10,578.46	4,738.32	110	0.6	3.41	5.66058	uPVC	145	0.2
P-21	35.5	20.982	21.085	-9.78252	J-20	J-21	236.57	-9,993.01	4,852.44	160	0.49	1.51	9.78252	uPVC	145	0.05
P-210	56.5	19.27	19.109	2.78909	J-150	J-151	236.49	-10,595.31	4,681.66	110	0.29	0.92	2.78909	uPVC	145	0.05
P-211	54	19.109	18.942	2.35918	J-151	J-152	236.6	-10,611.45	4,627.51	110	0.25	0.67	2.35918	uPVC	145	0.04
P-212	11.5	18.942	18.912	2.75919	J-152	J-153	236.73	-10,626.51	4,575.51	110	0.29	0.9	2.75919	uPVC	145	0.01
P-213	39	18.912	18.931	1.48036	J-153	J-154	236.75	-10,630.82	4,565.11	110	0.16	0.28	1.48036	uPVC	145	0.01
P-214	29	18.931	18.849	0.77755	J-154	J-155	236.72	-10,645.88	4,528.89	110	0.08	0.09	0.77755	uPVC	145	0
P-215	25.5	18.849	19.048	0.18851	J-155	J-156	236.8	-10,657.35	4,502.35	110	0.02	0.01	0.18851	uPVC	145	0
P-216	30.5	19.048	18.82	-1.69003	J-156	J-157	236.6	-10,655.92	4,476.89	110	0.18	0.36	1.69003	uPVC	145	0.01
P-217	98.5	18.82	18.705	-1.05496	J-157	J-158	236.84	-10,626.51	4,469.36	110	0.11	0.15	1.05496	uPVC	145	0.01
P-218	61	18.705	18.909	-2.14308	J-158	J-159	236.97	-10,596.39	4,563.32	110	0.23	0.56	2.14308	uPVC	145	0.03
P-219	50.5	18.909	19.043	-2.36419	J-159	J-160	236.8	-10,585.99	4,623.56	110	0.25	0.68	2.36419	uPVC	145	0.03
P-22	43	21.085	21.233	-7.97505	J-21	J-22	236.52	-10,026.98	4,842.92	125	0.65	3.45	7.97505	HDPE	145	0.15
P-220	23	19.043	19.27	-2.54251	J-160	J-150	236.7	-10,574.15	4,672.70	110	0.27	0.77	2.54251	uPVC	145	0.02
P-221	26	19.109	18.909	0.10556	J-151	J-159	236.6	-10,611.45	4,627.51	110	0.01	0	0.10556	uPVC	145	0
P-222	32.5	18.942	18.705	-0.63511	J-152	J-158	236.73	-10,626.51	4,575.51	110	0.07	0.06	0.63511	uPVC	145	0

P-223	96	19.177	18.849	-0.23224	J-161	J-155	236.47	-10,747.37	4,536.06	110	0.02	0.01	0.23224	uPVC	145	0
P-224	88	19.069	18.931	-0.33325	J-162	J-154	236.58	-10,729.80	4,556.14	110	0.04	0.02	0.33325	uPVC	145	0
P-225	80.5	19.022	18.912	-0.96722	J-163	J-153	236.63	-10,709.71	4,580.89	110	0.1	0.13	0.96722	uPVC	145	0.01
P-226	113.5	19.186	19.105	0.21675	J-164	J-165	236.46	-10,765.66	4,512.75	110	0.02	0.01	0.21675	uPVC	145	0
P-227	8	19.105	19.048	-1.72224	J-165	J-156	236.54	-10,660.22	4,470.43	110	0.18	0.38	1.72224	uPVC	145	0
P-228	31	19.118	19.218	-0.33808	J-166	J-167	236.52	-10,697.88	4,464.34	110	0.04	0.02	0.33808	uPVC	145	0
P-229	19	19.218	19.105	-1.60537	J-167	J-165	236.42	-10,668.83	4,453.58	110	0.17	0.33	1.60537	uPVC	145	0.01
P-23	53	21.233	21.446	-7.75032	J-22	J-23	236.52	-10,041.47	4,883.23	125	0.63	3.27	7.75032	HDPE	145	0.17
P-230	41	18.82	19.142	1.1011	J-157	J-168	236.84	-10,626.51	4,469.36	110	0.12	0.16	1.1011	uPVC	145	0.01
P-231	28	19.142	19.306	2.14436	J-168	J-169	236.51	-10,646.24	4,433.14	110	0.23	0.57	2.14436	uPVC	145	0.02
P-232	13	19.306	19.218	-1.11331	J-169	J-167	236.33	-10,672.77	4,441.38	110	0.12	0.17	1.11331	uPVC	145	0
P-233	38.5	19.142	19.041	-1.30039	J-168	J-170	236.51	-10,646.24	4,433.14	110	0.14	0.22	1.30039	uPVC	145	0.01
P-234	42.5	19.041	18.646	-1.61066	J-170	J-171	236.62	-10,610.02	4,419.87	110	0.17	0.33	1.61066	uPVC	145	0.01
P-235	27	18.646	18.82	2.20076	J-171	J-157	237.03	-10,600.69	4,461.47	110	0.23	0.59	2.20076	uPVC	145	0.02
P-236	11.5	18.646	18.587	-4.00713	J-171	J-172	237.03	-10,600.69	4,461.47	110	0.42	1.8	4.00713	uPVC	145	0.02
P-237	47.5	18.587	18.654	-3.80813	J-172	J-173	237.11	-10,589.93	4,456.80	110	0.4	1.64	3.80813	uPVC	145	0.08
P-238	37	18.654	18.708	-3.57448	J-173	J-174	237.12	-10,577.02	4,502.35	110	0.38	1.46	3.57448	uPVC	145	0.05
P-239	41	18.708	18.834	-5.36032	J-174	J-175	237.12	-10,564.83	4,533.55	110	0.56	3.08	5.36032	uPVC	145	0.13
P-24	44.5	21.446	21.376	2.76805	J-23	J-24	236.48	-10,059.04	4,933.08	110	0.29	0.91	2.76805	uPVC	145	0.04
P-240	28	18.834	18.89	-4.22682	J-175	J-176	237.12	-10,549.77	4,571.92	110	0.44	1.99	4.22682	uPVC	145	0.06
P-241	53	18.89	18.966	-3.55975	J-176	J-177	237.12	-10,546.18	4,599.54	110	0.37	1.44	3.55975	uPVC	145	0.08
P-242	47.5	18.966	19.045	-2.24533	J-177	J-178	237.12	-10,538.65	4,651.90	110	0.24	0.62	2.24533	uPVC	145	0.03
P-243	74.5	19.045	19.503	3.25993	J-178	J-148	237.07	-10,532.91	4,698.87	110	0.34	1.23	3.25993	uPVC	145	0.09
P-244	74	19.909	19.664	1.95402	J-147	J-179	236.42	-10,544.39	4,801.80	110	0.21	0.48	1.95402	uPVC	145	0.04
P-245	58.5	19.664	19.853	0.14354	J-179	J-180	236.63	-10,479.84	4,765.94	110	0.02	0	0.14354	uPVC	145	0
P-246	25	19.664	19.557	1.43744	J-179	J-181	236.63	-10,479.84	4,765.94	110	0.15	0.27	1.43744	uPVC	145	0.01
P-247	53.5	19.557	19.244	3.72553	J-181	J-182	236.73	-10,489.52	4,742.63	110	0.39	1.57	3.72553	uPVC	145	0.08
P-248	24.5	19.244	19.045	5.85279	J-182	J-178	236.96	-10,509.24	4,693.14	110	0.62	3.63	5.85279	uPVC	145	0.09
P-249	121	19.557	20.125	-2.75848	J-181	J-183	236.73	-10,489.52	4,742.63	110	0.29	0.9	2.75848	uPVC	145	0.11
P-25	47	21.376	21.169	4.07508	J-24	J-25	236.51	-10,073.38	4,975.40	110	0.43	1.86	4.07508	uPVC	145	0.09
P-250	24.5	20.125	19.914	8.30938	J-183	J-184	236.27	-10,384.80	4,684.53	125	0.68	3.73	8.30938	HDPE	145	0.09
P-251	125.5	19.914	19.244	2.60692	J-184	J-182	236.39	-10,388.39	4,660.14	110	0.27	0.81	2.60692	uPVC	145	0.1
P-252	145.5	18.966	19.88	-1.8926	J-177	J-185	237.12	-10,538.65	4,651.90	110	0.2	0.45	1.8926	uPVC	145	0.07
P-253	18.5	19.88	19.85	-6.8513	J-185	J-186	236.27	-10,396.64	4,621.05	110	0.72	4.86	6.8513	uPVC	145	0.09
P-254	21.5	19.85	19.914	-5.29697	J-186	J-184	236.39	-10,392.69	4,638.98	110	0.56	3.02	5.29697	uPVC	145	0.06
P-255	142.5	18.89	19.665	-1.1931	J-176	J-187	237.12	-10,546.18	4,599.54	110	0.13	0.19	1.1931	uPVC	145	0.03

Distribution Network Design Output: Zone 4

P-256	52.5	19.665	19.88	-4.4489	J-187	J-185	236.37	-10,406.68	4,569.77	110	0.47	2.18	4.4489	uPVC	145	0.11
P-257	141.5	18.834	19.521	-1.62939	J-175	J-188	237.12	-10,549.77	4,571.92	110	0.17	0.34	1.62939	uPVC	145	0.05
P-258	40	19.521	19.665	-2.70311	J-188	J-187	236.48	-10,414.57	4,530.68	110	0.28	0.87	2.70311	uPVC	145	0.03
P-259	54.5	18.708	18.823	1.47076	J-174	J-189	237.12	-10,564.83	4,533.55	110	0.15	0.28	1.47076	uPVC	145	0.02
P-26	41.5	21.169	21.088	5.86909	J-25	J-26	236.63	-10,089.88	5,019.15	125	0.48	1.96	5.86909	HDPE	145	0.08
P-260	92	18.823	19.189	-2.2589	J-189	J-190	236.99	-10,514.62	4,512.39	110	0.24	0.62	2.2589	uPVC	145	0.06
P-261	30.5	19.189	19.319	-4.92266	J-190	J-191	236.68	-10,457.96	4,466.85	110	0.52	2.63	4.92266	uPVC	145	0.08
P-262	32	19.319	19.43	-3.73564	J-191	J-192	236.63	-10,427.84	4,463.62	110	0.39	1.58	3.73564	uPVC	145	0.05
P-263	36	19.43	19.521	-0.5616	J-192	J-188	236.57	-10,421.38	4,495.18	110	0.06	0.05	0.5616	uPVC	145	0
P-264	47	19.43	19.563	-3.44855	J-192	J-193	236.57	-10,421.38	4,495.18	110	0.36	1.36	3.44855	uPVC	145	0.06
P-265	141	19.563	19.987	-3.46983	J-193	J-194	236.5	-10,374.40	4,493.38	110	0.37	1.38	3.46983	uPVC	145	0.19
P-266	44.5	19.987	19.85	1.75814	J-194	J-186	236.27	-10,348.94	4,632.17	110	0.19	0.39	1.75814	uPVC	145	0.02
P-267	42.5	19.987	20.336	-5.76443	J-194	J-195	236.27	-10,348.94	4,632.17	110	0.61	3.53	5.76443	uPVC	145	0.15
P-268	44	20.336	20.546	-2.79864	J-195	J-196	236.07	-10,306.98	4,626.79	110	0.29	0.93	2.79864	uPVC	145	0.04
P-269	36	20.546	20.464	-2.99202	J-196	J-197	235.9	-10,298.73	4,670.18	110	0.31	1.05	2.99202	uPVC	145	0.04
P-27	37	21.088	21.113	4.86598	J-26	J-27	236.63	-10,103.14	5,058.51	110	0.51	2.58	4.86598	uPVC	145	0.1
P-270	10.5	20.464	20.387	3.75514	J-197	J-198	236.02	-10,333.16	4,681.30	110	0.4	1.6	3.75514	uPVC	145	0.02
P-271	51	20.387	20.125	3.53876	J-198	J-183	236.08	-10,336.75	4,671.62	110	0.37	1.43	3.53876	uPVC	145	0.07
P-272	12.5	20.318	20.387	-0.03691	J-199	J-198	236.15	-10,341.05	4,659.78	110	0	0	0.03691	uPVC	145	0
P-273	39	20.125	20.333	-8.08295	J-183	J-200	236.27	-10,384.80	4,684.53	125	0.66	3.54	8.08295	HDPE	145	0.14
P-274	39.5	20.333	20.511	-6.38188	J-200	J-201	236.2	-10,372.61	4,721.83	110	0.67	4.26	6.38188	uPVC	145	0.17
P-275	10	20.511	20.524	-5.57482	J-201	J-145	236.19	-10,355.75	4,757.69	110	0.59	3.32	5.57482	uPVC	145	0.03
P-276	49.5	20.333	20.657	-2.00572	J-200	J-202	236.2	-10,372.61	4,721.83	110	0.21	0.5	2.00572	uPVC	145	0.02
P-277	35.5	20.657	20.557	-6.35696	J-202	J-203	235.9	-10,325.27	4,707.48	110	0.67	4.23	6.35696	uPVC	145	0.15
P-278	45	20.557	20.511	1.03405	J-203	J-201	236.15	-10,314.15	4,741.19	110	0.11	0.15	1.03405	uPVC	145	0.01
P-279	27.5	20.464	20.657	-6.92663	J-197	J-202	236.02	-10,333.16	4,681.30	125	0.56	2.66	6.92663	HDPE	145	0.07
P-28	39	21.113	21.205	2.43309	J-27	J-28	236.51	-10,114.60	5,093.94	110	0.26	0.71	2.43309	uPVC	145	0.03
P-280	64.5	20.657	20.535	-2.99362	J-202	J-204	235.9	-10,325.27	4,707.48	110	0.32	1.05	2.99362	uPVC	145	0.07
P-281	35	20.535	20.55	-5.80646	J-204	J-205	236.09	-10,263.59	4,688.12	110	0.61	3.58	5.80646	uPVC	145	0.13
P-282	62	20.55	20.557	2.3844	J-205	J-203	236.2	-10,255.34	4,722.19	110	0.25	0.69	2.3844	uPVC	145	0.04
P-283	132	20.557	20.736	-5.65086	J-203	J-133	236.15	-10,314.15	4,741.19	110	0.59	3.4	5.65086	uPVC	145	0.45
P-284	36	20.55	20.5	-8.50709	J-205	J-206	236.2	-10,255.34	4,722.19	125	0.69	3.89	8.50709	HDPE	145	0.14
P-285	29.5	20.5	20.55	0.07632	J-206	J-207	236.39	-10,242.79	4,755.90	110	0.01	0	0.07632	uPVC	145	0
P-286	22.5	20.5	20.453	-8.79534	J-206	J-208	236.39	-10,242.79	4,755.90	125	0.72	4.14	8.79534	HDPE	145	0.09
P-287	13	20.453	20.513	0.28807	J-208	J-209	236.53	-10,234.18	4,776.70	110	0.03	0.01	0.28807	uPVC	145	0
P-288	31	20.513	20.353	0.0798	J-209	J-210	236.47	-10,246.01	4,782.43	110	0.01	0	0.0798	uPVC	145	0

Distribution Network Design Output: Zone 4

P-289	19.5	20.593	20.513	-0.05314	J-211	J-209	236.39	-10,263.95	4,789.61	110	0.01	0	0.05314	uPVC	145	0
P-29	48	21.205	21.191	1.48168	J-28	J-8	236.39	-10,127.09	5,130.96	110	0.16	0.28	1.48168	uPVC	145	0.01
P-290	34	20.453	20.508	-9.25245	J-208	J-212	236.53	-10,234.18	4,776.70	125	0.75	4.55	9.25245	HDPE	145	0.15
P-291	23	20.508	20.601	-16.65833	J-212	J-132	236.63	-10,205.13	4,778.49	160	0.83	4.06	16.65833	uPVC	145	0.09
P-292	6.5	20.508	20.489	7.25074	J-212	J-213	236.63	-10,205.13	4,778.49	125	0.59	2.89	7.25074	HDPE	145	0.02
P-293	42	20.489	20.585	-1.0021	J-213	J-214	236.63	-10,202.26	4,772.75	110	0.11	0.14	1.0021	uPVC	145	0.01
P-294	43	20.585	20.466	3.7653	J-214	J-215	236.54	-10,161.38	4,763.43	110	0.4	1.6	3.7653	uPVC	145	0.07
P-295	151.5	20.466	20.743	-4.04548	J-215	J-98	236.59	-10,118.70	4,758.76	110	0.43	1.83	4.04548	uPVC	145	0.28
P-296	36	20.466	20.311	7.26853	J-215	J-216	236.59	-10,118.70	4,758.76	125	0.59	2.91	7.26853	HDPE	145	0.1
P-297	42.5	20.311	20.393	-2.89049	J-216	J-217	236.64	-10,126.95	4,723.62	110	0.3	0.98	2.89049	uPVC	145	0.04
P-298	39	20.393	20.368	-0.9401	J-217	J-218	236.6	-10,168.91	4,731.15	110	0.1	0.12	0.9401	uPVC	145	0
P-299	34.5	20.368	20.489	-8.05251	J-218	J-213	236.63	-10,207.28	4,738.68	125	0.66	3.51	8.05251	HDPE	145	0.12
P-3	47.5	21.56	21.312	23.01158	J-2	J-3	236.41	-10,105.96	4,964.36	200	0.73	2.49	23.01158	HDPE	145	0.12
P-30	33.5	21.179	21.16	5.80207	J-7	J-29	236.39	-10,176.81	5,165.04	160	0.29	0.58	5.80207	uPVC	145	0.02
P-300	33	20.585	20.393	8.62943	J-214	J-217	236.54	-10,161.38	4,763.43	125	0.7	4	8.62943	HDPE	145	0.13
P-301	41.5	20.368	20.267	6.83789	J-218	J-219	236.63	-10,207.28	4,738.68	110	0.72	4.84	6.83789	uPVC	145	0.2
P-302	16.5	20.267	20.176	-2.10057	J-219	J-220	236.53	-10,213.74	4,697.80	110	0.22	0.54	2.10057	uPVC	145	0.01
P-303	22.5	20.176	20.223	-4.32565	J-220	J-221	236.63	-10,197.60	4,700.67	110	0.46	2.07	4.32565	uPVC	145	0.05
P-304	7	20.223	20.22	1.84841	J-221	J-222	236.63	-10,175.37	4,698.52	110	0.19	0.43	1.84841	uPVC	145	0
P-305	34	20.22	20.166	-1.11545	J-222	J-223	236.63	-10,168.55	4,696.72	110	0.12	0.17	1.11545	uPVC	145	0.01
P-306	32	20.166	20.311	-5.28122	J-223	J-216	236.69	-10,134.84	4,692.78	110	0.56	3	5.28122	uPVC	145	0.1
P-307	17.5	20.311	20.231	4.57314	J-216	J-224	236.64	-10,126.95	4,723.62	110	0.48	2.3	4.57314	uPVC	145	0.04
P-308	24.5	20.231	20.108	4.46785	J-224	J-225	236.68	-10,109.74	4,721.47	110	0.47	2.2	4.46785	uPVC	145	0.05
P-309	10	20.108	20.083	1.95353	J-225	J-226	236.75	-10,111.53	4,697.08	110	0.21	0.48	1.95353	uPVC	145	0
P-31	47.5	21.16	21.235	-1.55754	J-29	J-30	236.39	-10,208.47	5,154.17	110	0.16	0.31	1.55754	uPVC	145	0.01
P-310	21.5	20.083	20.166	-0.98771	J-226	J-223	236.77	-10,114.04	4,687.40	110	0.1	0.13	0.98771	uPVC	145	0
P-311	87.5	20.166	19.907	2.76446	J-223	J-227	236.69	-10,134.84	4,692.78	110	0.29	0.9	2.76446	uPVC	145	0.08
P-312	100.5	19.907	19.407	2.42398	J-227	J-228	236.87	-10,152.41	4,607.07	110	0.26	0.71	2.42398	uPVC	145	0.07
P-313	27	19.407	19.424	4.61367	J-228	J-229	237.3	-10,172.50	4,508.45	110	0.49	2.34	4.61367	uPVC	145	0.06
P-314	47.5	19.794	19.515	-3.32892	J-230	J-231	236.88	-10,141.30	4,486.57	110	0.35	1.28	3.32892	uPVC	145	0.06
P-315	53.5	19.515	19.712	-2.04601	J-231	J-232	237.22	-10,139.14	4,533.91	110	0.22	0.52	2.04601	uPVC	145	0.03
P-316	35.5	19.712	19.846	-2.85036	J-232	J-233	237.05	-10,130.90	4,586.98	110	0.3	0.96	2.85036	uPVC	145	0.03
P-317	66	19.846	20.083	-2.70729	J-233	J-226	236.95	-10,124.44	4,622.13	110	0.28	0.87	2.70729	uPVC	145	0.06
P-318	33.5	20.223	20.393	-6.32804	J-221	J-217	236.63	-10,175.37	4,698.52	110	0.67	4.19	6.32804	uPVC	145	0.14
P-319	7	19.503	19.543	-0.02416	J-234	J-235	237.23	-10,205.57	4,491.30	110	0	0	0.02416	uPVC	145	0
P-32	39	21.235	21.186	-2.57859	J-30	J-31	236.33	-10,192.90	5,109.07	110	0.27	0.8	2.57859	uPVC	145	0.03

Distribution Network Design Output: Zone 4

P-320	16	19.543	19.64	0.94059	J-235	J-236	237.19	-10,205.86	4,498.47	110	0.1	0.12	0.94059	uPVC	145	0
P-321	98.5	19.64	20.047	-1.96734	J-236	J-237	237.09	-10,202.42	4,514.25	110	0.21	0.48	1.96734	uPVC	145	0.05
P-322	87	20.047	20.22	-2.65921	J-237	J-222	236.73	-10,184.63	4,611.22	110	0.28	0.84	2.65921	uPVC	145	0.07
P-323	202.5	20.176	19.766	1.65733	J-220	J-238	236.63	-10,197.60	4,700.67	110	0.17	0.35	1.65733	uPVC	145	0.07
P-324	6	19.766	19.736	0.02184	J-238	J-239	236.97	-10,231.37	4,501.07	110	0	0	0.02184	uPVC	145	0
P-325	26.5	20.108	20.09	2.36498	J-225	J-240	236.75	-10,111.53	4,697.08	110	0.25	0.68	2.36498	uPVC	145	0.02
P-326	79.5	20.09	19.837	2.11132	J-240	J-241	236.75	-10,085.26	4,694.13	110	0.22	0.55	2.11132	uPVC	145	0.04
P-327	20	19.837	19.846	0.43265	J-241	J-233	236.96	-10,105.34	4,616.96	110	0.05	0.03	0.43265	uPVC	145	0
P-328	52.5	19.837	19.865	1.31839	J-241	J-242	236.96	-10,105.34	4,616.96	110	0.14	0.23	1.31839	uPVC	145	0.01
P-329	9.5	19.865	19.907	-1.27247	J-242	J-243	236.92	-10,055.42	4,601.47	110	0.13	0.22	1.27247	uPVC	145	0
P-33	38	21.186	21.17	-3.8634	J-31	J-32	236.41	-10,182.19	5,071.45	110	0.41	1.68	3.8634	uPVC	145	0.06
P-330	23.5	19.907	19.935	0.64016	J-243	J-244	236.88	-10,048.83	4,594.87	110	0.07	0.06	0.64016	uPVC	145	0
P-331	48.5	19.712	19.781	0.47767	J-232	J-245	237.05	-10,130.90	4,586.98	110	0.05	0.03	0.47767	uPVC	145	0
P-332	36	19.781	19.865	-2.35576	J-245	J-242	236.98	-10,083.25	4,578.80	110	0.25	0.67	2.35576	uPVC	145	0.02
P-333	31	19.798	19.781	-0.7013	J-246	J-245	236.96	-10,062.60	4,555.56	110	0.07	0.07	0.7013	uPVC	145	0
P-334	71.5	19.781	19.515	1.69071	J-245	J-231	236.98	-10,083.25	4,578.80	110	0.18	0.36	1.69071	uPVC	145	0.03
P-335	8	20.535	20.489	2.5557	J-204	J-247	236.09	-10,263.59	4,688.12	110	0.27	0.78	2.5557	uPVC	145	0.01
P-336	16	20.489	20.339	0.04503	J-247	J-248	236.13	-10,255.82	4,689.84	110	0	0	0.04503	uPVC	145	0
P-337	16.5	20.489	20.507	2.40886	J-247	J-249	236.13	-10,255.82	4,689.84	110	0.25	0.7	2.40886	uPVC	145	0.01
P-338	27.5	20.507	20.225	-2.91493	J-249	J-250	236.1	-10,259.64	4,673.68	110	0.31	1	2.91493	uPVC	145	0.03
P-339	40	20.225	20.267	-8.70336	J-250	J-219	236.41	-10,233.05	4,667.66	125	0.71	4.06	8.70336	HDPE	145	0.16
P-34	41	21.17	21.343	-4.57145	J-32	J-33	236.49	-10,168.78	5,036.01	110	0.48	2.3	4.57145	uPVC	145	0.09
P-340	49.5	20.225	20.085	5.50927	J-250	J-251	236.41	-10,233.05	4,667.66	110	0.58	3.24	5.50927	uPVC	145	0.16
P-341	52	20.085	20.072	3.24129	J-251	J-252	236.39	-10,244.28	4,619.55	110	0.34	1.21	3.24129	uPVC	145	0.06
P-342	48	20.072	20.052	2.62154	J-252	J-253	236.34	-10,256.38	4,568.89	110	0.28	0.82	2.62154	uPVC	145	0.04
P-343	54.5	20.052	19.922	4.67028	J-253	J-254	236.32	-10,267.14	4,522.27	110	0.49	2.39	4.67028	uPVC	145	0.13
P-344	42	19.922	19.587	-0.84605	J-254	J-255	236.32	-10,279.25	4,468.92	110	0.09	0.1	0.84605	uPVC	145	0
P-345	51	19.587	19.443	-4.94578	J-255	J-256	236.66	-10,239.80	4,455.03	110	0.52	2.66	4.94578	uPVC	145	0.14
P-346	86	19.587	19.326	3.67686	J-255	J-257	236.66	-10,239.80	4,455.03	110	0.39	1.53	3.67686	uPVC	145	0.13
P-347	32	19.326	19.34	-0.9472	J-257	J-258	236.79	-10,268.49	4,373.89	110	0.1	0.12	0.9472	uPVC	145	0
P-348	36.5	19.563	19.615	-0.50707	J-193	J-259	236.5	-10,374.40	4,493.38	110	0.05	0.04	0.50707	uPVC	145	0
P-349	62.5	19.615	19.922	-5.13983	J-259	J-254	236.45	-10,337.97	4,490.89	110	0.54	2.85	5.13983	uPVC	145	0.18
P-35	47.5	21.343	21.554	-4.61448	J-33	J-34	236.41	-10,155.01	4,997.46	110	0.49	2.34	4.61448	uPVC	145	0.11
P-350	43	19.615	19.447	4.29566	J-259	J-260	236.45	-10,337.97	4,490.89	110	0.45	2.05	4.29566	uPVC	145	0.09
P-351	34.5	19.447	19.414	2.34866	J-260	J-261	236.53	-10,342.00	4,448.30	110	0.25	0.67	2.34866	uPVC	145	0.02
P-352	10	19.414	19.425	-0.62509	J-261	J-262	236.54	-10,346.04	4,414.23	110	0.07	0.06	0.62509	uPVC	145	0

Distribution Network Design Output: Zone 4

P-353	28	19.425	19.291	3.23204	J-262	J-263	236.53	-10,346.94	4,404.37	110	0.34	1.21	3.23204	uPVC	145	0.03
P-354	28	19.291	19.288	0.87035	J-263	J-264	236.63	-10,350.52	4,376.58	110	0.09	0.11	0.87035	uPVC	145	0
P-355	33	19.288	19.299	-1.6519	J-264	J-265	236.63	-10,354.11	4,348.79	110	0.17	0.35	1.6519	uPVC	145	0.01
P-356	84	19.425	19.326	-4.14787	J-262	J-257	236.53	-10,346.94	4,404.37	110	0.44	1.92	4.14787	uPVC	145	0.16
P-357	34	20.336	20.55	-3.75184	J-195	J-266	236.07	-10,306.98	4,626.79	110	0.39	1.59	3.75184	uPVC	145	0.05
P-358	52.5	20.55	20.507	-5.09216	J-266	J-249	235.91	-10,273.42	4,623.13	110	0.54	2.8	5.09216	uPVC	145	0.15
P-359	29.5	20.55	20.085	-1.95638	J-266	J-251	235.91	-10,273.42	4,623.13	110	0.21	0.48	1.95638	uPVC	145	0.01
P-36	45.5	21.554	21.523	-3.02927	J-34	J-35	236.31	-10,140.69	4,952.29	110	0.32	1.07	3.02927	uPVC	145	0.05
P-360	44.5	20.336	20.285	0.39563	J-195	J-267	236.07	-10,306.98	4,626.79	110	0.04	0.02	0.39563	uPVC	145	0
P-361	50	20.285	20.016	1.16379	J-267	J-268	236.12	-10,318.25	4,583.68	110	0.12	0.18	1.16379	uPVC	145	0.01
P-362	32.5	20.016	20.243	0.86627	J-268	J-269	236.38	-10,329.00	4,534.82	110	0.09	0.11	0.86627	uPVC	145	0
P-363	30.5	20.243	20.052	2.36498	J-269	J-253	236.15	-10,296.73	4,529.44	110	0.25	0.68	2.36498	uPVC	145	0.02
P-364	36	20.285	20.231	-1.0786	J-267	J-270	236.12	-10,318.25	4,583.68	110	0.11	0.16	1.0786	uPVC	145	0.01
P-365	28	20.231	20.072	-0.3151	J-270	J-252	236.18	-10,283.73	4,574.27	110	0.03	0.02	0.3151	uPVC	145	0
P-366	50	20.55	20.231	2.90397	J-266	J-270	235.91	-10,273.42	4,623.13	110	0.31	0.99	2.90397	uPVC	145	0.05
P-367	46.5	20.231	20.243	1.76048	J-270	J-269	236.18	-10,283.73	4,574.27	110	0.19	0.39	1.76048	uPVC	145	0.02
P-368	19.5	19.986	20.016	-0.05314	J-271	J-268	236.41	-10,333.94	4,515.99	110	0.01	0	0.05314	uPVC	145	0
P-369	90.5	19.319	19.447	-1.54962	J-191	J-260	236.63	-10,427.84	4,463.62	110	0.16	0.31	1.54962	uPVC	145	0.03
P-37	49.5	21.523	21.345	8.16424	J-35	J-36	236.39	-10,124.90	4,909.69	125	0.67	3.61	8.16424	HDPE	145	0.18
P-370	61	18.654	18.797	-0.57887	J-173	J-272	237.12	-10,577.02	4,502.35	110	0.06	0.05	0.57887	uPVC	145	0
P-371	28	18.797	18.823	-3.31722	J-272	J-189	236.98	-10,518.56	4,484.67	110	0.35	1.27	3.31722	uPVC	145	0.04
P-372	26	18.587	18.607	-0.40396	J-172	J-273	237.11	-10,589.93	4,456.80	110	0.04	0.03	0.40396	uPVC	145	0
P-373	45	18.607	18.838	-2.77576	J-273	J-274	237.09	-10,565.88	4,447.33	110	0.29	0.91	2.77576	uPVC	145	0.04
P-374	56.5	18.838	18.797	-2.39313	J-274	J-272	236.9	-10,526.29	4,428.69	110	0.25	0.69	2.39313	uPVC	145	0.04
P-375	46.5	18.838	18.978	-3.34366	J-274	J-275	236.9	-10,526.29	4,428.69	110	0.35	1.29	3.34366	uPVC	145	0.06
P-376	15.5	18.978	19.091	-5.08046	J-275	J-276	236.82	-10,480.10	4,423.52	110	0.53	2.79	5.08046	uPVC	145	0.04
P-377	46	19.091	19.189	-2.26524	J-276	J-190	236.75	-10,464.61	4,421.51	110	0.24	0.63	2.26524	uPVC	145	0.03
P-378	31.5	19.091	19.124	-3.03874	J-276	J-277	236.75	-10,464.61	4,421.51	110	0.32	1.08	3.03874	uPVC	145	0.03
P-379	96.5	19.124	19.414	-2.63896	J-277	J-261	236.75	-10,433.34	4,416.92	110	0.28	0.83	2.63896	uPVC	145	0.08
P-38	43.5	21.345	21.104	5.914	J-36	J-37	236.39	-10,110.76	4,862.50	110	0.62	3.7	5.914	uPVC	145	0.16
P-380	27.5	19.124	19.057	-0.76817	J-277	J-278	236.75	-10,433.34	4,416.92	110	0.08	0.08	0.76817	uPVC	145	0
P-381	88	19.057	19.291	-2.01996	J-278	J-263	236.82	-10,437.35	4,389.67	110	0.21	0.51	2.01996	uPVC	145	0.04
P-382	30.5	19.057	18.954	0.90541	J-278	J-279	236.82	-10,437.35	4,389.67	110	0.1	0.11	0.90541	uPVC	145	0
P-383	17	18.954	19.056	-1.0727	J-279	J-280	236.92	-10,441.37	4,359.26	110	0.11	0.16	1.0727	uPVC	145	0
P-384	71	19.056	19.288	-2.20833	J-280	J-264	236.82	-10,424.44	4,356.96	110	0.23	0.6	2.20833	uPVC	145	0.04
P-385	58	19.056	18.801	0.78926	J-280	J-281	236.82	-10,424.44	4,356.96	110	0.08	0.09	0.78926	uPVC	145	0.01

Distribution Network Design Output: Zone 4

P-386	83.5	18.535	18.954	-1.6665	J-282	J-279	237.31	-10,463.75	4,290.11	110	0.18	0.35	1.6665	uPVC	145	0.03
P-387	146.5	18.408	18.978	-1.24555	J-283	J-275	237.36	-10,499.61	4,278.35	110	0.13	0.21	1.24555	uPVC	145	0.03
P-388	135.5	18.838	18.442	2.29591	J-274	J-284	236.9	-10,526.29	4,428.69	110	0.24	0.64	2.29591	uPVC	145	0.09
P-389	54	18.442	20.238	-0.11413	J-284	J-285	237.21	-10,542.35	4,293.97	110	0.01	0	0.11413	uPVC	145	0
P-39	36.5	21.104	21.148	-7.53259	J-37	J-38	236.47	-10,096.26	4,821.55	160	0.37	0.93	7.53259	uPVC	145	0.03
P-390	14.5	19.696	19.376	0.45199	J-286	J-287	235.93	-10,589.42	4,258.11	110	0.05	0.03	0.45199	uPVC	145	0
P-391	28	19.376	18.873	-1.26259	J-287	J-288	236.25	-10,587.18	4,272.46	110	0.13	0.21	1.26259	uPVC	145	0.01
P-392	148	18.873	18.607	-1.8562	J-288	J-273	236.76	-10,583.60	4,300.25	110	0.2	0.43	1.8562	uPVC	145	0.06
P-393	23	19.041	19.311	0.06125	J-170	J-289	236.62	-10,610.02	4,419.87	110	0.01	0	0.06125	uPVC	145	0
P-394	42.5	20.241	19.852	0.10365	J-290	J-291	235.37	-10,637.39	4,242.42	110	0.01	0	0.10365	uPVC	145	0
P-395	21.5	19.852	19.652	-0.19485	J-291	J-292	235.76	-10,630.22	4,284.56	110	0.02	0.01	0.19485	uPVC	145	0
P-396	44	19.652	18.873	-1.84614	J-292	J-288	235.96	-10,627.08	4,305.63	110	0.19	0.43	1.84614	uPVC	145	0.02
P-397	44.5	19.376	19.852	1.50497	J-287	J-291	236.25	-10,587.18	4,272.46	110	0.16	0.29	1.50497	uPVC	145	0.01
P-398	50.5	19.852	19.719	1.42696	J-291	J-293	235.76	-10,630.22	4,284.56	110	0.15	0.27	1.42696	uPVC	145	0.01
P-399	84	19.719	20.268	0.07703	J-293	J-294	235.88	-10,679.53	4,295.77	110	0.01	0	0.07703	uPVC	145	0
P-4	41	21.312	21.123	10.25129	J-3	J-4	236.54	-10,121.10	5,009.27	140	0.67	3.16	10.25129	HDPE	145	0.13
P-40	36	21.148	21.085	2.08082	J-38	J-21	236.46	-10,061.55	4,832.50	160	0.1	0.09	2.08082	uPVC	145	0
P-400	59	19.719	19.692	0.89344	J-293	J-295	235.88	-10,679.53	4,295.77	110	0.09	0.11	0.89344	uPVC	145	0.01
P-401	49.5	19.692	19.664	-0.53642	J-295	J-296	235.9	-10,727.49	4,324.01	110	0.06	0.04	0.53642	uPVC	145	0
P-402	42	19.664	19.512	-1.13858	J-296	J-297	235.93	-10,707.32	4,369.28	110	0.12	0.17	1.13858	uPVC	145	0.01
P-403	11.5	19.512	19.446	-1.6664	J-297	J-298	236.09	-10,689.84	4,407.39	110	0.18	0.35	1.6664	uPVC	145	0
P-404	26.5	19.446	19.306	-3.09327	J-298	J-169	236.16	-10,685.80	4,418.15	110	0.33	1.11	3.09327	uPVC	145	0.03
P-405	80.5	19.512	19.312	0.20926	J-297	J-299	236.09	-10,689.84	4,407.39	110	0.02	0.01	0.20926	uPVC	145	0
P-406	57	19.312	19.472	-0.11741	J-299	J-300	236.29	-10,614.08	4,379.59	110	0.01	0	0.11741	uPVC	145	0
P-407	25	19.472	19.657	-1.27861	J-300	J-301	236.13	-10,637.03	4,331.76	110	0.13	0.22	1.27861	uPVC	145	0.01
P-408	21	19.657	19.652	-1.44284	J-301	J-292	235.95	-10,647.85	4,308.99	110	0.15	0.27	1.44284	uPVC	145	0.01
P-409	79.5	19.472	19.664	0.77889	J-300	J-296	236.13	-10,637.03	4,331.76	110	0.08	0.09	0.77889	uPVC	145	0.01
P-41	43	21.148	21.359	-9.88909	J-38	J-39	236.46	-10,061.55	4,832.50	125	0.81	5.14	9.88909	HDPE	145	0.22
P-410	84	19.664	19.927	0.782	J-296	J-302	235.93	-10,707.32	4,369.28	110	0.08	0.09	0.782	uPVC	145	0.01
P-411	42.5	19.927	19.895	0.51929	J-302	J-303	235.66	-10,782.35	4,407.22	110	0.05	0.04	0.51929	uPVC	145	0
P-412	38.5	19.895	19.795	-0.18543	J-303	J-304	235.69	-10,803.24	4,370.04	110	0.02	0.01	0.18543	uPVC	145	0
P-413	50.5	19.795	19.692	-0.97931	J-304	J-295	235.79	-10,771.10	4,349.15	110	0.1	0.13	0.97931	uPVC	145	0.01
P-414	86.5	19.692	19.992	-0.12647	J-295	J-305	235.9	-10,727.49	4,324.01	110	0.01	0	0.12647	uPVC	145	0
P-415	38.5	19.992	20.265	-0.7725	J-305	J-306	235.6	-10,761.22	4,244.11	110	0.08	0.09	0.7725	uPVC	145	0
P-416	32	19.992	19.902	0.27416	J-305	J-307	235.6	-10,761.22	4,244.11	110	0.03	0.01	0.27416	uPVC	145	0
P-417	27	19.902	19.852	0.07052	J-307	J-308	235.69	-10,789.31	4,258.99	110	0.01	0	0.07052	uPVC	145	0

Distribution Network Design Output: Zone 4

P-418	11	19.932	19.902	-0.03343	J-309	J-307	235.66	-10,799.46	4,263.51	110	0	0	0.03343	uPVC	145	0
P-419	22.5	19.933	19.923	-0.06009	J-310	J-311	235.65	-10,821.72	4,300.92	110	0.01	0	0.06009	uPVC	145	0
P-42	51	21.359	21.667	-19.56625	J-39	J-1	236.47	-10,072.34	4,874.27	160	0.97	5.47	19.56625	HDPE	145	0.28
P-420	47.5	19.923	19.795	-0.46952	J-311	J-304	235.66	-10,805.43	4,316.30	110	0.05	0.03	0.46952	uPVC	145	0
P-421	57.5	19.963	19.923	-0.10594	J-312	J-311	235.62	-10,847.89	4,354.86	110	0.01	0	0.10594	uPVC	145	0
P-422	37.5	19.895	19.924	0.42209	J-303	J-313	235.69	-10,803.24	4,370.04	110	0.04	0.03	0.42209	uPVC	145	0
P-423	6	19.924	19.924	-0.07627	J-313	J-314	235.66	-10,835.29	4,389.71	110	0.01	0	0.07627	uPVC	145	0
P-424	39.5	19.924	19.924	-0.26833	J-314	J-315	235.66	-10,839.88	4,393.38	110	0.03	0.01	0.26833	uPVC	145	0
P-425	42.5	19.924	19.927	-0.6041	J-315	J-302	235.66	-10,819.91	4,427.35	110	0.06	0.05	0.6041	uPVC	145	0
P-426	46.5	19.927	19.512	-0.84887	J-302	J-316	235.66	-10,782.35	4,407.22	110	0.09	0.1	0.84887	uPVC	145	0
P-427	79	19.512	19.446	-1.14772	J-316	J-298	236.08	-10,758.86	4,447.54	110	0.12	0.18	1.14772	uPVC	145	0.01
P-428	28	19.924	19.924	0.07284	J-315	J-317	235.66	-10,819.91	4,427.35	110	0.01	0	0.07284	uPVC	145	0
P-429	111.5	19.924	19.964	-0.17981	J-314	J-318	235.66	-10,839.88	4,393.38	110	0.02	0.01	0.17981	HDPE	145	0
P-43	35	21.104	21.012	13.17208	J-37	J-40	236.47	-10,096.26	4,821.55	160	0.66	2.63	13.17208	uPVC	145	0.09
P-430	197	19.964	19.598	-0.90288	J-318	J-319	235.62	-10,923.89	4,465.91	110	0.1	0.11	0.90288	HDPE	145	0.02
P-431	121	19.598	19.929	-1.64796	J-319	J-320	236.01	-10,827.82	4,637.97	110	0.17	0.35	1.64796	HDPE	145	0.04
P-44	42.5	21.012	21.203	-4.66345	J-40	J-41	236.47	-10,129.96	4,812.21	110	0.49	2.38	4.66345	uPVC	145	0.1
P-45	48.5	21.203	21.39	-4.46821	J-41	J-42	236.38	-10,143.73	4,852.23	110	0.47	2.2	4.46821	uPVC	145	0.11
P-46	45.5	21.39	21.477	-2.23234	J-42	J-43	236.3	-10,159.83	4,897.85	110	0.23	0.61	2.23234	uPVC	145	0.03
P-47	47	21.477	21.439	3.27496	J-43	J-44	236.24	-10,174.15	4,940.81	110	0.34	1.24	3.27496	uPVC	145	0.06
P-48	42	21.439	21.276	3.93907	J-44	J-45	236.22	-10,190.21	4,984.77	110	0.41	1.74	3.93907	uPVC	145	0.07
P-49	37.5	21.276	21.239	2.90542	J-45	J-46	236.31	-10,203.71	5,024.55	110	0.31	0.99	2.90542	uPVC	145	0.04
P-5	38	21.123	21.111	4.96525	J-4	J-5	236.6	-10,134.05	5,048.14	110	0.52	2.68	4.96525	uPVC	145	0.1
P-50	39	21.239	21.257	2.12244	J-46	J-47	236.31	-10,217.31	5,059.76	110	0.22	0.55	2.12244	uPVC	145	0.02
P-51	47	21.257	21.157	1.27575	J-47	J-48	236.27	-10,229.24	5,096.85	110	0.13	0.22	1.27575	uPVC	145	0.01
P-52	35	21.157	21.19	8.06083	J-48	J-49	236.36	-10,245.22	5,141.29	160	0.4	1.06	8.06083	uPVC	145	0.04
P-53	47	21.19	21.24	-0.256	J-49	J-50	236.29	-10,278.08	5,129.91	160	0.01	0	0.256	uPVC	145	0
P-54	23.5	21.24	21.287	2.81154	J-50	J-51	236.24	-10,264.31	5,084.74	160	0.14	0.15	2.81154	uPVC	145	0
P-55	15.5	21.287	21.27	-2.68766	J-51	J-52	236.19	-10,257.34	5,062.52	110	0.28	0.86	2.68766	uPVC	145	0.01
P-56	40	21.27	21.336	0.81471	J-52	J-53	236.22	-10,252.75	5,047.65	110	0.09	0.09	0.81471	uPVC	145	0
P-57	28	21.336	21.337	-0.4078	J-53	J-54	236.15	-10,239.34	5,010.19	110	0.04	0.03	0.4078	uPVC	145	0
P-58	11.5	21.337	21.38	-8.30319	J-54	J-55	236.15	-10,230.16	4,983.56	125	0.68	3.72	8.30319	HDPE	145	0.04
P-59	47	21.38	21.285	-2.87473	J-55	J-56	236.15	-10,226.12	4,972.55	110	0.3	0.97	2.87473	uPVC	145	0.05
P-6	38.5	21.111	21.156	2.79599	J-5	J-6	236.51	-10,146.86	5,083.88	110	0.29	0.92	2.79599	uPVC	145	0.04
P-60	44	21.285	21.086	2.76647	J-56	J-57	236.29	-10,209.96	4,928.30	110	0.29	0.91	2.76647	uPVC	145	0.04
P-61	48	21.086	20.929	4.03466	J-57	J-58	236.45	-10,195.09	4,886.80	110	0.42	1.82	4.03466	uPVC	145	0.09

Distribution Network Design Output: Zone 4

P-62	28	20.929	20.761	9.67789	J-58	J-59	236.52	-10,178.57	4,841.63	125	0.79	4.94	9.67789	HDPE	145	0.14
P-63	18	20.761	20.817	-3.58849	J-59	J-60	236.55	-10,169.38	4,815.37	110	0.38	1.47	3.58849	uPVC	145	0.03
P-64	32.5	20.817	21.012	-17.5726	J-60	J-40	236.52	-10,161.09	4,802.61	160	0.87	4.48	17.5726	uPVC	145	0.15
P-65	36.5	20.929	21.203	-5.91195	J-58	J-41	236.52	-10,178.57	4,841.63	110	0.62	3.7	5.91195	uPVC	145	0.13
P-66	34.5	21.203	21.345	-6.49065	J-41	J-36	236.38	-10,143.73	4,852.23	110	0.68	4.39	6.49065	uPVC	145	0.15
P-67	40	21.345	21.359	-4.63662	J-36	J-39	236.39	-10,110.76	4,862.50	110	0.49	2.36	4.63662	uPVC	145	0.09
P-68	32	21.359	21.233	4.64781	J-39	J-22	236.47	-10,072.34	4,874.27	110	0.49	2.37	4.64781	uPVC	145	0.08
P-69	34.5	21.233	21.121	4.03845	J-22	J-19	236.52	-10,041.47	4,883.23	110	0.42	1.83	4.03845	uPVC	145	0.06
P-7	48	21.156	21.179	1.64612	J-6	J-7	236.43	-10,159.70	5,120.06	110	0.17	0.35	1.64612	uPVC	145	0.02
P-70	33.5	21.191	21.446	-8.69634	J-17	J-23	236.6	-10,027.55	4,944.36	125	0.71	4.05	8.69634	HDPE	145	0.14
P-71	33	21.446	21.667	-19.60281	J-23	J-1	236.48	-10,059.04	4,933.08	160	0.97	5.49	19.60281	HDPE	145	0.18
P-72	37	21.667	21.523	26.12111	J-1	J-35	236.44	-10,089.97	4,922.32	180	1.03	5.26	26.12111	HDPE	145	0.19
P-73	37	21.523	21.39	14.52792	J-35	J-42	236.39	-10,124.90	4,909.69	140	0.94	6.04	14.52792	HDPE	145	0.22
P-74	37	21.39	21.086	11.89467	J-42	J-57	236.3	-10,159.83	4,897.85	140	0.77	4.17	11.89467	HDPE	145	0.15
P-75	38	21.285	21.477	-5.94817	J-56	J-43	236.29	-10,209.96	4,928.30	110	0.63	3.74	5.94817	uPVC	145	0.14
P-76	35.5	21.477	21.554	-11.84821	J-43	J-34	236.24	-10,174.15	4,940.81	140	0.77	4.14	11.84821	HDPE	145	0.15
P-77	37	21.554	21.56	-13.825	J-34	J-2	236.31	-10,140.69	4,952.29	160	0.69	2.87	13.825	HDPE	145	0.11
P-78	34.5	21.56	21.376	8.91685	J-2	J-24	236.41	-10,105.96	4,964.36	140	0.58	2.44	8.91685	HDPE	145	0.08
P-79	32	21.376	21.174	7.23563	J-24	J-15	236.51	-10,073.38	4,975.40	125	0.59	2.88	7.23563	HDPE	145	0.09
P-8	35	21.179	21.191	-4.43394	J-7	J-8	236.39	-10,176.81	5,165.04	160	0.22	0.35	4.43394	uPVC	145	0.01
P-80	38	21.38	21.439	-5.66009	J-55	J-44	236.15	-10,226.12	4,972.55	110	0.6	3.41	5.66009	uPVC	145	0.13
P-81	37.5	21.439	21.343	-6.71345	J-44	J-33	236.22	-10,190.21	4,984.77	125	0.55	2.51	6.71345	HDPE	145	0.09
P-82	36	21.343	21.312	-7.0539	J-33	J-3	236.41	-10,155.01	4,997.46	125	0.57	2.75	7.0539	HDPE	145	0.1
P-83	32.5	21.312	21.169	5.33451	J-3	J-25	236.54	-10,121.10	5,009.27	125	0.43	1.64	5.33451	HDPE	145	0.05
P-84	32.5	21.169	21.131	3.17674	J-25	J-13	236.63	-10,089.88	5,019.15	110	0.33	1.17	3.17674	uPVC	145	0.04
P-85	31	21.077	21.088	-1.69662	J-12	J-26	236.63	-10,073.87	5,068.34	110	0.18	0.37	1.69662	uPVC	145	0.01
P-86	32.5	21.088	21.123	-1.03061	J-26	J-4	236.63	-10,103.14	5,058.51	110	0.11	0.15	1.03061	uPVC	145	0
P-87	37	21.123	21.17	3.90326	J-4	J-32	236.6	-10,134.05	5,048.14	110	0.41	1.71	3.90326	uPVC	145	0.06
P-88	37	21.17	21.276	4.21746	J-32	J-45	236.49	-10,168.78	5,036.01	110	0.44	1.98	4.21746	uPVC	145	0.07
P-89	38.5	21.276	21.336	4.88387	J-45	J-53	236.31	-10,203.71	5,024.55	110	0.51	2.59	4.88387	uPVC	145	0.1
P-9	33	21.191	21.198	-3.22909	J-8	J-9	236.39	-10,143.56	5,176.06	160	0.16	0.19	3.22909	uPVC	145	0.01
P-90	37.5	21.27	21.239	-3.72588	J-52	J-46	236.22	-10,252.75	5,047.65	110	0.39	1.57	3.72588	uPVC	145	0.06
P-91	37	21.239	21.186	-3.30087	J-46	J-31	236.31	-10,217.31	5,059.76	110	0.35	1.26	3.30087	uPVC	145	0.05
P-92	37.5	21.186	21.111	-2.37519	J-31	J-5	236.41	-10,182.19	5,071.45	110	0.25	0.68	2.37519	uPVC	145	0.03
P-93	34	21.111	21.113	-0.55693	J-5	J-27	236.51	-10,146.86	5,083.88	110	0.06	0.05	0.55693	uPVC	145	0
P-94	31.5	21.113	21.143	1.54001	J-27	J-11	236.51	-10,114.60	5,093.94	110	0.16	0.31	1.54001	uPVC	145	0.01

Distribution Network Design Output: Zone 4

P-95	37	21.24	21.257	-3.32466	J-50	J-47	236.24	-10,264.31	5,084.74	110	0.35	1.27	3.32466	uPVC	145	0.05
P-96	38.5	21.257	21.235	-2.86027	J-47	J-30	236.27	-10,229.24	5,096.85	110	0.3	0.96	2.86027	uPVC	145	0.04
P-97	35	21.235	21.156	-2.21804	J-30	J-6	236.33	-10,192.90	5,109.07	110	0.23	0.6	2.21804	uPVC	145	0.02
P-98	34.5	21.156	21.205	-1.43774	J-6	J-28	236.43	-10,159.70	5,120.06	110	0.15	0.27	1.43774	uPVC	145	0.01
P-99	32	21.205	21.318	-0.8501	J-28	J-10	236.39	-10,127.09	5,130.96	110	0.09	0.1	0.8501	uPVC	145	0
PP-432	29	20.639	20.507	-2.27016	J-123	J-119	236.48	-10,387.16	5,076.67	110	0.24	0.63	2.27016	HDPE	145	0.02
PP-433	50	21.132	21.15	-4.84729	J-118	PJ-321	236.15	-10,347.86	5,128.89	110	0.51	2.56	4.84729	HDPE	145	0.13
PP-434	20	21.15	21.19	-8.07245	PJ-321	J-49	236.26	-10,297.90	5,129.89	125	0.66	3.53	8.07245	HDPE	145	0.07
PP-435	20	21.15	21.238	3.00859	PJ-321	PJ-322	236.26	-10,297.90	5,129.89	110	0.32	1.06	3.00859	HDPE	145	0.02
PP-436	73.5	21.238	20.952	3.19419	PJ-322	PJ-323	236.15	-10,303.28	5,110.62	110	0.34	1.18	3.19419	HDPE	145	0.09
PP-437	47	20.952	20.945	4.56527	PJ-323	J-127	236.35	-10,321.65	5,039.34	110	0.48	2.29	4.56527	HDPE	145	0.11
PP-438	8	21.02	21.057	-7.98804	J-128	PJ-324	236.21	-10,309.49	4,984.70	125	0.65	3.46	7.98804	HDPE	145	0.03
PP-439	66.5	21.057	21.336	-5.69742	PJ-324	J-53	236.2	-10,301.93	4,987.34	110	0.6	3.45	5.69742	HDPE	145	0.23
PP-440	55.5	21.057	20.952	-2.59991	PJ-324	PJ-323	236.2	-10,301.93	4,987.34	110	0.27	0.81	2.59991	HDPE	145	0.04
PP-441	40.5	20.952	21.241	-4.48078	PJ-323	PJ-325	236.35	-10,321.65	5,039.34	110	0.47	2.21	4.48078	HDPE	145	0.09
PP-442	60	21.241	21.238	0.54936	PJ-325	PJ-322	236.15	-10,284.00	5,053.69	110	0.06	0.05	0.54936	HDPE	145	0
PP-443	28	21.241	21.287	-5.33595	PJ-325	J-51	236.15	-10,284.00	5,053.69	110	0.56	3.06	5.33595	HDPE	145	0.09
PP-444	39	20.585	20.817	-13.76871	J-214	J-60	236.54	-10,161.38	4,763.43	140	0.89	5.47	13.76871	HDPE	145	0.21
PP-445	32.5	20.047	19.907	0.17859	J-237	J-227	236.73	-10,184.63	4,611.22	110	0.02	0.01	0.17859	HDPE	145	0
PP-446	27	20.213	20.193	0.07052	J-115	PJ-326	236.7	-9,957.05	4,721.09	110	0.01	0	0.07052	HDPE	145	0
PP-447	16	20.209	20.259	0.04503	J-101	PJ-327	236.87	-9,834.54	4,842.16	110	0	0	0.04503	HDPE	145	0
PP-448	86.5	21.222	21.18	0.40129	J-74	J-65	236.39	-9,903.77	4,998.47	110	0.04	0.03	0.40129	HDPE	145	0
PP-449	183	21.201	21.187	0.98781	J-61	PJ-328	236.4	-10,045.42	5,113.79	110	0.1	0.13	0.98781	HDPE	145	0.02
PP-450	67	21.187	21.17	0.83682	PJ-328	J-66	236.39	-9,871.07	5,168.87	110	0.09	0.1	0.83682	HDPE	145	0.01
PP-451	92.5	21.17	20.983	2.24498	J-66	J-77	236.4	-9,853.78	5,104.02	110	0.24	0.62	2.24498	HDPE	145	0.06
PP-452	231.5	20.983	20.384	4.42605	J-77	J-108	236.53	-9,832.67	5,014.04	110	0.47	2.16	4.42605	HDPE	145	0.5
PP-453	26	20.306	20.336	0.06821	J-109	PJ-329	236.66	-9,776.87	4,762.41	110	0.01	0	0.06821	HDPE	145	0
PP-454	87.5	20.178	20.238	-0.1271	J-110	PJ-330	236.76	-9,772.86	4,744.62	110	0.01	0	0.1271	HDPE	145	0
PP-455	6	20.238	20.272	-2.24494	PJ-330	J-114	236.7	-9,852.06	4,707.68	110	0.24	0.62	2.24494	HDPE	145	0
PP-456	43.5	20.238	20.29	1.79233	PJ-330	J-117	236.7	-9,852.06	4,707.68	110	0.19	0.41	1.79233	HDPE	145	0.02
PP-457	6	20.29	20.278	4.29378	J-117	PJ-331	236.63	-9,891.35	4,689.25	110	0.45	2.04	4.29378	HDPE	145	0.01
PP-458	31.5	20.278	20.25	1.36857	PJ-331	PJ-332	236.63	-9,896.17	4,685.80	110	0.14	0.25	1.36857	HDPE	145	0.01
PP-459	39.5	20.25	20.213	-1.57294	PJ-332	J-115	236.65	-9,921.99	4,703.02	110	0.17	0.32	1.57294	HDPE	145	0.01
PP-460	174.5	20.278	20.064	2.42585	PJ-331	PJ-333	236.63	-9,896.17	4,685.80	110	0.26	0.71	2.42585	HDPE	145	0.12
PP-461	7.5	20.064	19.935	-0.56036	PJ-333	J-244	236.72	-10,028.14	4,571.76	110	0.06	0.05	0.56036	HDPE	145	0
PP-462	166.5	19.907	20.25	-2.38302	J-243	PJ-332	236.88	-10,048.83	4,594.87	110	0.25	0.69	2.38302	HDPE	145	0.11

Distribution Network Design Output: Zone 4

PP-463	9	19.798	19.918	0.60064	J-246	PJ-334	236.96	-10,062.60	4,555.56	110	0.06	0.05	0.60064	HDPE	145	0
PP-464	37	19.918	20.064	-2.47061	PJ-334	PJ-333	236.84	-10,056.83	4,548.45	110	0.26	0.73	2.47061	HDPE	145	0.03
PP-465	10	19.794	19.782	3.1877	J-230	PJ-335	236.88	-10,141.30	4,486.57	110	0.34	1.18	3.1877	HDPE	145	0.01
PP-466	110.5	19.782	19.918	-2.70054	PJ-335	PJ-334	236.88	-10,140.39	4,476.37	110	0.28	0.87	2.70054	HDPE	145	0.1
PP-467	30	19.424	19.697	4.4736	J-229	PJ-336	237.22	-10,178.23	4,482.27	110	0.47	2.21	4.4736	HDPE	145	0.07
PP-468	26	19.697	19.782	-5.5407	PJ-336	PJ-335	236.88	-10,159.76	4,458.80	110	0.58	3.28	5.5407	HDPE	145	0.09
PP-469	9	19.443	19.528	-5.0928	J-256	PJ-337	236.94	-10,191.83	4,438.44	110	0.54	2.8	5.0928	HDPE	145	0.03
PP-470	33.5	19.528	19.697	-9.79891	PJ-337	PJ-336	236.88	-10,183.43	4,435.13	125	0.8	5.06	9.79891	HDPE	145	0.17
PP-471	10	19.34	19.356	-5.81373	J-258	PJ-338	236.78	-10,277.45	4,343.41	110	0.61	3.58	5.81373	HDPE	145	0.04
PP-472	122.5	19.356	19.528	-4.31568	PJ-338	PJ-337	236.8	-10,268.06	4,346.91	110	0.45	2.06	4.31568	HDPE	145	0.25
PP-473	25.5	19.766	19.543	1.08512	J-238	J-235	236.97	-10,231.37	4,501.07	110	0.11	0.16	1.08512	HDPE	145	0
PP-474	30.5	19.64	19.407	2.56388	J-236	J-228	237.09	-10,202.42	4,514.25	110	0.27	0.79	2.56388	HDPE	145	0.02
PP-475	494.5	19.356	20.421	-2.95942	PJ-338	PJ-339	236.8	-10,268.06	4,346.91	110	0.31	1.03	2.95942	HDPE	145	0.51
PP-476	253.5	20.421	20.178	-3.05795	PJ-339	J-110	236.24	-9,795.70	4,492.20	110	0.32	1.09	3.05795	HDPE	145	0.28
PP-477	83	19.34	19.299	4.56883	J-258	J-265	236.78	-10,277.45	4,343.41	110	0.48	2.29	4.56883	HDPE	145	0.19
PP-478	82.5	19.299	18.751	2.44886	J-265	PJ-340	236.63	-10,355.90	4,315.61	110	0.26	0.72	2.44886	HDPE	145	0.06
PP-479	10.5	18.751	18.801	-0.62253	PJ-340	J-281	237.12	-10,433.86	4,289.23	110	0.07	0.06	0.62253	HDPE	145	0
PP-480	33	18.751	19.16	2.77138	PJ-340	PJ-341	237.12	-10,433.86	4,289.23	110	0.29	0.91	2.77138	HDPE	145	0.03
PP-481	13	19.16	18.535	-1.43487	PJ-341	J-282	236.68	-10,464.71	4,277.03	110	0.15	0.27	1.43487	HDPE	145	0
PP-482	42	19.16	20.353	3.99432	PJ-341	PJ-342	236.68	-10,464.71	4,277.03	110	0.42	1.79	3.99432	HDPE	145	0.08
PP-483	18	20.353	18.408	-0.85629	PJ-342	J-283	235.41	-10,503.08	4,260.54	110	0.09	0.1	0.85629	HDPE	145	0
PP-484	9	19.657	19.617	0.0288	J-301	PJ-343	235.95	-10,647.85	4,308.99	110	0	0	0.0288	HDPE	145	0
PP-485	41.5	18.873	18.442	-1.86664	J-288	J-284	236.76	-10,583.60	4,300.25	110	0.2	0.44	1.86664	HDPE	145	0.02
PP-486	49.5	20.353	20.238	4.58884	PJ-342	J-285	235.41	-10,503.08	4,260.54	110	0.48	2.31	4.58884	HDPE	145	0.11
PP-487	43	20.238	20.125	2.09831	J-285	PJ-344	235.41	-10,548.18	4,240.18	110	0.22	0.54	2.09831	HDPE	145	0.02
PP-488	10	20.125	19.696	0.51672	PJ-344	J-286	235.5	-10,590.22	4,248.34	110	0.05	0.04	0.51672	HDPE	145	0
PP-489	34.5	20.125	20.247	1.37082	PJ-344	PJ-345	235.5	-10,590.22	4,248.34	110	0.14	0.25	1.37082	HDPE	145	0.01
PP-490	16.5	20.247	20.311	1.57242	PJ-345	PJ-346	235.37	-10,623.58	4,239.02	110	0.17	0.32	1.57242	HDPE	145	0.01
PP-491	7.5	20.311	20.241	0.22749	PJ-346	J-290	235.3	-10,639.71	4,235.07	110	0.02	0.01	0.22749	HDPE	145	0
PP-492	72	20.238	20.327	1.86197	J-285	PJ-347	235.41	-10,548.18	4,240.18	110	0.2	0.43	1.86197	HDPE	145	0.03
PP-493	178.5	20.327	20.269	0.83897	PJ-347	PJ-348	235.29	-10,616.40	4,217.14	110	0.09	0.1	0.83897	HDPE	145	0.02
PP-494	36	20.269	20.267	0.69275	PJ-348	PJ-349	235.33	-10,784.96	4,158.33	110	0.07	0.07	0.69275	HDPE	145	0
PP-495	39.5	20.267	20.265	0.47739	PJ-349	PJ-350	235.33	-10,798.58	4,191.68	110	0.05	0.03	0.47739	HDPE	145	0
PP-496	39.5	20.265	20.268	-0.6158	PJ-350	PJ-351	235.33	-10,760.57	4,202.80	110	0.06	0.06	0.6158	HDPE	145	0
PP-497	85.5	20.268	20.311	-1.08316	PJ-351	PJ-346	235.33	-10,722.20	4,212.48	110	0.11	0.16	1.08316	HDPE	145	0.01
PP-498	7	20.265	20.265	-0.88591	J-306	PJ-350	235.33	-10,763.79	4,209.04	110	0.09	0.11	0.88591	HDPE	145	0

Distribution Network Design Output: Zone 4

PP-499	9.5	20.268	20.268	-0.14764	J-294	PJ-351	235.33	-10,718.98	4,221.35	110	0.02	0	0.14764	HDPE	145	0
PP-500	23	20.247	20.327	-0.38107	PJ-345	PJ-347	235.37	-10,623.58	4,239.02	110	0.04	0.02	0.38107	HDPE	145	0
PP-501	13	19.963	19.933	-0.06542	J-312	PJ-352	235.62	-10,847.89	4,354.86	110	0.01	0	0.06542	HDPE	145	0
PP-502	25	19.933	19.924	-0.33164	PJ-352	J-313	235.65	-10,847.64	4,368.01	110	0.03	0.02	0.33164	HDPE	145	0
PP-503	35	19.963	19.933	-0.08907	PJ-353	PJ-352	235.62	-10,878.39	4,384.76	110	0.01	0	0.08907	HDPE	145	0
PP-504	54	19.118	19.178	0.13311	J-166	PJ-354	236.52	-10,697.88	4,464.34	110	0.01	0	0.13311	HDPE	145	0
PP-505	29.5	19.186	19.177	-0.55618	J-164	J-161	236.46	-10,765.66	4,512.75	110	0.06	0.05	0.55618	HDPE	145	0
PP-506	26.5	19.177	19.069	-0.68422	J-161	J-162	236.47	-10,747.37	4,536.06	110	0.07	0.07	0.68422	HDPE	145	0
PP-507	32	19.069	19.022	-0.6985	J-162	J-163	236.58	-10,729.80	4,556.14	110	0.07	0.07	0.6985	HDPE	145	0
PP-508	85.5	19.929	20.336	-2.13458	J-320	PJ-355	235.72	-10,770.17	4,744.25	110	0.22	0.56	2.13458	HDPE	145	0.05
PP-509	130	20.336	20.348	0.65272	PJ-355	PJ-356	235.36	-10,728.52	4,818.81	110	0.07	0.06	0.65272	HDPE	145	0.01
PP-510	140	20.348	19.916	0.33247	PJ-356	PJ-357	235.34	-10,734.57	4,939.87	110	0.03	0.02	0.33247	HDPE	145	0
PP-511	170.5	20.336	19.471	-3.69002	PJ-355	J-149	235.36	-10,728.52	4,818.81	110	0.39	1.54	3.69002	HDPE	145	0.26
	24129															

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	17.5	110	PVC	315	HDPE	Replacement
P-10	J-9	J-10	48.5	160	PVC	160	uPVC	Retained
P-100	J-48	J-29	39	160	PVC	160	uPVC	Retained
P-101	J-11	J-61	40.5	110	PVC	110	uPVC	Retained
P-102	J-14	J-62	28	110	PVC	110	uPVC	Retained
P-103	J-62	J-63	41	110	PVC	110	uPVC	Retained
P-104	J-63	J-64	14.5	110	PVC	110	uPVC	Retained
P-105	J-63	J-65	112.5	110	PVC	110	uPVC	Retained
P-106	J-65	J-66	81.5	110	PVC	110	uPVC	Retained
P-107	J-62	J-67	33	110	PVC	110	uPVC	Retained
P-108	J-67	J-68	21.5	110	PVC	110	uPVC	Retained
P-109	J-68	J-69	39	110	PVC	110	uPVC	Retained
P-11	J-10	J-11	40.5	160	PVC	160	uPVC	Retained
P-110	J-69	J-70	21	110	PVC	110	uPVC	Retained
P-111	J-70	J-67	49	110	PVC	110	uPVC	Retained
P-112	J-67	J-71	51	110	PVC	110	uPVC	Retained
P-113	J-71	J-16	34	110	PVC	110	uPVC	Retained
P-114	J-71	J-72	27.5	110	PVC	110	uPVC	Retained
P-115	J-72	J-73	45.5	110	PVC	110	uPVC	Retained
P-116	J-73	J-70	38	110	PVC	110	uPVC	Retained
P-117	J-73	J-74	28.5	110	PVC	110	uPVC	Retained
P-118	J-74	J-75	25.5	110	PVC	110	uPVC	Retained
P-119	J-75	J-76	3.5	110	PVC	110	uPVC	Retained
P-12	J-11	J-12	36	110	PVC	110	uPVC	Retained
P-120	J-76	J-77	43.5	110	PVC	110	uPVC	Retained
P-121	J-76	J-78	107.5	110	PVC	110	uPVC	Retained
P-122	J-75	J-79	61	110	PVC	110	uPVC	Retained
P-123	J-73	J-80	24	110	PVC	110	uPVC	Retained
P-124	J-80	J-81	27	110	PVC	110	uPVC	Retained
P-125	J-81	J-82	7	110	PVC	110	uPVC	Retained
P-126	J-82	J-83	13	110	PVC	110	uPVC	Retained
P-127	J-83	J-84	8.5	110	PVC	110	uPVC	Retained
P-128	J-82	J-85	11.5	110	PVC	110	uPVC	Retained
P-129	J-83	J-86	11.5	110	PVC	110	uPVC	Retained
P-13	J-12	J-13	40	110	PVC	110	uPVC	Retained
P-130	J-80	J-87	31	110	PVC	110	uPVC	Retained
P-131	J-81	J-88	51	110	PVC	110	uPVC	Retained
P-132	J-88	J-72	44.5	110	PVC	110	uPVC	Retained
P-133	J-18	J-88	57	110	PVC	110	uPVC	Retained
P-134	J-20	J-89	42.5	110	PVC	125	HDPE	Replacement
P-135	J-89	J-90	9	110	PVC	110	uPVC	Retained
P-136	J-90	J-91	38.5	110	PVC	110	uPVC	Retained
P-137	J-91	J-92	28.5	110	PVC	110	uPVC	Retained
P-138	J-92	J-93	48	110	PVC	110	uPVC	Retained
P-139	J-93	J-90	36.5	110	PVC	110	uPVC	Retained
P-14	J-13	J-14	34.5	110	PVC	110	uPVC	Retained
P-140	J-94	J-93	15.5	110	PVC	110	uPVC	Retained
P-141	J-91	J-95	34.5	110	PVC	110	uPVC	Retained
P-142	J-95	J-96	46	110	PVC	110	uPVC	Retained
P-143	J-96	J-89	36	110	PVC	110	uPVC	Retained
P-144	J-20	J-97	45	110	PVC	125	HDPE	Replacement
P-145	J-97	J-96	39.5	110	PVC	110	uPVC	Retained
P-146	J-97	J-98	5	110	PVC	125	HDPE	Replacement
P-147	J-98	J-99	27.5	110	PVC	110	uPVC	Retained
P-148	J-99	J-100	136.5	110	PVC	110	uPVC	Retained
P-149	J-100	J-101	21.5	160	PVC	160	uPVC	Retained
P-15	J-14	J-15	13	110	PVC	110	uPVC	Retained
P-150	J-101	J-95	65	110	PVC	110	uPVC	Retained
P-151	J-99	J-102	27	110	PVC	110	uPVC	Retained

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-152	J-102	J-103	35.5	110	PVC	110	uPVC	Retained
P-153	J-103	J-104	36	110	PVC	110	uPVC	Retained
P-154	J-103	J-105	31	110	PVC	110	uPVC	Retained
P-155	J-102	J-106	40	110	PVC	110	uPVC	Retained
P-156	J-100	J-107	43.5	160	PVC	160	uPVC	Retained
P-157	J-107	J-108	53.5	160	PVC	160	uPVC	Retained
P-158	J-108	J-109	26.5	110	PVC	110	uPVC	Retained
P-159	J-109	J-110	18	110	PVC	110	uPVC	Retained
P-16	J-15	J-16	18.5	110	PVC	110	uPVC	Retained
P-160	J-111	J-112	40	160	PVC	160	uPVC	Retained
P-161	J-112	J-113	42.5	160	PVC	160	uPVC	Retained
P-162	J-113	J-107	31.5	160	PVC	160	uPVC	Retained
P-163	J-113	J-114	57	110	PVC	110	uPVC	Retained
P-164	J-115	J-116	58.5	110	PVC	110	uPVC	Retained
P-165	J-116	J-112	47	160	PVC	160	uPVC	Retained
P-166	J-116	J-117	23.5	110	PVC	110	uPVC	Retained
P-167	J-118	J-119	63.5	110	PVC	110	uPVC	Retained
P-168	J-119	J-120	59	110	PVC	110	uPVC	Retained
P-169	J-120	J-121	29.5	110	PVC	110	uPVC	Retained
P-17	J-16	J-17	26	110	PVC	110	uPVC	Retained
P-170	J-121	J-122	13.5	110	PVC	110	uPVC	Retained
P-171	J-122	J-123	48	110	PVC	110	uPVC	Retained
P-172	J-124	J-125	40.5	110	PVC	110	uPVC	Retained
P-173	J-125	J-122	25.5	110	PVC	110	uPVC	Retained
P-174	J-126	J-125	16	110	PVC	110	uPVC	Retained
P-175	J-120	J-127	47.5	110	PVC	110	uPVC	Retained
P-176	J-127	J-128	28.5	110	PVC	110	uPVC	Retained
P-177	J-128	J-129	37.5	160	PVC	160	uPVC	Retained
P-178	J-129	J-130	44	110	PVC	110	uPVC	Retained
P-179	J-130	J-54	30	110	PVC	125	HDPE	Replacement
P-18	J-17	J-18	11	110	PVC	125	HDPE	Replacement
P-180	J-130	J-131	98	110	PVC	110	uPVC	Retained
P-181	J-131	J-132	82.5	110	PVC	110	uPVC	Retained
P-182	J-132	J-59	31	160	PVC	160	uPVC	Retained
P-183	J-57	J-131	30	110	PVC	125	HDPE	Replacement
P-184	J-131	J-133	43.5	110	PVC	110	uPVC	Retained
P-185	J-133	J-134	48.5	110	PVC	110	uPVC	Retained
P-186	J-133	J-129	91.5	110	PVC	110	uPVC	Retained
P-187	J-129	J-135	102	160	PVC	160	uPVC	Retained
P-188	J-135	J-133	45	110	PVC	110	uPVC	Retained
P-189	J-135	J-136	52	110	PVC	110	uPVC	Retained
P-19	J-18	J-19	43	110	PVC	110	uPVC	Retained
P-190	J-136	J-127	123	110	PVC	110	uPVC	Retained
P-191	J-121	J-137	105	110	PVC	110	uPVC	Retained
P-192	J-137	J-138	49	110	PVC	110	uPVC	Retained
P-193	J-138	J-139	70.5	110	PVC	110	uPVC	Retained
P-194	J-139	J-136	14.5	110	PVC	110	uPVC	Retained
P-195	J-138	J-120	116.5	110	PVC	110	uPVC	Retained
P-196	J-137	J-140	34.5	110	PVC	110	uPVC	Retained
P-197	J-140	J-141	120.5	110	PVC	110	uPVC	Retained
P-198	J-141	J-142	14.5	110	PVC	110	uPVC	Retained
P-199	J-142	J-139	16	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	45	110	PVC	250	HDPE	Replacement
P-20	J-19	J-20	44	110	PVC	125	HDPE	Replacement
P-200	J-142	J-143	23.5	110	PVC	110	uPVC	Retained
P-201	J-140	J-144	56	110	PVC	125	HDPE	Replacement
P-202	J-144	J-145	191.5	110	PVC	110	uPVC	Retained
P-203	J-145	J-146	28.5	110	PVC	125	HDPE	Replacement
P-204	J-146	J-141	68.5	110	PVC	110	uPVC	Retained
P-205	J-135	J-146	67	110	PVC	110	uPVC	Retained

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-206	J-144	J-147	61.5	110	PVC	125	HDPE	Replacement
P-207	J-147	J-148	60.5	110	PVC	110	uPVC	Retained
P-208	J-148	J-149	12	110	PVC	125	HDPE	Replacement
P-209	J-149	J-150	59	110	PVC	110	uPVC	Retained
P-21	J-20	J-21	35.5	160	PVC	160	uPVC	Retained
P-210	J-150	J-151	56.5	110	PVC	110	uPVC	Retained
P-211	J-151	J-152	54	110	PVC	110	uPVC	Retained
P-212	J-152	J-153	11.5	110	PVC	110	uPVC	Retained
P-213	J-153	J-154	39	110	PVC	110	uPVC	Retained
P-214	J-154	J-155	29	110	PVC	110	uPVC	Retained
P-215	J-155	J-156	25.5	110	PVC	110	uPVC	Retained
P-216	J-156	J-157	30.5	110	PVC	110	uPVC	Retained
P-217	J-157	J-158	98.5	110	PVC	110	uPVC	Retained
P-218	J-158	J-159	61	110	PVC	110	uPVC	Retained
P-219	J-159	J-160	50.5	110	PVC	110	uPVC	Retained
P-22	J-21	J-22	43	110	PVC	125	HDPE	Replacement
P-220	J-160	J-150	23	110	PVC	110	uPVC	Retained
P-221	J-151	J-159	26	110	PVC	110	uPVC	Retained
P-222	J-152	J-158	32.5	110	PVC	110	uPVC	Retained
P-223	J-161	J-155	96	110	PVC	110	uPVC	Retained
P-224	J-162	J-154	88	110	PVC	110	uPVC	Retained
P-225	J-163	J-153	80.5	110	PVC	110	uPVC	Retained
P-226	J-164	J-165	113.5	110	PVC	110	uPVC	Retained
P-227	J-165	J-156	8	110	PVC	110	uPVC	Retained
P-228	J-166	J-167	31	110	PVC	110	uPVC	Retained
P-229	J-167	J-165	19	110	PVC	110	uPVC	Retained
P-23	J-22	J-23	53	110	PVC	125	HDPE	Replacement
P-230	J-157	J-168	41	110	PVC	110	uPVC	Retained
P-231	J-168	J-169	28	110	PVC	110	uPVC	Retained
P-232	J-169	J-167	13	110	PVC	110	uPVC	Retained
P-233	J-168	J-170	38.5	110	PVC	110	uPVC	Retained
P-234	J-170	J-171	42.5	110	PVC	110	uPVC	Retained
P-235	J-171	J-157	27	110	PVC	110	uPVC	Retained
P-236	J-171	J-172	11.5	110	PVC	110	uPVC	Retained
P-237	J-172	J-173	47.5	110	PVC	110	uPVC	Retained
P-238	J-173	J-174	37	110	PVC	110	uPVC	Retained
P-239	J-174	J-175	41	110	PVC	110	uPVC	Retained
P-24	J-23	J-24	44.5	110	PVC	110	uPVC	Retained
P-240	J-175	J-176	28	110	PVC	110	uPVC	Retained
P-241	J-176	J-177	53	110	PVC	110	uPVC	Retained
P-242	J-177	J-178	47.5	110	PVC	110	uPVC	Retained
P-243	J-178	J-148	74.5	110	PVC	110	uPVC	Retained
P-244	J-147	J-179	74	110	PVC	110	uPVC	Retained
P-245	J-179	J-180	58.5	110	PVC	110	uPVC	Retained
P-246	J-179	J-181	25	110	PVC	110	uPVC	Retained
P-247	J-181	J-182	53.5	110	PVC	110	uPVC	Retained
P-248	J-182	J-178	24.5	110	PVC	110	uPVC	Retained
P-249	J-181	J-183	121	110	PVC	110	uPVC	Retained
P-25	J-24	J-25	47	110	PVC	110	uPVC	Retained
P-250	J-183	J-184	24.5	110	PVC	125	HDPE	Replacement
P-251	J-184	J-182	125.5	110	PVC	110	uPVC	Retained
P-252	J-177	J-185	145.5	110	PVC	110	uPVC	Retained
P-253	J-185	J-186	18.5	110	PVC	110	uPVC	Retained
P-254	J-186	J-184	21.5	110	PVC	110	uPVC	Retained
P-255	J-176	J-187	142.5	110	PVC	110	uPVC	Retained
P-256	J-187	J-185	52.5	110	PVC	110	uPVC	Retained
P-257	J-175	J-188	141.5	110	PVC	110	uPVC	Retained
P-258	J-188	J-187	40	110	PVC	110	uPVC	Retained
P-259	J-174	J-189	54.5	110	PVC	110	uPVC	Retained
P-26	J-25	J-26	41.5	110	PVC	125	HDPE	Replacement

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-260	J-189	J-190	92	110	PVC	110	uPVC	Retained
P-261	J-190	J-191	30.5	110	PVC	110	uPVC	Retained
P-262	J-191	J-192	32	110	PVC	110	uPVC	Retained
P-263	J-192	J-188	36	110	PVC	110	uPVC	Retained
P-264	J-192	J-193	47	110	PVC	110	uPVC	Retained
P-265	J-193	J-194	141	110	PVC	110	uPVC	Retained
P-266	J-194	J-186	44.5	110	PVC	110	uPVC	Retained
P-267	J-194	J-195	42.5	110	PVC	110	uPVC	Retained
P-268	J-195	J-196	44	110	PVC	110	uPVC	Retained
P-269	J-196	J-197	36	110	PVC	110	uPVC	Retained
P-27	J-26	J-27	37	110	PVC	110	uPVC	Retained
P-270	J-197	J-198	10.5	110	PVC	110	uPVC	Retained
P-271	J-198	J-183	51	110	PVC	110	uPVC	Retained
P-272	J-199	J-198	12.5	110	PVC	110	uPVC	Retained
P-273	J-183	J-200	39	110	PVC	125	HDPE	Replacement
P-274	J-200	J-201	39.5	110	PVC	110	uPVC	Retained
P-275	J-201	J-145	10	110	PVC	110	uPVC	Retained
P-276	J-200	J-202	49.5	110	PVC	110	uPVC	Retained
P-277	J-202	J-203	35.5	110	PVC	110	uPVC	Retained
P-278	J-203	J-201	45	110	PVC	110	uPVC	Retained
P-279	J-197	J-202	27.5	110	PVC	125	HDPE	Replacement
P-28	J-27	J-28	39	110	PVC	110	uPVC	Retained
P-280	J-202	J-204	64.5	110	PVC	110	uPVC	Retained
P-281	J-204	J-205	35	110	PVC	110	uPVC	Retained
P-282	J-205	J-203	62	110	PVC	110	uPVC	Retained
P-283	J-203	J-133	132	110	PVC	110	uPVC	Retained
P-284	J-205	J-206	36	110	PVC	125	HDPE	Replacement
P-285	J-206	J-207	29.5	110	PVC	110	uPVC	Retained
P-286	J-206	J-208	22.5	110	PVC	125	HDPE	Replacement
P-287	J-208	J-209	13	110	PVC	110	uPVC	Retained
P-288	J-209	J-210	31	110	PVC	110	uPVC	Retained
P-289	J-211	J-209	19.5	110	PVC	110	uPVC	Retained
P-29	J-28	J-8	48	110	PVC	110	uPVC	Retained
P-290	J-208	J-212	34	110	PVC	125	HDPE	Replacement
P-291	J-212	J-132	23	160	PVC	160	uPVC	Retained
P-292	J-212	J-213	6.5	110	PVC	125	HDPE	Replacement
P-293	J-213	J-214	42	110	PVC	110	uPVC	Retained
P-294	J-214	J-215	43	110	PVC	110	uPVC	Retained
P-295	J-215	J-98	151.5	110	PVC	110	uPVC	Retained
P-296	J-215	J-216	36	110	PVC	125	HDPE	Replacement
P-297	J-216	J-217	42.5	110	PVC	110	uPVC	Retained
P-298	J-217	J-218	39	110	PVC	110	uPVC	Retained
P-299	J-218	J-213	34.5	110	PVC	125	HDPE	Replacement
P-3	J-2	J-3	47.5	110	PVC	200	HDPE	Replacement
P-30	J-7	J-29	33.5	160	PVC	160	uPVC	Retained
P-300	J-214	J-217	33	110	PVC	125	HDPE	Replacement
P-301	J-218	J-219	41.5	110	PVC	110	uPVC	Retained
P-302	J-219	J-220	16.5	110	PVC	110	uPVC	Retained
P-303	J-220	J-221	22.5	110	PVC	110	uPVC	Retained
P-304	J-221	J-222	7	110	PVC	110	uPVC	Retained
P-305	J-222	J-223	34	110	PVC	110	uPVC	Retained
P-306	J-223	J-216	32	110	PVC	110	uPVC	Retained
P-307	J-216	J-224	17.5	110	PVC	110	uPVC	Retained
P-308	J-224	J-225	24.5	110	PVC	110	uPVC	Retained
P-309	J-225	J-226	10	110	PVC	110	uPVC	Retained
P-31	J-29	J-30	47.5	110	PVC	110	uPVC	Retained
P-310	J-226	J-223	21.5	110	PVC	110	uPVC	Retained
P-311	J-223	J-227	87.5	110	PVC	110	uPVC	Retained
P-312	J-227	J-228	100.5	110	PVC	110	uPVC	Retained
P-313	J-228	J-229	27	110	PVC	110	uPVC	Retained

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-314	J-230	J-231	47.5	110	PVC	110	uPVC	Retained
P-315	J-231	J-232	53.5	110	PVC	110	uPVC	Retained
P-316	J-232	J-233	35.5	110	PVC	110	uPVC	Retained
P-317	J-233	J-226	66	110	PVC	110	uPVC	Retained
P-318	J-221	J-217	33.5	110	PVC	110	uPVC	Retained
P-319	J-234	J-235	7	110	PVC	110	uPVC	Retained
P-32	J-30	J-31	39	110	PVC	110	uPVC	Retained
P-320	J-235	J-236	16	110	PVC	110	uPVC	Retained
P-321	J-236	J-237	98.5	110	PVC	110	uPVC	Retained
P-322	J-237	J-222	87	110	PVC	110	uPVC	Retained
P-323	J-220	J-238	202.5	110	PVC	110	uPVC	Retained
P-324	J-238	J-239	6	110	PVC	110	uPVC	Retained
P-325	J-225	J-240	26.5	110	PVC	110	uPVC	Retained
P-326	J-240	J-241	79.5	110	PVC	110	uPVC	Retained
P-327	J-241	J-233	20	110	PVC	110	uPVC	Retained
P-328	J-241	J-242	52.5	110	PVC	110	uPVC	Retained
P-329	J-242	J-243	9.5	110	PVC	110	uPVC	Retained
P-33	J-31	J-32	38	110	PVC	110	uPVC	Retained
P-330	J-243	J-244	23.5	110	PVC	110	uPVC	Retained
P-331	J-232	J-245	48.5	110	PVC	110	uPVC	Retained
P-332	J-245	J-242	36	110	PVC	110	uPVC	Retained
P-333	J-246	J-245	31	110	PVC	110	uPVC	Retained
P-334	J-245	J-231	71.5	110	PVC	110	uPVC	Retained
P-335	J-204	J-247	8	110	PVC	110	uPVC	Retained
P-336	J-247	J-248	16	110	PVC	110	uPVC	Retained
P-337	J-247	J-249	16.5	110	PVC	110	uPVC	Retained
P-338	J-249	J-250	27.5	110	PVC	110	uPVC	Retained
P-339	J-250	J-219	40	110	PVC	125	HDPE	Replacement
P-34	J-32	J-33	41	110	PVC	110	uPVC	Retained
P-340	J-250	J-251	49.5	110	PVC	110	uPVC	Retained
P-341	J-251	J-252	52	110	PVC	110	uPVC	Retained
P-342	J-252	J-253	48	110	PVC	110	uPVC	Retained
P-343	J-253	J-254	54.5	110	PVC	110	uPVC	Retained
P-344	J-254	J-255	42	110	PVC	110	uPVC	Retained
P-345	J-255	J-256	51	110	PVC	110	uPVC	Retained
P-346	J-255	J-257	86	110	PVC	110	uPVC	Retained
P-347	J-257	J-258	32	110	PVC	110	uPVC	Retained
P-348	J-193	J-259	36.5	110	PVC	110	uPVC	Retained
P-349	J-259	J-254	62.5	110	PVC	110	uPVC	Retained
P-35	J-33	J-34	47.5	110	PVC	110	uPVC	Retained
P-350	J-259	J-260	43	110	PVC	110	uPVC	Retained
P-351	J-260	J-261	34.5	110	PVC	110	uPVC	Retained
P-352	J-261	J-262	10	110	PVC	110	uPVC	Retained
P-353	J-262	J-263	28	110	PVC	110	uPVC	Retained
P-354	J-263	J-264	28	110	PVC	110	uPVC	Retained
P-355	J-264	J-265	33	110	PVC	110	uPVC	Retained
P-356	J-262	J-257	84	110	PVC	110	uPVC	Retained
P-357	J-195	J-266	34	110	PVC	110	uPVC	Retained
P-358	J-266	J-249	52.5	110	PVC	110	uPVC	Retained
P-359	J-266	J-251	29.5	110	PVC	110	uPVC	Retained
P-36	J-34	J-35	45.5	110	PVC	110	uPVC	Retained
P-360	J-195	J-267	44.5	110	PVC	110	uPVC	Retained
P-361	J-267	J-268	50	110	PVC	110	uPVC	Retained
P-362	J-268	J-269	32.5	110	PVC	110	uPVC	Retained
P-363	J-269	J-253	30.5	110	PVC	110	uPVC	Retained
P-364	J-267	J-270	36	110	PVC	110	uPVC	Retained
P-365	J-270	J-252	28	110	PVC	110	uPVC	Retained
P-366	J-266	J-270	50	110	PVC	110	uPVC	Retained
P-367	J-270	J-269	46.5	110	PVC	110	uPVC	Retained
P-368	J-271	J-268	19.5	110	PVC	110	uPVC	Retained

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-369	J-191	J-260	90.5	110	PVC	110	uPVC	Retained
P-37	J-35	J-36	49.5	110	PVC	125	HDPE	Replacement
P-370	J-173	J-272	61	110	PVC	110	uPVC	Retained
P-371	J-272	J-189	28	110	PVC	110	uPVC	Retained
P-372	J-172	J-273	26	110	PVC	110	uPVC	Retained
P-373	J-273	J-274	45	110	PVC	110	uPVC	Retained
P-374	J-274	J-272	56.5	110	PVC	110	uPVC	Retained
P-375	J-274	J-275	46.5	110	PVC	110	uPVC	Retained
P-376	J-275	J-276	15.5	110	PVC	110	uPVC	Retained
P-377	J-276	J-190	46	110	PVC	110	uPVC	Retained
P-378	J-276	J-277	31.5	110	PVC	110	uPVC	Retained
P-379	J-277	J-261	96.5	110	PVC	110	uPVC	Retained
P-38	J-36	J-37	43.5	110	PVC	110	uPVC	Retained
P-380	J-277	J-278	27.5	110	PVC	110	uPVC	Retained
P-381	J-278	J-263	88	110	PVC	110	uPVC	Retained
P-382	J-278	J-279	30.5	110	PVC	110	uPVC	Retained
P-383	J-279	J-280	17	110	PVC	110	uPVC	Retained
P-384	J-280	J-264	71	110	PVC	110	uPVC	Retained
P-385	J-280	J-281	58	110	PVC	110	uPVC	Retained
P-386	J-282	J-279	83.5	110	PVC	110	uPVC	Retained
P-387	J-283	J-275	146.5	110	PVC	110	uPVC	Retained
P-388	J-274	J-284	135.5	110	PVC	110	uPVC	Retained
P-389	J-284	J-285	54	110	PVC	110	uPVC	Retained
P-39	J-37	J-38	36.5	160	PVC	160	uPVC	Retained
P-390	J-286	J-287	14.5	110	PVC	110	uPVC	Retained
P-391	J-287	J-288	28	110	PVC	110	uPVC	Retained
P-392	J-288	J-273	148	110	PVC	110	uPVC	Retained
P-393	J-170	J-289	23	110	PVC	110	uPVC	Retained
P-394	J-290	J-291	42.5	110	PVC	110	uPVC	Retained
P-395	J-291	J-292	21.5	110	PVC	110	uPVC	Retained
P-396	J-292	J-288	44	110	PVC	110	uPVC	Retained
P-397	J-287	J-291	44.5	110	PVC	110	uPVC	Retained
P-398	J-291	J-293	50.5	110	PVC	110	uPVC	Retained
P-399	J-293	J-294	84	110	PVC	110	uPVC	Retained
P-4	J-3	J-4	41	110	PVC	140	HDPE	Replacement
P-40	J-38	J-21	36	160	PVC	160	uPVC	Retained
P-400	J-293	J-295	59	110	PVC	110	uPVC	Retained
P-401	J-295	J-296	49.5	110	PVC	110	uPVC	Retained
P-402	J-296	J-297	42	110	PVC	110	uPVC	Retained
P-403	J-297	J-298	11.5	110	PVC	110	uPVC	Retained
P-404	J-298	J-169	26.5	110	PVC	110	uPVC	Retained
P-405	J-297	J-299	80.5	110	PVC	110	uPVC	Retained
P-406	J-299	J-300	57	110	PVC	110	uPVC	Retained
P-407	J-300	J-301	25	110	PVC	110	uPVC	Retained
P-408	J-301	J-292	21	110	PVC	110	uPVC	Retained
P-409	J-300	J-296	79.5	110	PVC	110	uPVC	Retained
P-41	J-38	J-39	43	110	PVC	125	HDPE	Replacement
P-410	J-296	J-302	84	110	PVC	110	uPVC	Retained
P-411	J-302	J-303	42.5	110	PVC	110	uPVC	Retained
P-412	J-303	J-304	38.5	110	PVC	110	uPVC	Retained
P-413	J-304	J-295	50.5	110	PVC	110	uPVC	Retained
P-414	J-295	J-305	86.5	110	PVC	110	uPVC	Retained
P-415	J-305	J-306	38.5	110	PVC	110	uPVC	Retained
P-416	J-305	J-307	32	110	PVC	110	uPVC	Retained
P-417	J-307	J-308	27	110	PVC	110	uPVC	Retained
P-418	J-309	J-307	11	110	PVC	110	uPVC	Retained
P-419	J-310	J-311	22.5	110	PVC	110	uPVC	Retained
P-42	J-39	J-1	51	110	PVC	160	HDPE	Replacement
P-420	J-311	J-304	47.5	110	PVC	110	uPVC	Retained
P-421	J-312	J-311	57.5	110	PVC	110	uPVC	Retained

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-422	J-303	J-313	37.5	110	PVC	110	uPVC	Retained
P-423	J-313	J-314	6	110	PVC	110	uPVC	Retained
P-424	J-314	J-315	39.5	110	PVC	110	uPVC	Retained
P-425	J-315	J-302	42.5	110	PVC	110	uPVC	Retained
P-426	J-302	J-316	46.5	110	PVC	110	uPVC	Retained
P-427	J-316	J-298	79	110	PVC	110	uPVC	Retained
P-428	J-315	J-317	28	110	PVC	110	uPVC	Retained
P-429	J-314	J-318	111.5	75	PVC	110	HDPE	Replacement
P-43	J-37	J-40	35	160	PVC	160	uPVC	Retained
P-430	J-318	J-319	197	75	PVC	110	HDPE	Replacement
P-431	J-319	J-320	121	75	PVC	110	HDPE	Replacement
P-44	J-40	J-41	42.5	110	PVC	110	uPVC	Retained
P-45	J-41	J-42	48.5	110	PVC	110	uPVC	Retained
P-46	J-42	J-43	45.5	110	PVC	110	uPVC	Retained
P-47	J-43	J-44	47	110	PVC	110	uPVC	Retained
P-48	J-44	J-45	42	110	PVC	110	uPVC	Retained
P-49	J-45	J-46	37.5	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	38	110	PVC	110	uPVC	Retained
P-50	J-46	J-47	39	110	PVC	110	uPVC	Retained
P-51	J-47	J-48	47	110	PVC	110	uPVC	Retained
P-52	J-48	J-49	35	160	PVC	160	uPVC	Retained
P-53	J-49	J-50	47	160	PVC	160	uPVC	Retained
P-54	J-50	J-51	23.5	160	PVC	160	uPVC	Retained
P-55	J-51	J-52	15.5	110	PVC	110	uPVC	Retained
P-56	J-52	J-53	40	110	PVC	110	uPVC	Retained
P-57	J-53	J-54	28	110	PVC	110	uPVC	Retained
P-58	J-54	J-55	11.5	110	PVC	125	HDPE	Replacement
P-59	J-55	J-56	47	110	PVC	110	uPVC	Retained
P-6	J-5	J-6	38.5	110	PVC	110	uPVC	Retained
P-60	J-56	J-57	44	110	PVC	110	uPVC	Retained
P-61	J-57	J-58	48	110	PVC	110	uPVC	Retained
P-62	J-58	J-59	28	110	PVC	125	HDPE	Replacement
P-63	J-59	J-60	18	110	PVC	110	uPVC	Retained
P-64	J-60	J-40	32.5	160	PVC	160	uPVC	Retained
P-65	J-58	J-41	36.5	110	PVC	110	uPVC	Retained
P-66	J-41	J-36	34.5	110	PVC	110	uPVC	Retained
P-67	J-36	J-39	40	110	PVC	110	uPVC	Retained
P-68	J-39	J-22	32	110	PVC	110	uPVC	Retained
P-69	J-22	J-19	34.5	110	PVC	110	uPVC	Retained
P-7	J-6	J-7	48	110	PVC	110	uPVC	Retained
P-70	J-17	J-23	33.5	110	PVC	125	HDPE	Replacement
P-71	J-23	J-1	33	110	PVC	160	HDPE	Replacement
P-72	J-1	J-35	37	110	PVC	180	HDPE	Replacement
P-73	J-35	J-42	37	110	PVC	140	HDPE	Replacement
P-74	J-42	J-57	37	110	PVC	140	HDPE	Replacement
P-75	J-56	J-43	38	110	PVC	110	uPVC	Retained
P-76	J-43	J-34	35.5	110	PVC	140	HDPE	Replacement
P-77	J-34	J-2	37	110	PVC	160	HDPE	Replacement
P-78	J-2	J-24	34.5	110	PVC	140	HDPE	Replacement
P-79	J-24	J-15	32	110	PVC	125	HDPE	Replacement
P-8	J-7	J-8	35	160	PVC	160	uPVC	Retained
P-80	J-55	J-44	38	110	PVC	110	uPVC	Retained
P-81	J-44	J-33	37.5	110	PVC	125	HDPE	Replacement
P-82	J-33	J-3	36	110	PVC	125	HDPE	Replacement
P-83	J-3	J-25	32.5	110	PVC	125	HDPE	Replacement
P-84	J-25	J-13	32.5	110	PVC	110	uPVC	Retained
P-85	J-12	J-26	31	110	PVC	110	uPVC	Retained
P-86	J-26	J-4	32.5	110	PVC	110	uPVC	Retained
P-87	J-4	J-32	37	110	PVC	110	uPVC	Retained
P-88	J-32	J-45	37	110	PVC	110	uPVC	Retained

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-89	J-45	J-53	38.5	110	PVC	110	uPVC	Retained
P-9	J-8	J-9	33	160	PVC	160	uPVC	Retained
P-90	J-52	J-46	37.5	110	PVC	110	uPVC	Retained
P-91	J-46	J-31	37	110	PVC	110	uPVC	Retained
P-92	J-31	J-5	37.5	110	PVC	110	uPVC	Retained
P-93	J-5	J-27	34	110	PVC	110	uPVC	Retained
P-94	J-27	J-11	31.5	110	PVC	110	uPVC	Retained
P-95	J-50	J-47	37	110	PVC	110	uPVC	Retained
P-96	J-47	J-30	38.5	110	PVC	110	uPVC	Retained
P-97	J-30	J-6	35	110	PVC	110	uPVC	Retained
P-98	J-6	J-28	34.5	110	PVC	110	uPVC	Retained
P-99	J-28	J-10	32	110	PVC	110	uPVC	Retained
PP-432	J-123	J-119	29	#N/A	#N/A	110	HDPE	New
PP-433	J-118	PJ-321	50	#N/A	#N/A	110	HDPE	New
PP-434	PJ-321	J-49	20	#N/A	#N/A	125	HDPE	New
PP-435	PJ-321	PJ-322	20	#N/A	#N/A	110	HDPE	New
PP-436	PJ-322	PJ-323	73.5	#N/A	#N/A	110	HDPE	New
PP-437	PJ-323	J-127	47	#N/A	#N/A	110	HDPE	New
PP-438	J-128	PJ-324	8	#N/A	#N/A	125	HDPE	New
PP-439	PJ-324	J-53	66.5	#N/A	#N/A	110	HDPE	New
PP-440	PJ-324	PJ-323	55.5	#N/A	#N/A	110	HDPE	New
PP-441	PJ-323	PJ-325	40.5	#N/A	#N/A	110	HDPE	New
PP-442	PJ-325	PJ-322	60	#N/A	#N/A	110	HDPE	New
PP-443	PJ-325	J-51	28	#N/A	#N/A	110	HDPE	New
PP-444	J-214	J-60	39	#N/A	#N/A	140	HDPE	New
PP-445	J-237	J-227	32.5	#N/A	#N/A	110	HDPE	New
PP-446	J-115	PJ-326	27	#N/A	#N/A	110	HDPE	New
PP-447	J-101	PJ-327	16	#N/A	#N/A	110	HDPE	New
PP-448	J-74	J-65	86.5	#N/A	#N/A	110	HDPE	New
PP-449	J-61	PJ-328	183	#N/A	#N/A	110	HDPE	New
PP-450	PJ-328	J-66	67	#N/A	#N/A	110	HDPE	New
PP-451	J-66	J-77	92.5	#N/A	#N/A	110	HDPE	New
PP-452	J-77	J-108	231.5	#N/A	#N/A	110	HDPE	New
PP-453	J-109	PJ-329	26	#N/A	#N/A	110	HDPE	New
PP-454	J-110	PJ-330	87.5	#N/A	#N/A	110	HDPE	New
PP-455	PJ-330	J-114	6	#N/A	#N/A	110	HDPE	New
PP-456	PJ-330	J-117	43.5	#N/A	#N/A	110	HDPE	New
PP-457	J-117	PJ-331	6	#N/A	#N/A	110	HDPE	New
PP-458	PJ-331	PJ-332	31.5	#N/A	#N/A	110	HDPE	New
PP-459	PJ-332	J-115	39.5	#N/A	#N/A	110	HDPE	New
PP-460	PJ-331	PJ-333	174.5	#N/A	#N/A	110	HDPE	New
PP-461	PJ-333	J-244	7.5	#N/A	#N/A	110	HDPE	New
PP-462	J-243	PJ-332	166.5	#N/A	#N/A	110	HDPE	New
PP-463	J-246	PJ-334	9	#N/A	#N/A	110	HDPE	New
PP-464	PJ-334	PJ-333	37	#N/A	#N/A	110	HDPE	New
PP-465	J-230	PJ-335	10	#N/A	#N/A	110	HDPE	New
PP-466	PJ-335	PJ-334	110.5	#N/A	#N/A	110	HDPE	New
PP-467	J-229	PJ-336	30	#N/A	#N/A	110	HDPE	New
PP-468	PJ-336	PJ-335	26	#N/A	#N/A	110	HDPE	New
PP-469	J-256	PJ-337	9	#N/A	#N/A	110	HDPE	New
PP-470	PJ-337	PJ-336	33.5	#N/A	#N/A	125	HDPE	New
PP-471	J-258	PJ-338	10	#N/A	#N/A	110	HDPE	New
PP-472	PJ-338	PJ-337	122.5	#N/A	#N/A	110	HDPE	New
PP-473	J-238	J-235	25.5	#N/A	#N/A	110	HDPE	New
PP-474	J-236	J-228	30.5	#N/A	#N/A	110	HDPE	New
PP-475	PJ-338	PJ-339	494.5	#N/A	#N/A	110	HDPE	New
PP-476	PJ-339	J-110	253.5	#N/A	#N/A	110	HDPE	New
PP-477	J-258	J-265	83	#N/A	#N/A	110	HDPE	New
PP-478	J-265	PJ-340	82.5	#N/A	#N/A	110	HDPE	New
PP-479	PJ-340	J-281	10.5	#N/A	#N/A	110	HDPE	New

BOQ for Z4								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-480	PJ-340	PJ-341	33	#N/A	#N/A	110	HDPE	New
PP-481	PJ-341	J-282	13	#N/A	#N/A	110	HDPE	New
PP-482	PJ-341	PJ-342	42	#N/A	#N/A	110	HDPE	New
PP-483	PJ-342	J-283	18	#N/A	#N/A	110	HDPE	New
PP-484	J-301	PJ-343	9	#N/A	#N/A	110	HDPE	New
PP-485	J-288	J-284	41.5	#N/A	#N/A	110	HDPE	New
PP-486	PJ-342	J-285	49.5	#N/A	#N/A	110	HDPE	New
PP-487	J-285	PJ-344	43	#N/A	#N/A	110	HDPE	New
PP-488	PJ-344	J-286	10	#N/A	#N/A	110	HDPE	New
PP-489	PJ-344	PJ-345	34.5	#N/A	#N/A	110	HDPE	New
PP-490	PJ-345	PJ-346	16.5	#N/A	#N/A	110	HDPE	New
PP-491	PJ-346	J-290	7.5	#N/A	#N/A	110	HDPE	New
PP-492	J-285	PJ-347	72	#N/A	#N/A	110	HDPE	New
PP-493	PJ-347	PJ-348	178.5	#N/A	#N/A	110	HDPE	New
PP-494	PJ-348	PJ-349	36	#N/A	#N/A	110	HDPE	New
PP-495	PJ-349	PJ-350	39.5	#N/A	#N/A	110	HDPE	New
PP-496	PJ-350	PJ-351	39.5	#N/A	#N/A	110	HDPE	New
PP-497	PJ-351	PJ-346	85.5	#N/A	#N/A	110	HDPE	New
PP-498	J-306	PJ-350	7	#N/A	#N/A	110	HDPE	New
PP-499	J-294	PJ-351	9.5	#N/A	#N/A	110	HDPE	New
PP-500	PJ-345	PJ-347	23	#N/A	#N/A	110	HDPE	New
PP-501	J-312	PJ-352	13	#N/A	#N/A	110	HDPE	New
PP-502	PJ-352	J-313	25	#N/A	#N/A	110	HDPE	New
PP-503	PJ-353	PJ-352	35	#N/A	#N/A	110	HDPE	New
PP-504	J-166	PJ-354	54	#N/A	#N/A	110	HDPE	New
PP-505	J-164	J-161	29.5	#N/A	#N/A	110	HDPE	New
PP-506	J-161	J-162	26.5	#N/A	#N/A	110	HDPE	New
PP-507	J-162	J-163	32	#N/A	#N/A	110	HDPE	New
PP-508	J-320	PJ-355	85.5	#N/A	#N/A	110	HDPE	New
PP-509	PJ-355	PJ-356	130	#N/A	#N/A	110	HDPE	New
PP-510	PJ-356	PJ-357	140	#N/A	#N/A	110	HDPE	New
PP-511	PJ-355	J-149	170.5	#N/A	#N/A	110	HDPE	New
			24129.00					

Zone -5

Distribution Network Design Output: Zone 5

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	27.5	1.796	21.632	143.79999	T-1	J-1	236.14	-8,050.27	5,938.80	355	1.45	4.53	143.79999	HDPE	145	0.12
P-10	76.5	19.027	19.049	1.34778	J-9	J-10	236.43	-7,787.48	6,299.19	110	0.14	0.24	1.34778	uPVC	145	0.02
P-100	40	19.232	19.375	-10.11368	J-80	J-68	236.15	-8,042.91	5,638.76	140	0.66	3.09	10.11368	HDPE	145	0.12
P-101	102.5	19.232	19.448	4.33634	J-80	J-72	236.15	-8,042.91	5,638.76	110	0.46	2.08	4.33634	uPVC	145	0.21
P-102	103	19.552	19.135	-2.2221	J-73	J-79	235.66	-7,944.92	5,586.65	110	0.23	0.6	2.2221	uPVC	145	0.06
P-103	57	19.135	19.245	0.0871	J-79	J-81	236.14	-8,017.35	5,659.73	110	0.01	0	0.0871	uPVC	145	0
P-104	52	19.314	19.214	-0.07947	J-82	J-78	235.93	-8,030.13	5,716.75	110	0.01	0	0.07947	uPVC	145	0
P-105	104.5	19.214	19.564	1.18263	J-78	J-74	236.03	-7,992.77	5,680.71	110	0.12	0.19	1.18263	uPVC	145	0.02
P-106	55	19.377	19.377	0.08405	J-77	J-83	235.86	-7,966.88	5,702.01	110	0.01	0	0.08405	uPVC	145	0
P-107	26.5	19.313	19.351	10.1805	J-71	J-84	235.78	-8,000.63	5,541.43	140	0.66	3.12	10.1805	HDPE	145	0.08
P-108	35.5	19.351	19.174	9.71925	J-84	J-85	235.66	-7,981.00	5,523.58	125	0.79	4.98	9.71925	HDPE	145	0.18
P-109	32	19.174	19.028	9.28014	J-85	J-86	235.66	-7,955.77	5,498.35	125	0.76	4.57	9.28014	HDPE	145	0.15
P-11	40.5	19.049	18.954	4.87483	J-10	J-11	236.39	-7,853.44	6,337.70	110	0.51	2.59	4.87483	uPVC	145	0.1
P-110	34	19.028	18.885	8.88149	J-86	J-87	235.66	-7,932.83	5,475.73	125	0.72	4.21	8.88149	HDPE	145	0.14
P-111	20	18.885	18.816	8.58972	J-87	J-88	235.66	-7,908.58	5,452.14	125	0.7	3.96	8.58972	HDPE	145	0.08
P-112	35.5	18.816	18.787	7.49132	J-88	J-89	235.65	-7,894.82	5,437.72	125	0.61	3.07	7.49132	HDPE	145	0.11
P-113	27.5	18.787	18.726	6.50605	J-89	J-90	235.57	-7,876.47	5,407.57	110	0.68	4.41	6.50605	uPVC	145	0.12
P-114	22	18.726	18.67	6.44641	J-90	J-91	235.51	-7,862.37	5,383.98	110	0.68	4.34	6.44641	uPVC	145	0.1
P-115	67	18.67	18.406	6.12716	J-91	J-92	235.47	-7,849.92	5,365.62	110	0.64	3.95	6.12716	uPVC	145	0.26
P-116	43	18.406	18.366	0.06573	J-92	J-93	235.47	-7,821.08	5,305.00	110	0.01	0	0.06573	uPVC	145	0
P-117	36.5	18.406	18.335	5.83768	J-92	J-94	235.47	-7,821.08	5,305.00	110	0.61	3.61	5.83768	uPVC	145	0.13
P-118	35	18.335	18.385	-3.55567	J-94	J-95	235.41	-7,854.51	5,290.58	110	0.37	1.44	3.55567	uPVC	145	0.05
P-119	79.5	18.385	18.603	-6.17818	J-95	J-96	235.41	-7,885.97	5,275.50	110	0.65	4.01	6.17818	uPVC	145	0.32
P-12	23.5	18.954	18.965	-1.90179	J-11	J-12	236.38	-7,888.26	6,358.59	110	0.2	0.45	1.90179	uPVC	145	0.01
P-120	38.5	18.603	18.716	-5.46385	J-96	J-97	235.51	-7,926.60	5,343.67	110	0.57	3.19	5.46385	uPVC	145	0.12
P-121	37.5	18.716	18.726	0.25504	J-97	J-90	235.52	-7,893.83	5,363.66	110	0.03	0.01	0.25504	uPVC	145	0
P-122	60	18.826	18.716	-0.09168	J-98	J-97	235.41	-7,867.62	5,309.91	110	0.01	0	0.09168	uPVC	145	0
P-123	30.5	18.716	18.764	-6.06485	J-97	J-99	235.52	-7,893.83	5,363.66	110	0.64	3.88	6.06485	uPVC	145	0.12
P-124	35.5	18.764	18.803	-10.0592	J-99	J-100	235.59	-7,911.20	5,388.56	140	0.65	3.06	10.0592	HDPE	145	0.11
P-125	158.5	18.803	19.313	-8.61866	J-100	J-71	235.66	-7,929.23	5,419.37	125	0.7	3.99	8.61866	HDPE	145	0.63

Distribution Network Design Output: Zone 5

P-126	39.5	18.787	18.764	0.69427	J-89	J-99	235.57	-7,876.47	5,407.57	110	0.07	0.07	0.69427	uPVC	145	0
P-127	69	18.764	18.566	4.42211	J-99	J-101	235.59	-7,911.20	5,388.56	110	0.47	2.16	4.42211	uPVC	145	0.15
P-128	18	18.566	18.546	6.95238	J-101	J-102	235.64	-7,953.80	5,348.26	110	0.73	4.99	6.95238	uPVC	145	0.09
P-129	20	18.546	18.603	0.92511	J-102	J-96	235.57	-7,943.65	5,333.18	110	0.1	0.12	0.92511	uPVC	145	0
P-13	9	18.965	18.985	0.01381	J-12	J-13	236.38	-7,908.33	6,370.47	110	0	0	0.01381	uPVC	145	0
P-130	83.5	18.546	18.115	5.84169	J-102	J-103	235.57	-7,943.65	5,333.18	110	0.61	3.62	5.84169	uPVC	145	0.3
P-131	26	18.115	18.385	2.48703	J-103	J-95	235.7	-7,908.25	5,261.74	110	0.26	0.74	2.48703	uPVC	145	0.02
P-132	82.5	18.385	17.512	4.76898	J-95	J-104	235.41	-7,885.97	5,275.50	110	0.5	2.48	4.76898	uPVC	145	0.2
P-133	26	17.512	17.092	9.35763	J-104	J-105	236.08	-7,844.02	5,204.39	125	0.76	4.64	9.35763	HDPE	145	0.12
P-134	24	17.092	17.295	-2.86917	J-105	J-106	236.38	-7,821.74	5,217.83	110	0.3	0.97	2.86917	uPVC	145	0.02
P-135	56	17.295	18.335	-9.1986	J-106	J-94	236.2	-7,832.55	5,239.13	125	0.75	4.5	9.1986	HDPE	145	0.25
P-136	80.5	18.115	17.388	3.06449	J-103	J-107	235.7	-7,908.25	5,261.74	110	0.32	1.09	3.06449	uPVC	145	0.09
P-137	30	17.388	17.512	9.24101	J-107	J-104	236.34	-7,870.57	5,190.63	125	0.75	4.54	9.24101	HDPE	145	0.14
P-138	137.5	17.295	17.393	5.99727	J-106	J-108	236.2	-7,832.55	5,239.13	110	0.63	3.8	5.99727	uPVC	145	0.52
P-139	11	17.393	17.134	5.77046	J-108	J-109	235.58	-7,708.02	5,295.82	110	0.61	3.53	5.77046	uPVC	145	0.04
P-14	35	18.954	18.51	6.62539	J-11	J-14	236.38	-7,888.26	6,358.59	125	0.54	2.45	6.62539	HDPE	145	0.09
P-140	52.5	17.134	16.89	-5.23314	J-109	J-110	235.8	-7,701.80	5,286.65	110	0.55	2.95	5.23314	uPVC	145	0.15
P-141	30	16.89	16.843	-6.78626	J-110	J-111	236.2	-7,747.02	5,260.43	110	0.71	4.77	6.78626	uPVC	145	0.14
P-142	40	16.843	16.773	-8.93495	J-111	J-112	236.39	-7,772.91	5,245.68	125	0.73	4.26	8.93495	HDPE	145	0.17
P-143	16	16.773	17.092	-12.12595	J-112	J-105	236.63	-7,807.63	5,225.43	140	0.79	4.32	12.12595	HDPE	145	0.07
P-144	39	18.816	18.803	0.78601	J-88	J-100	235.65	-7,894.82	5,437.72	110	0.08	0.09	0.78601	uPVC	145	0
P-145	49.5	18.803	18.701	-1.08594	J-100	J-113	235.66	-7,929.23	5,419.37	110	0.11	0.16	1.08594	uPVC	145	0.01
P-146	101.5	18.701	18.978	-4.82936	J-113	J-114	235.77	-7,970.77	5,392.40	110	0.51	2.54	4.82936	uPVC	145	0.26
P-147	76	18.978	19.065	-8.53034	J-114	J-115	235.75	-8,030.98	5,473.91	125	0.7	3.91	8.53034	HDPE	145	0.3
P-148	72	19.065	19.246	-11.03328	J-115	J-70	235.96	-8,077.27	5,534.13	140	0.72	3.63	11.03328	HDPE	145	0.26
P-149	56	19.065	19.062	2.19139	J-115	J-116	235.96	-8,077.27	5,534.13	110	0.23	0.59	2.19139	uPVC	145	0.03
P-15	8	18.51	18.46	0.06732	J-14	J-15	236.74	-7,869.41	6,388.08	110	0.01	0	0.06732	uPVC	145	0
P-150	28.5	19.062	18.904	6.30155	J-116	J-117	235.93	-8,125.20	5,505.46	110	0.66	4.16	6.30155	uPVC	145	0.12
P-151	57	18.904	18.652	8.32043	J-117	J-118	235.97	-8,107.58	5,482.93	125	0.68	3.73	8.32043	HDPE	145	0.21
P-152	53	18.652	18.369	7.97625	J-118	J-119	236.01	-8,070.31	5,439.92	125	0.65	3.45	7.97625	HDPE	145	0.18
P-153	40	18.369	18.256	4.05374	J-119	J-120	236.11	-8,038.36	5,397.72	110	0.43	1.84	4.05374	uPVC	145	0.07
P-154	16	18.256	18.209	7.33286	J-120	J-121	236.15	-8,012.55	5,367.41	125	0.6	2.96	7.33286	HDPE	145	0.05
P-155	33.5	18.209	18.386	8.21491	J-121	J-122	236.15	-8,003.95	5,353.89	125	0.67	3.65	8.21491	HDPE	145	0.12
P-156	34.5	18.386	18.566	2.71586	J-122	J-101	235.85	-7,982.24	5,328.49	110	0.29	0.88	2.71586	uPVC	145	0.03
P-157	48.5	18.256	18.701	-3.43875	J-120	J-113	236.15	-8,012.55	5,367.41	110	0.36	1.36	3.43875	uPVC	145	0.07
P-158	7	18.386	18.414	5.38447	J-122	J-123	235.85	-7,982.24	5,328.49	110	0.57	3.11	5.38447	uPVC	145	0.02

P-159	106.5	18.414	17.955	3.63705	J-123	J-124	235.8	-7,979.37	5,321.94	110	0.38	1.5	3.63705	uPVC	145	0.16
P-16	239.5	18.51	18.113	6.12665	J-14	J-16	236.74	-7,869.41	6,388.08	125	0.5	2.12	6.12665	HDPE	145	0.51
P-160	59.5	17.955	17.716	5.61214	J-124	J-125	236.1	-7,927.34	5,228.95	110	0.59	3.36	5.61214	uPVC	145	0.2
P-161	31	17.716	17.388	11.85695	J-125	J-107	236.14	-7,898.26	5,176.93	140	0.77	4.14	11.85695	HDPE	145	0.13
P-162	29.5	18.414	18.196	1.529	J-123	J-126	235.8	-7,979.37	5,321.94	110	0.16	0.3	1.529	uPVC	145	0.01
P-163	33.5	18.196	18.154	-2.06685	J-126	J-127	236.01	-8,004.77	5,306.78	110	0.22	0.53	2.06685	uPVC	145	0.02
P-164	37	18.154	18.225	-5.30406	J-127	J-128	236.07	-8,034.26	5,290.40	110	0.56	3.02	5.30406	uPVC	145	0.11
P-165	38.5	18.225	18.212	-2.40646	J-128	J-129	236.11	-8,058.43	5,318.66	110	0.25	0.7	2.40646	uPVC	145	0.03
P-166	26.5	18.212	18.209	0.99816	J-129	J-121	236.15	-8,026.89	5,340.37	110	0.11	0.14	0.99816	uPVC	145	0
P-167	54	18.212	18.291	-3.58639	J-129	J-130	236.15	-8,026.89	5,340.37	110	0.38	1.46	3.58639	uPVC	145	0.08
P-168	24	18.291	18.369	-3.7438	J-130	J-119	236.15	-8,058.02	5,384.20	110	0.39	1.59	3.7438	HDPE	145	0.04
P-169	37.5	18.225	18.227	-3.0702	J-128	J-131	236.11	-8,058.43	5,318.66	110	0.32	1.1	3.0702	uPVC	145	0.04
P-17	32	18.113	18.042	6.30288	J-16	J-17	236.63	-7,657.63	6,276.66	125	0.51	2.23	6.30288	HDPE	145	0.07
P-170	72.5	18.227	18.438	-5.20829	J-131	J-132	236.15	-8,085.46	5,344.88	110	0.55	2.92	5.20829	uPVC	145	0.21
P-171	57	18.438	18.652	-3.36022	J-132	J-118	236.15	-8,118.64	5,409.60	110	0.35	1.3	3.36022	uPVC	145	0.07
P-172	52	18.652	18.978	-3.3505	J-118	J-114	236.01	-8,070.31	5,439.92	110	0.35	1.29	3.3505	uPVC	145	0.07
P-173	153	18.904	19.209	-2.3831	J-117	J-133	235.97	-8,107.58	5,482.93	110	0.25	0.69	2.3831	uPVC	145	0.11
P-174	43.5	19.062	19.214	-4.38361	J-116	J-134	235.93	-8,125.20	5,505.46	110	0.46	2.12	4.38361	uPVC	145	0.09
P-175	43.5	19.214	19.204	0.06649	J-134	J-135	235.87	-8,163.30	5,484.16	110	0.01	0	0.06649	uPVC	145	0
P-176	101	19.214	19.334	-4.73721	J-134	J-136	235.87	-8,163.30	5,484.16	160	0.24	0.4	4.73721	uPVC	145	0.04
P-177	112.5	18.825	18.438	2.21764	J-137	J-132	235.83	-8,216.51	5,353.88	110	0.23	0.6	2.21764	uPVC	145	0.07
P-178	65	18.652	18.356	6.56778	J-138	J-139	235.78	-8,193.16	5,301.45	160	0.33	0.72	6.56778	uPVC	145	0.05
P-179	30	18.356	18.217	2.30448	J-139	J-140	236.03	-8,132.53	5,324.80	110	0.24	0.65	2.30448	uPVC	145	0.02
P-18	96	18.042	17.971	0.14665	J-17	J-18	236.63	-7,642.06	6,304.52	110	0.02	0	0.14665	uPVC	145	0
P-180	21	18.217	18.227	-1.938	J-140	J-131	236.15	-8,104.68	5,336.27	110	0.2	0.47	1.938	uPVC	145	0.01
P-181	217	18.356	18.374	3.78686	J-139	J-141	236.03	-8,132.53	5,324.80	110	0.4	1.62	3.78686	uPVC	145	0.35
P-182	11	18.374	18.374	0.65128	J-141	J-142	235.66	-8,035.04	5,131.45	110	0.07	0.06	0.65128	uPVC	145	0
P-183	28.5	18.374	18.323	0.45952	J-142	J-143	235.66	-8,024.80	5,134.73	110	0.05	0.03	0.45952	uPVC	145	0
P-184	145.5	18.323	18.194	-3.3801	J-143	J-144	235.71	-7,996.94	5,141.28	110	0.36	1.31	3.3801	uPVC	145	0.19
P-185	78	18.194	18.217	-4.04545	J-144	J-140	236.03	-8,062.07	5,270.72	110	0.43	1.83	4.04545	uPVC	145	0.14
P-186	34	18.194	18.154	0.27212	J-144	J-127	236.03	-8,062.07	5,270.72	110	0.03	0.01	0.27212	uPVC	145	0
P-187	135	18.154	18.099	3.14357	J-127	J-145	236.07	-8,034.26	5,290.40	110	0.33	1.15	3.14357	uPVC	145	0.15
P-188	7	18.099	18.07	-0.86324	J-145	J-146	235.97	-7,953.52	5,213.38	110	0.09	0.11	0.86324	uPVC	145	0
P-189	106.5	18.07	18.196	-3.33698	J-146	J-126	236	-7,947.37	5,217.06	110	0.35	1.28	3.33698	uPVC	145	0.14
P-19	95.5	18.042	17.88	5.81491	J-17	J-19	236.63	-7,642.06	6,304.52	110	0.61	3.58	5.81491	uPVC	145	0.34
P-190	23.5	18.07	17.955	2.26449	J-146	J-124	236	-7,947.37	5,217.06	110	0.24	0.63	2.26449	uPVC	145	0.01

P-191	110	18.164	18.314	-0.16802	J-147	J-148	235.84	-8,121.06	5,218.70	110	0.02	0.01	0.16802	uPVC	145	0
P-192	34.5	18.314	18.374	-2.7347	J-148	J-141	235.69	-8,068.22	5,122.03	110	0.29	0.89	2.7347	uPVC	145	0.03
P-193	23.5	18.179	18.314	-2.3101	J-149	J-148	235.81	-8,091.16	5,117.11	110	0.24	0.65	2.3101	uPVC	145	0.02
P-194	42	18.323	18.142	1.42712	J-143	J-150	235.71	-7,996.94	5,141.28	110	0.15	0.27	1.42712	uPVC	145	0.01
P-195	54	18.323	18.086	2.00018	J-143	J-151	235.71	-7,996.94	5,141.28	110	0.21	0.5	2.00018	uPVC	145	0.03
P-196	25.5	18.086	18.071	-1.1162	J-151	J-152	235.92	-7,945.74	5,149.06	110	0.12	0.17	1.1162	uPVC	145	0
P-197	16	18.071	18.001	0.0245	J-152	J-153	235.94	-7,933.86	5,126.53	110	0	0	0.0245	uPVC	145	0
P-198	27	18.086	17.949	2.95369	J-151	J-154	235.92	-7,945.74	5,149.06	110	0.31	1.02	2.95369	uPVC	145	0.03
P-199	9.5	17.949	17.877	6.5107	J-154	J-155	236.03	-7,923.21	5,163.81	110	0.69	4.42	6.5107	uPVC	145	0.04
P-2	13.5	21.632	21.602	93.80987	J-1	J-2	236.14	-8,068.62	5,959.24	315	1.2	3.68	93.80987	HDPE	145	0.05
P-20	98	17.88	17.739	4.40917	J-19	J-20	236.45	-7,551.94	6,272.98	110	0.46	2.15	4.40917	uPVC	145	0.21
P-200	19	17.877	17.716	6.41208	J-155	J-125	236.06	-7,914.19	5,166.27	110	0.67	4.3	6.41208	uPVC	145	0.08
P-201	33.5	17.388	17.273	5.41315	J-107	J-156	236.34	-7,870.57	5,190.63	110	0.57	3.14	5.41315	uPVC	145	0.11
P-202	40.5	17.273	17.205	4.97016	J-156	J-157	236.35	-7,853.98	5,161.76	110	0.52	2.68	4.97016	uPVC	145	0.11
P-203	11.5	17.205	17.195	0.32009	J-157	J-158	236.31	-7,832.27	5,127.76	110	0.03	0.02	0.32009	uPVC	145	0
P-204	64.5	17.195	16.965	0.09855	J-158	J-159	236.32	-7,826.53	5,117.93	110	0.01	0	0.09855	uPVC	145	0
P-205	31.5	17.205	17.014	4.5225	J-157	J-160	236.31	-7,832.27	5,127.76	110	0.48	2.25	4.5225	uPVC	145	0.07
P-206	71.5	17.014	17.512	-4.33166	J-160	J-104	236.43	-7,805.23	5,144.15	110	0.46	2.08	4.33166	uPVC	145	0.15
P-207	80	16.755	17.014	-3.46679	J-161	J-160	236.58	-7,764.68	5,074.92	110	0.36	1.38	3.46679	uPVC	145	0.11
P-208	43.5	17.014	16.725	5.04147	J-160	J-162	236.43	-7,805.23	5,144.15	110	0.53	2.75	5.04147	uPVC	145	0.12
P-209	83.5	16.725	16.552	2.05873	J-162	J-163	236.6	-7,765.91	5,162.99	110	0.22	0.52	2.05873	uPVC	145	0.04
P-21	151.5	17.739	17.728	0.23139	J-20	J-21	236.38	-7,461.00	6,236.52	110	0.02	0.01	0.23139	uPVC	145	0
P-210	75	16.773	16.725	2.99091	J-112	J-162	236.63	-7,807.63	5,225.43	110	0.31	1.05	2.99091	uPVC	145	0.08
P-211	38.5	16.725	16.756	5.60638	J-162	J-164	236.6	-7,765.91	5,162.99	110	0.59	3.35	5.60638	uPVC	145	0.13
P-212	84	16.756	17.032	1.08068	J-164	J-165	236.44	-7,730.27	5,177.33	110	0.11	0.16	1.08068	uPVC	145	0.01
P-213	80.5	16.843	16.756	1.91882	J-111	J-164	236.39	-7,772.91	5,245.68	110	0.2	0.46	1.91882	uPVC	145	0.04
P-214	32	16.756	16.831	6.08564	J-164	J-166	236.44	-7,730.27	5,177.33	110	0.64	3.9	6.08564	uPVC	145	0.12
P-215	83.5	16.831	16.89	-1.29959	J-166	J-110	236.24	-7,701.18	5,190.85	110	0.14	0.22	1.29959	uPVC	145	0.02
P-216	55.5	16.44	16.592	1.56914	J-167	J-168	236.63	-7,654.07	5,115.88	110	0.17	0.32	1.56914	uPVC	145	0.02
P-217	33	16.592	16.831	-2.21713	J-168	J-166	236.46	-7,684.39	5,162.17	110	0.23	0.6	2.21713	uPVC	145	0.02
P-218	56.5	16.831	16.956	4.85503	J-166	J-169	236.24	-7,701.18	5,190.85	110	0.51	2.57	4.85503	uPVC	145	0.15
P-219	91	16.956	17.134	-0.82932	J-169	J-109	235.97	-7,649.16	5,212.56	110	0.09	0.1	0.82932	uPVC	145	0.01
P-22	12	17.88	17.838	1.09191	J-19	J-22	236.45	-7,551.94	6,272.98	110	0.11	0.16	1.09191	uPVC	145	0
P-220	15	17.134	17.21	9.91542	J-109	J-170	235.8	-7,701.80	5,286.65	140	0.64	2.98	9.91542	HDPE	145	0.04
P-221	93	17.21	16.992	-0.37856	J-170	J-171	235.68	-7,689.30	5,294.89	110	0.04	0.02	0.37856	uPVC	145	0
P-222	37.5	16.992	17.083	2.97347	J-171	J-172	235.9	-7,635.64	5,218.70	110	0.31	1.04	2.97347	uPVC	145	0.04

Distribution Network Design Output: Zone 5

P-223	55	17.083	17.417	-3.67883	J-172	J-173	235.77	-7,613.11	5,188.80	110	0.39	1.54	3.67883	uPVC	145	0.08
P-224	15	16.992	16.956	-8.51467	J-171	J-169	235.9	-7,635.64	5,218.70	140	0.55	2.24	8.51467	HDPE	145	0.03
P-225	35	16.956	16.996	-3.13195	J-169	J-174	235.97	-7,649.16	5,212.56	110	0.33	1.14	3.13195	uPVC	145	0.04
P-226	56	16.996	17.374	0.19993	J-174	J-175	235.97	-7,629.50	5,183.47	110	0.02	0.01	0.19993	uPVC	145	0
P-227	14.5	17.374	17.195	0.02221	J-175	J-176	235.59	-7,597.54	5,137.59	110	0	0	0.02221	uPVC	145	0
P-228	161	16.079	15.878	2.61397	J-177	J-178	237.05	-7,990.74	4,910.38	110	0.28	0.82	2.61397	uPVC	145	0.13
P-229	39.5	15.878	16.092	1.73258	J-178	J-179	237.12	-7,842.75	4,974.39	110	0.18	0.38	1.73258	uPVC	145	0.02
P-23	43.5	17.838	17.781	-4.13346	J-22	J-23	236.49	-7,557.68	6,262.33	110	0.43	1.91	4.13346	uPVC	145	0.08
P-230	28.5	16.092	16.122	0.04359	J-179	J-180	236.89	-7,806.40	4,989.75	110	0	0	0.04359	uPVC	145	0
P-231	47	15.878	16.156	0.50342	J-178	J-181	237.12	-7,842.75	4,974.39	110	0.05	0.04	0.50342	uPVC	145	0
P-232	57	16.092	16.325	1.49807	J-179	J-182	236.89	-7,806.40	4,989.75	110	0.16	0.29	1.49807	uPVC	145	0.02
P-233	108	19.479	19.574	-8.82103	J-183	J-184	235.85	-8,275.86	5,488.68	160	0.44	1.25	8.82103	uPVC	145	0.14
P-234	133	19.574	19.332	0.79166	J-184	J-69	235.89	-8,177.71	5,533.78	110	0.08	0.09	0.79166	uPVC	145	0.01
P-235	36	19.574	19.593	-10.0357	J-184	J-185	235.89	-8,177.71	5,533.78	140	0.65	3.04	10.0357	HDPE	145	0.11
P-236	30.5	19.593	19.559	-12.33977	J-185	J-186	235.98	-8,192.02	5,566.84	140	0.8	4.46	12.33977	HDPE	145	0.14
P-237	108.5	19.559	19.482	-0.37257	J-186	J-67	236.15	-8,203.49	5,595.35	110	0.04	0.02	0.37257	uPVC	145	0
P-238	42.5	19.559	19.536	-12.24439	J-186	J-187	236.15	-8,203.49	5,595.35	140	0.8	4.4	12.24439	HDPE	145	0.19
P-239	100	19.536	19.555	1.81808	J-187	J-66	236.36	-8,220.86	5,634.02	110	0.19	0.42	1.81808	uPVC	145	0.04
P-24	93	17.781	18.113	-8.13193	J-23	J-16	236.63	-7,580.21	6,225.05	125	0.66	3.58	8.13193	HDPE	145	0.33
P-240	46	19.536	19.687	-16.40625	J-187	J-188	236.36	-8,220.86	5,634.02	160	0.82	3.95	16.40625	HDPE	145	0.18
P-241	86.5	19.687	19.898	-0.23289	J-188	J-64	236.39	-8,240.85	5,675.31	110	0.02	0.01	0.23289	uPVC	145	0
P-242	47	19.687	19.944	-14.47116	J-188	J-189	236.39	-8,240.85	5,675.31	160	0.72	3.13	14.47116	HDPE	145	0.15
P-243	32	19.944	20.123	-10.68726	J-189	J-190	236.28	-8,261.17	5,717.91	140	0.69	3.42	10.68726	HDPE	145	0.11
P-244	5.5	19.944	19.973	-3.913	J-189	J-191	236.28	-8,261.17	5,717.91	110	0.41	1.72	3.913	uPVC	145	0.01
P-245	26	19.973	19.988	8.26678	J-191	J-192	236.26	-8,266.41	5,716.60	140	0.54	2.12	8.26678	HDPE	145	0.06
P-246	77	19.988	20.162	2.44365	J-192	J-193	236.19	-8,290.99	5,708.73	110	0.26	0.72	2.44365	uPVC	145	0.06
P-247	33.5	19.687	19.794	-2.02748	J-188	J-194	236.39	-8,240.85	5,675.31	110	0.21	0.51	2.02748	uPVC	145	0.02
P-248	76.5	19.794	20.076	3.32677	J-194	J-195	236.3	-8,272.97	5,665.48	110	0.35	1.27	3.32677	uPVC	145	0.1
P-249	109.5	19.536	19.936	1.88871	J-187	J-196	236.36	-8,220.86	5,634.02	110	0.2	0.45	1.88871	uPVC	145	0.05
P-25	45	18.113	18.304	-8.93348	J-16	J-24	236.63	-7,657.63	6,276.66	125	0.73	4.26	8.93348	HDPE	145	0.19
P-250	108	19.593	19.628	2.03756	J-185	J-197	235.98	-8,192.02	5,566.84	110	0.21	0.51	2.03756	uPVC	145	0.06
P-251	65.5	19.973	20.155	-12.32795	J-191	J-198	236.26	-8,266.41	5,716.60	160	0.61	2.32	12.32795	HDPE	145	0.15
P-252	107	20.155	20.743	-6.77308	J-198	J-199	236.23	-8,271.58	5,781.93	110	0.71	4.76	6.77308	uPVC	145	0.51
P-253	153	20.743	20.989	-0.55805	J-199	J-200	236.15	-8,279.36	5,888.44	110	0.06	0.05	0.55805	uPVC	145	0.01
P-254	48	20.989	21.109	-26.92679	J-200	J-54	235.91	-8,288.38	6,041.02	200	0.86	3.33	26.92679	HDPE	145	0.16
P-255	47.5	20.743	20.911	-6.68461	J-199	J-55	236.15	-8,279.36	5,888.44	125	0.54	2.49	6.68461	HDPE	145	0.12

P-256	47	20.155	20.517	-5.89009	J-198	J-56	236.23	-8,271.58	5,781.93	110	0.62	3.67	5.89009	uPVC	145	0.17
P-257	86	20.332	20.558	-3.60021	J-201	J-202	235.9	-8,380.66	5,725.48	110	0.38	1.48	3.60021	uPVC	145	0.13
P-258	201	20.558	20.504	-2.45213	J-202	J-203	235.8	-8,330.68	5,783.65	110	0.26	0.72	2.45213	uPVC	145	0.15
P-259	60.5	20.504	20.764	-5.1025	J-203	J-204	236	-8,347.88	5,983.96	110	0.54	2.81	5.1025	uPVC	145	0.17
P-26	118.5	18.304	19.027	-17.45629	J-24	J-9	236.63	-7,684.67	6,240.61	160	0.87	4.43	17.45629	HDPE	145	0.52
P-260	37.5	20.764	20.885	-16.02976	J-204	J-205	235.91	-8,352.39	6,044.18	160	0.8	3.78	16.02976	uPVC	145	0.14
P-261	27	20.885	20.989	-26.02055	J-205	J-200	235.93	-8,315.11	6,044.59	200	0.83	3.13	26.02055	HDPE	145	0.08
P-262	160	20.558	20.496	-1.83065	J-202	J-206	235.8	-8,330.68	5,783.65	110	0.19	0.42	1.83065	uPVC	145	0.07
P-263	52.5	20.496	20.637	-1.26057	J-206	J-207	235.93	-8,414.66	5,909.82	110	0.13	0.21	1.26057	uPVC	145	0.01
P-264	23.5	20.637	20.694	-2.511	J-207	J-208	235.8	-8,430.22	5,959.79	110	0.26	0.76	2.511	uPVC	145	0.02
P-265	52	20.694	20.678	-0.64863	J-208	J-209	235.76	-8,437.59	5,982.32	110	0.07	0.06	0.64863	uPVC	145	0
P-266	51.5	20.678	20.686	3.74457	J-209	J-210	235.78	-8,453.98	6,031.48	110	0.39	1.59	3.74457	uPVC	145	0.08
P-267	78.5	20.637	20.496	1.01446	J-207	J-206	235.8	-8,430.22	5,959.79	110	0.11	0.14	1.01446	uPVC	145	0.01
P-268	48.5	20.764	20.787	10.70351	J-204	J-211	235.91	-8,352.39	6,044.18	160	0.53	1.79	10.70351	uPVC	145	0.09
P-269	52	20.787	20.896	5.83074	J-211	J-212	235.8	-8,400.73	6,045.41	160	0.29	0.58	5.83074	uPVC	145	0.03
P-27	19.5	18.304	18.34	-4.02794	J-24	J-25	236.63	-7,684.67	6,240.61	110	0.42	1.82	4.02794	uPVC	145	0.04
P-270	52	20.896	20.919	-2.92301	J-212	J-213	235.66	-8,405.23	6,097.43	110	0.31	1	2.92301	uPVC	145	0.05
P-271	45	20.919	20.939	-5.18256	J-213	J-214	235.69	-8,353.21	6,096.61	110	0.55	2.9	5.18256	uPVC	145	0.13
P-272	50	20.939	20.885	-9.81589	J-214	J-205	235.8	-8,308.15	6,094.16	160	0.49	1.52	9.81589	uPVC	145	0.08
P-273	71	20.896	20.805	4.08618	J-212	J-215	235.66	-8,405.23	6,097.43	160	0.2	0.3	4.08618	uPVC	145	0.02
P-274	44.5	20.805	20.656	6.22036	J-215	J-216	235.73	-8,412.20	6,168.30	160	0.31	0.65	6.22036	uPVC	145	0.03
P-275	25	20.656	20.573	5.60613	J-216	J-217	235.85	-8,413.02	6,212.95	160	0.28	0.54	5.60613	uPVC	145	0.01
P-276	58	20.573	20.566	1.9252	J-217	J-218	235.92	-8,415.88	6,237.94	110	0.2	0.46	1.9252	uPVC	145	0.03
P-277	34.5	20.566	20.495	-3.0918	J-218	J-219	235.9	-8,358.94	6,228.52	110	0.33	1.11	3.0918	uPVC	145	0.04
P-278	16.5	20.495	20.511	-2.9289	J-219	J-220	236.01	-8,325.76	6,219.10	110	0.31	1.01	2.9289	uPVC	145	0.02
P-279	40	20.511	20.706	-3.45366	J-220	J-221	236.01	-8,311.43	6,211.31	110	0.36	1.37	3.45366	uPVC	145	0.05
P-28	97.5	18.304	17.884	12.1224	J-24	J-26	236.63	-7,684.67	6,240.61	140	0.79	4.32	12.1224	HDPE	145	0.42
P-280	77.5	20.706	20.939	-4.36988	J-221	J-214	235.87	-8,309.79	6,171.58	110	0.46	2.11	4.36988	uPVC	145	0.16
P-281	49.5	20.573	20.585	3.47855	J-217	J-222	235.92	-8,415.88	6,237.94	110	0.37	1.38	3.47855	uPVC	145	0.07
P-282	23.5	20.585	20.624	0.25429	J-222	J-223	235.84	-8,465.04	6,244.49	110	0.03	0.01	0.25429	uPVC	145	0
P-283	123	20.624	20.812	-1.76291	J-223	J-224	235.8	-8,461.76	6,223.19	110	0.19	0.39	1.76291	uPVC	145	0.05
P-284	77	20.812	20.766	2.20827	J-224	J-225	235.66	-8,445.38	6,101.53	110	0.23	0.6	2.20827	uPVC	145	0.05
P-285	60.5	20.766	20.748	0.98711	J-225	J-226	235.66	-8,504.37	6,144.95	110	0.1	0.13	0.98711	uPVC	145	0.01
P-286	48.5	20.748	20.652	1.61342	J-226	J-227	235.67	-8,527.31	6,199.43	110	0.17	0.33	1.61342	uPVC	145	0.02
P-287	49	20.652	20.601	-1.13059	J-227	J-228	235.75	-8,533.04	6,247.77	110	0.12	0.17	1.13059	uPVC	145	0.01
P-288	7	20.601	20.591	0.47039	J-228	J-229	235.81	-8,484.29	6,246.13	110	0.05	0.03	0.47039	uPVC	145	0

Distribution Network Design Output: Zone 5

P-289	12.5	20.591	20.585	-3.09365	J-229	J-222	235.82	-8,477.33	6,246.54	110	0.33	1.11	3.09365	uPVC	145	0.01
P-29	43	17.884	17.781	4.69353	J-26	J-23	236.63	-7,602.74	6,188.18	110	0.49	2.41	4.69353	uPVC	145	0.1
P-290	35	20.601	20.624	-1.74	J-228	J-223	235.81	-8,484.29	6,246.13	110	0.18	0.38	1.74	uPVC	145	0.01
P-291	21.5	20.591	20.501	3.50137	J-229	J-230	235.82	-8,477.33	6,246.54	110	0.37	1.4	3.50137	uPVC	145	0.03
P-292	17.5	20.501	20.439	4.64581	J-230	J-231	235.88	-8,474.05	6,267.84	110	0.49	2.37	4.64581	uPVC	145	0.04
P-293	18	20.439	20.399	4.50901	J-231	J-232	235.9	-8,471.19	6,285.05	110	0.47	2.24	4.50901	uPVC	145	0.04
P-294	17.5	20.399	20.391	2.00081	J-232	J-233	235.9	-8,467.50	6,302.66	110	0.21	0.5	2.00081	uPVC	145	0.01
P-295	24.5	20.391	20.37	0.39072	J-233	J-234	235.9	-8,460.94	6,318.64	110	0.04	0.02	0.39072	uPVC	145	0
P-296	41	20.37	20.183	-1.53402	J-234	J-235	235.92	-8,436.78	6,314.95	110	0.16	0.3	1.53402	uPVC	145	0.01
P-297	8	20.183	20.178	-2.26595	J-235	J-236	236.12	-8,396.22	6,310.44	110	0.24	0.63	2.26595	uPVC	145	0.01
P-298	7	20.178	20.143	-2.35923	J-236	J-237	236.13	-8,395.40	6,318.23	110	0.25	0.68	2.35923	uPVC	145	0
P-299	41	20.143	19.993	-2.48915	J-237	J-238	236.17	-8,388.44	6,318.23	110	0.26	0.74	2.48915	uPVC	145	0.03
P-3	42.5	21.602	21.416	56.22303	J-2	J-3	236.12	-8,076.22	5,970.26	250	1.15	4.39	56.22303	HDPE	145	0.19
P-30	93.5	17.781	17.675	8.27511	J-23	J-27	236.63	-7,580.21	6,225.05	125	0.67	3.7	8.27511	HDPE	145	0.35
P-300	12	19.993	19.953	0.32703	J-238	J-239	236.35	-8,347.88	6,313.31	110	0.03	0.02	0.32703	uPVC	145	0
P-301	14.5	19.953	19.963	0.18413	J-239	J-240	236.39	-8,343.79	6,324.78	110	0.02	0.01	0.18413	uPVC	145	0
P-302	16	19.993	20.069	-2.92161	J-238	J-241	236.35	-8,347.88	6,313.31	110	0.31	1	2.92161	uPVC	145	0.02
P-303	47.5	20.069	20.321	-3.0752	J-241	J-242	236.29	-8,348.70	6,297.34	110	0.32	1.1	3.0752	uPVC	145	0.05
P-304	6.5	20.321	20.397	-4.72669	J-242	J-243	236.09	-8,356.08	6,250.23	110	0.5	2.44	4.72669	uPVC	145	0.02
P-305	15.5	20.397	20.566	-4.85203	J-243	J-218	236.03	-8,356.49	6,243.67	110	0.51	2.56	4.85203	uPVC	145	0.04
P-306	119.5	20.321	20.501	1.38651	J-242	J-230	236.09	-8,356.08	6,250.23	110	0.15	0.25	1.38651	uPVC	145	0.03
P-307	70	20.399	20.222	-0.4294	J-232	J-244	235.9	-8,467.50	6,302.66	110	0.05	0.03	0.4294	uPVC	145	0
P-308	20	20.222	20.183	-0.62651	J-244	J-235	236.08	-8,398.27	6,290.78	110	0.07	0.06	0.62651	uPVC	145	0
P-309	19.5	20.222	20.192	0.02984	J-244	J-245	236.08	-8,398.27	6,290.78	110	0	0	0.02984	uPVC	145	0
P-31	42	17.675	17.677	-0.54546	J-27	J-28	236.39	-7,501.97	6,173.43	110	0.06	0.04	0.54546	uPVC	145	0
P-310	72.5	20.652	20.559	2.48437	J-227	J-246	235.75	-8,533.04	6,247.77	110	0.26	0.74	2.48437	uPVC	145	0.05
P-311	60	15.296	15.02	4.36214	J-247	J-248	236.52	-7,317.72	6,234.56	110	0.46	2.11	4.36214	uPVC	145	0.13
P-312	13.5	15.02	14.936	7.75789	J-248	J-249	236.67	-7,278.30	6,279.62	125	0.63	3.28	7.75789	HDPE	145	0.04
P-313	63.5	14.936	14.676	4.31046	J-249	J-250	236.71	-7,277.27	6,292.93	110	0.45	2.06	4.31046	uPVC	145	0.13
P-314	79.5	14.676	14.468	2.23903	J-250	J-251	236.84	-7,267.54	6,355.91	110	0.24	0.61	2.23903	uPVC	145	0.05
P-315	46	14.468	14.374	1.51875	J-251	J-252	237	-7,254.23	6,434.26	110	0.16	0.3	1.51875	uPVC	145	0.01
P-316	62.5	14.374	14.579	1.35302	J-252	J-253	237.08	-7,247.06	6,479.83	110	0.14	0.24	1.35302	uPVC	145	0.02
P-317	17.5	14.579	14.577	3.28804	J-253	J-254	236.86	-7,189.20	6,455.76	110	0.35	1.25	3.28804	uPVC	145	0.02
P-318	18.5	14.577	14.585	3.16117	J-254	J-255	236.84	-7,172.81	6,449.62	110	0.33	1.16	3.16117	uPVC	145	0.02
P-319	123.5	14.585	14.748	-2.35436	J-255	J-256	236.81	-7,156.43	6,441.43	110	0.25	0.67	2.35436	uPVC	145	0.08
P-32	96.5	17.677	17.838	-4.99322	J-28	J-22	236.39	-7,477.80	6,207.84	110	0.53	2.7	4.99322	uPVC	145	0.26

P-320	8	14.748	14.761	-5.18822	J-256	J-257	236.73	-7,203.54	6,327.24	110	0.55	2.9	5.18822	uPVC	145	0.02
P-321	25	14.761	14.701	0.36745	J-257	J-258	236.74	-7,210.71	6,330.31	110	0.04	0.02	0.36745	uPVC	145	0
P-322	37	14.701	14.676	-1.79653	J-258	J-250	236.8	-7,233.24	6,341.58	110	0.19	0.41	1.79653	uPVC	145	0.02
P-323	74	14.701	14.636	1.95625	J-258	J-259	236.8	-7,233.24	6,341.58	110	0.21	0.48	1.95625	uPVC	145	0.04
P-324	48.5	14.636	14.579	2.1313	J-259	J-253	236.83	-7,205.58	6,410.19	110	0.22	0.56	2.1313	uPVC	145	0.03
P-325	54.5	14.468	14.636	0.44537	J-251	J-259	237	-7,254.23	6,434.26	110	0.05	0.03	0.44537	uPVC	145	0
P-326	44	15.02	15.404	-3.57522	J-248	J-260	236.67	-7,278.30	6,279.62	110	0.38	1.46	3.57522	uPVC	145	0.06
P-327	33	15.404	15.304	13.35013	J-260	J-261	236.35	-7,237.84	6,262.72	140	0.87	5.16	13.35013	HDPE	145	0.17
P-328	38.5	15.304	15.047	9.01637	J-261	J-262	236.28	-7,207.63	6,249.41	125	0.73	4.33	9.01637	HDPE	145	0.17
P-329	37.5	15.047	14.637	6.18632	J-262	J-263	236.37	-7,172.30	6,234.05	110	0.65	4.02	6.18632	uPVC	145	0.15
P-33	15.5	17.923	17.884	4.79184	J-29	J-26	236.63	-7,610.93	6,175.07	110	0.5	2.5	4.79184	uPVC	145	0.04
P-330	42	14.637	14.523	5.01603	J-263	J-264	236.63	-7,137.48	6,219.71	110	0.53	2.73	5.01603	uPVC	145	0.11
P-331	37	14.523	14.44	4.50579	J-264	J-265	236.63	-7,099.08	6,202.81	110	0.47	2.24	4.50579	uPVC	145	0.08
P-332	36.5	14.44	14.454	4.02679	J-265	J-266	236.63	-7,064.77	6,188.99	110	0.42	1.81	4.02679	uPVC	145	0.07
P-333	35	14.454	14.51	3.67162	J-266	J-267	236.55	-7,031.49	6,174.14	110	0.39	1.53	3.67162	uPVC	145	0.05
P-334	38	14.51	14.674	3.23371	J-267	J-268	236.44	-6,999.74	6,159.29	110	0.34	1.21	3.23371	uPVC	145	0.05
P-335	33.5	14.674	14.563	2.82747	J-268	J-269	236.23	-6,965.43	6,142.90	110	0.3	0.94	2.82747	uPVC	145	0.03
P-336	37	14.563	14.435	2.52206	J-269	J-270	236.31	-6,934.71	6,129.59	110	0.27	0.76	2.52206	uPVC	145	0.03
P-337	32	14.435	14.324	2.30556	J-270	J-271	236.41	-6,900.92	6,114.74	110	0.24	0.65	2.30556	uPVC	145	0.02
P-338	37	14.324	14.403	2.16521	J-271	J-272	236.5	-6,871.22	6,102.96	110	0.23	0.58	2.16521	uPVC	145	0.02
P-339	31	14.403	14.385	2.14594	J-272	J-273	236.4	-6,838.45	6,086.07	110	0.23	0.57	2.14594	uPVC	145	0.02
P-34	90	17.884	17.752	11.84503	J-26	J-30	236.63	-7,602.74	6,188.18	140	0.77	4.14	11.84503	HDPE	145	0.37
P-340	27.5	14.385	14.274	1.86961	J-273	J-274	236.4	-6,809.77	6,074.80	110	0.2	0.44	1.86961	uPVC	145	0.01
P-341	26	14.274	14.215	1.66366	J-274	J-275	236.5	-6,784.17	6,064.56	110	0.18	0.35	1.66366	uPVC	145	0.01
P-342	31.5	14.215	14.165	1.5707	J-275	J-276	236.55	-6,760.10	6,054.32	110	0.17	0.32	1.5707	uPVC	145	0.01
P-343	71	14.165	14.481	-0.84536	J-276	J-277	236.59	-6,731.43	6,041.01	110	0.09	0.1	0.84536	uPVC	145	0.01
P-344	29	14.481	14.615	-0.99812	J-277	J-278	236.28	-6,705.83	6,107.06	110	0.11	0.14	0.99812	uPVC	145	0
P-345	29	14.615	14.623	-1.50925	J-278	J-279	236.15	-6,732.97	6,117.81	110	0.16	0.29	1.50925	uPVC	145	0.01
P-346	26	14.623	14.635	-1.9028	J-279	J-280	236.15	-6,759.59	6,129.59	110	0.2	0.45	1.9028	uPVC	145	0.01
P-347	28.5	14.635	14.654	-2.35964	J-280	J-281	236.15	-6,783.15	6,140.85	110	0.25	0.67	2.35964	uPVC	145	0.02
P-348	7.5	14.654	14.662	-2.93453	J-281	J-282	236.15	-6,809.26	6,152.63	110	0.31	1.01	2.93453	uPVC	145	0.01
P-349	20	14.662	14.622	-2.02325	J-282	J-283	236.15	-6,816.33	6,155.53	110	0.21	0.51	2.02325	uPVC	145	0.01
P-35	43.5	17.752	17.675	3.97509	J-30	J-27	236.39	-7,527.77	6,138.61	110	0.42	1.77	3.97509	uPVC	145	0.08
P-350	7.5	14.622	14.585	-1.66392	J-283	J-284	236.2	-6,834.53	6,164.41	110	0.18	0.35	1.66392	uPVC	145	0
P-351	24.5	14.585	14.459	-2.11315	J-284	J-285	236.24	-6,841.52	6,166.46	110	0.22	0.55	2.11315	uPVC	145	0.01
P-352	12.5	14.459	14.405	-2.09306	J-285	J-286	236.38	-6,863.54	6,177.72	110	0.22	0.54	2.09306	uPVC	145	0.01

P-353	17	14.405	14.318	-2.45621	J-286	J-287	236.44	-6,875.31	6,181.31	110	0.26	0.73	2.45621	uPVC	145	0.01
P-354	20.5	14.318	14.234	-2.51409	J-287	J-288	236.54	-6,890.68	6,188.47	110	0.26	0.76	2.51409	uPVC	145	0.02
P-355	13.5	14.234	14.246	-2.80054	J-288	J-289	236.64	-6,909.62	6,196.16	110	0.29	0.93	2.80054	uPVC	145	0.01
P-356	18.5	14.246	14.255	-2.95115	J-289	J-290	236.64	-6,920.89	6,203.84	110	0.31	1.02	2.95115	uPVC	145	0.02
P-357	9.5	14.255	14.266	-3.1322	J-290	J-291	236.65	-6,938.30	6,209.47	110	0.33	1.14	3.1322	uPVC	145	0.01
P-358	29.5	14.266	14.291	-3.20593	J-291	J-292	236.65	-6,946.49	6,214.08	110	0.34	1.19	3.20593	uPVC	145	0.04
P-359	28	14.291	14.343	-3.66347	J-292	J-293	236.66	-6,973.63	6,225.85	110	0.39	1.52	3.66347	uPVC	145	0.04
P-36	18	17.79	17.752	4.38531	J-31	J-30	236.39	-7,538.02	6,123.87	110	0.46	2.13	4.38531	uPVC	145	0.04
P-360	7	14.343	14.354	-3.72191	J-293	J-294	236.65	-6,999.23	6,237.63	110	0.39	1.57	3.72191	uPVC	145	0.01
P-361	26	14.354	14.41	-3.96167	J-294	J-295	236.65	-7,005.89	6,239.17	110	0.42	1.76	3.96167	uPVC	145	0.05
P-362	10.5	14.41	14.44	-4.17175	J-295	J-296	236.64	-7,028.93	6,251.46	110	0.44	1.94	4.17175	uPVC	145	0.02
P-363	7.5	14.44	14.456	-4.2724	J-296	J-297	236.63	-7,039.17	6,254.53	110	0.45	2.03	4.2724	uPVC	145	0.02
P-364	20.5	14.456	14.5	-4.45882	J-297	J-298	236.63	-7,045.83	6,258.11	110	0.47	2.19	4.45882	uPVC	145	0.04
P-365	9.5	14.5	14.523	-4.65135	J-298	J-299	236.63	-7,065.28	6,265.28	110	0.49	2.37	4.65135	uPVC	145	0.02
P-366	19.5	14.523	14.571	-4.73832	J-299	J-300	236.63	-7,073.48	6,269.89	110	0.5	2.45	4.73832	uPVC	145	0.05
P-367	21.5	14.571	14.632	-5.14059	J-300	J-301	236.63	-7,091.40	6,278.08	110	0.54	2.85	5.14059	uPVC	145	0.06
P-368	24.5	14.632	14.788	-4.59729	J-301	J-302	236.63	-7,111.37	6,286.28	110	0.48	2.32	4.59729	uPVC	145	0.06
P-369	12.5	14.788	14.808	-6.1158	J-302	J-303	236.53	-7,133.39	6,296.52	110	0.64	3.94	6.1158	uPVC	145	0.05
P-37	182.5	17.752	16.941	11.74521	J-30	J-32	236.39	-7,527.77	6,138.61	140	0.76	4.07	11.74521	HDPE	145	0.74
P-370	29.5	14.808	14.768	-3.89976	J-303	J-304	236.56	-7,145.16	6,301.13	110	0.41	1.71	3.89976	uPVC	145	0.05
P-371	9.5	14.768	14.788	-6.32985	J-304	J-305	236.65	-7,171.28	6,314.95	110	0.67	4.19	6.32985	uPVC	145	0.04
P-372	25	14.788	14.748	-2.59484	J-305	J-256	236.67	-7,180.49	6,318.02	110	0.27	0.8	2.59484	uPVC	145	0.02
P-373	71	15.837	15.404	22.98043	J-306	J-260	236.21	-7,266.01	6,197.69	180	0.9	4.15	22.98043	HDPE	145	0.29
P-374	73	15.404	14.761	5.71758	J-260	J-257	236.35	-7,237.84	6,262.72	110	0.6	3.47	5.71758	uPVC	145	0.25
P-375	69	15.653	15.304	-0.10542	J-307	J-261	235.93	-7,234.54	6,185.98	110	0.01	0	0.10542	uPVC	145	0
P-376	74	15.304	14.788	3.90075	J-261	J-305	236.28	-7,207.63	6,249.41	110	0.41	1.71	3.90075	uPVC	145	0.13
P-377	72.5	14.808	15.047	-2.39094	J-303	J-262	236.56	-7,145.16	6,301.13	110	0.25	0.69	2.39094	uPVC	145	0.05
P-378	69.5	15.047	15.556	0.10619	J-262	J-308	236.37	-7,172.30	6,234.05	110	0.01	0	0.10619	uPVC	145	0
P-379	71	15.445	14.637	-0.10848	J-309	J-263	235.82	-7,169.06	6,155.90	110	0.01	0	0.10848	uPVC	145	0
P-38	46.5	16.941	16.803	5.04447	J-32	J-33	236.46	-7,377.03	6,035.39	110	0.53	2.76	5.04447	uPVC	145	0.13
P-380	71.5	14.637	14.632	0.72278	J-263	J-301	236.63	-7,137.48	6,219.71	110	0.08	0.08	0.72278	uPVC	145	0.01
P-381	72	14.523	14.523	-0.06731	J-299	J-264	236.63	-7,073.48	6,269.89	110	0.01	0	0.06731	uPVC	145	0
P-382	69.5	14.523	15.381	0.10619	J-264	J-310	236.63	-7,099.08	6,202.81	110	0.01	0	0.10619	uPVC	145	0
P-383	73.5	15.318	14.44	-0.11229	J-311	J-265	235.75	-7,095.83	6,122.62	110	0.01	0	0.11229	uPVC	145	0
P-384	70.5	14.44	14.44	0.03455	J-265	J-296	236.63	-7,064.77	6,188.99	110	0	0	0.03455	uPVC	145	0
P-385	70	14.354	14.454	0.08242	J-294	J-266	236.65	-7,005.89	6,239.17	110	0.01	0	0.08242	uPVC	145	0

P-386	72.5	14.454	15.292	0.11077	J-266	J-312	236.55	-7,031.49	6,174.14	110	0.01	0	0.11077	uPVC	145	0
P-387	116	14.151	14.291	-0.08982	J-313	J-292	236.8	-6,926.35	6,331.53	110	0.01	0	0.08982	uPVC	145	0
P-388	71.5	14.291	14.51	-0.00644	J-292	J-267	236.66	-6,973.63	6,225.85	110	0	0	0.00644	uPVC	145	0
P-389	69	14.51	15.289	0.10542	J-267	J-314	236.44	-6,999.74	6,159.29	110	0.01	0	0.10542	uPVC	145	0
P-39	180.5	16.803	17.675	-12.24668	J-33	J-27	236.47	-7,351.22	6,074.30	140	0.8	4.4	12.24668	HDPE	145	0.79
P-390	70.5	15.203	14.674	-0.10771	J-315	J-268	235.7	-6,994.45	6,078.58	110	0.01	0	0.10771	uPVC	145	0
P-391	72	14.674	14.255	-0.02829	J-268	J-290	236.23	-6,965.43	6,142.90	110	0	0	0.02829	uPVC	145	0
P-392	71	14.234	14.563	0.12606	J-288	J-269	236.64	-6,909.62	6,196.16	110	0.01	0	0.12606	uPVC	145	0
P-393	70.5	14.563	15.052	0.10771	J-269	J-316	236.31	-6,934.71	6,129.59	110	0.01	0	0.10771	uPVC	145	0
P-394	71.5	14.405	14.435	0.20887	J-286	J-270	236.44	-6,875.31	6,181.31	110	0.02	0.01	0.20887	uPVC	145	0
P-395	69	14.435	14.874	0.10542	J-270	J-317	236.41	-6,900.92	6,114.74	110	0.01	0	0.10542	uPVC	145	0
P-396	72.5	14.743	14.324	-0.11077	J-318	J-271	236.08	-6,897.67	6,035.57	110	0.01	0	0.11077	uPVC	145	0
P-397	70	14.324	14.585	-0.29342	J-271	J-284	236.5	-6,871.22	6,102.96	110	0.03	0.01	0.29342	uPVC	145	0
P-398	72.5	14.654	14.403	0.40915	J-281	J-272	236.15	-6,809.26	6,152.63	110	0.04	0.03	0.40915	uPVC	145	0
P-399	70	14.403	14.592	0.10695	J-272	J-319	236.4	-6,838.45	6,086.07	110	0.01	0	0.10695	uPVC	145	0
P-4	52.5	21.416	21.246	46.14447	J-3	J-4	236.12	-8,045.29	5,999.36	250	0.94	3.05	46.14447	HDPE	145	0.16
P-40	33	17.739	17.677	3.74637	J-20	J-28	236.38	-7,461.00	6,236.52	110	0.39	1.59	3.74637	uPVC	145	0.05
P-400	68	14.425	14.385	-0.1039	J-320	J-273	236.36	-6,835.20	6,011.51	110	0.01	0	0.1039	uPVC	145	0
P-401	71	14.385	14.635	-0.12919	J-273	J-280	236.4	-6,809.77	6,074.80	110	0.01	0	0.12919	uPVC	145	0
P-402	44.5	14.635	14.485	0.06802	J-280	J-321	236.15	-6,783.15	6,140.85	110	0.01	0	0.06802	uPVC	145	0
P-403	69.5	14.623	14.274	0.20339	J-279	J-274	236.15	-6,759.59	6,129.59	110	0.02	0.01	0.20339	uPVC	145	0
P-404	72.5	14.274	14.313	0.11077	J-274	J-322	236.5	-6,784.17	6,064.56	110	0.01	0	0.11077	uPVC	145	0
P-405	71	14.164	14.215	-0.10848	J-323	J-275	236.6	-6,786.04	5,988.46	110	0.01	0	0.10848	uPVC	145	0
P-406	69	14.215	14.615	-0.31715	J-275	J-278	236.55	-6,760.10	6,054.32	110	0.03	0.02	0.31715	uPVC	145	0
P-407	23	14.12	14.12	-0.03519	J-324	J-325	236.63	-6,759.93	5,975.66	110	0	0	0.03519	uPVC	145	0
P-408	48.5	14.12	14.165	-0.87645	J-325	J-276	236.63	-6,750.71	5,996.66	110	0.09	0.11	0.87645	uPVC	145	0.01
P-409	35	14.165	14.227	1.25555	J-276	J-326	236.59	-6,731.43	6,041.01	110	0.13	0.21	1.25555	uPVC	145	0.01
P-41	179	17.677	17.045	7.6589	J-28	J-34	236.39	-7,477.80	6,207.84	125	0.62	3.2	7.6589	HDPE	145	0.57
P-410	35.5	14.227	14.314	0.72422	J-326	J-327	236.52	-6,699.51	6,026.87	110	0.08	0.08	0.72422	uPVC	145	0
P-411	33	14.314	14.353	0.4134	J-327	J-328	236.43	-6,666.74	6,013.04	110	0.04	0.03	0.4134	uPVC	145	0
P-412	51.5	14.353	14.113	0.22621	J-328	J-329	236.39	-6,635.73	6,001.07	110	0.02	0.01	0.22621	uPVC	145	0
P-413	32.5	14.113	14.222	0.56314	J-329	J-330	236.63	-6,654.96	5,953.13	110	0.06	0.05	0.56314	uPVC	145	0
P-414	34.5	14.222	14.221	0.34771	J-330	J-331	236.52	-6,625.26	5,940.33	110	0.04	0.02	0.34771	uPVC	145	0
P-415	24	14.221	14.221	0.1758	J-331	J-332	236.52	-6,593.00	5,928.55	110	0.02	0.01	0.1758	uPVC	145	0
P-416	17.5	14.221	14.221	0.02679	J-332	J-333	236.52	-6,571.50	5,917.80	110	0	0	0.02679	uPVC	145	0
P-417	36	14.12	14.117	0.67706	J-325	J-334	236.63	-6,750.71	5,996.66	110	0.07	0.07	0.67706	uPVC	145	0

P-418	49	14.117	14.227	-0.18382	J-334	J-326	236.63	-6,717.94	5,981.29	110	0.02	0.01	0.18382	uPVC	145	0
P-419	54	14.227	14.297	0.08252	J-326	J-335	236.52	-6,699.51	6,026.87	110	0.01	0	0.08252	uPVC	145	0
P-42	40.5	17.045	16.803	7.32368	J-34	J-33	236.45	-7,329.10	6,108.30	110	0.77	5.5	7.32368	uPVC	145	0.22
P-420	36	14.117	14.115	0.67606	J-334	J-336	236.63	-6,717.94	5,981.29	110	0.07	0.07	0.67606	uPVC	145	0
P-421	49	14.115	14.314	-0.01982	J-336	J-327	236.63	-6,684.66	5,967.47	110	0	0	0.01982	uPVC	145	0
P-422	36.5	14.314	14.224	0.0558	J-327	J-337	236.43	-6,666.74	6,013.04	110	0.01	0	0.0558	uPVC	145	0
P-423	33	14.115	14.113	0.51564	J-336	J-329	236.63	-6,684.66	5,967.47	110	0.05	0.04	0.51564	uPVC	145	0
P-424	48	14.5	14.431	0.07336	J-298	J-338	236.63	-7,065.28	6,265.28	110	0.01	0	0.07336	uPVC	145	0
P-425	47	14.456	14.356	0.07183	J-297	J-339	236.63	-7,045.83	6,258.11	110	0.01	0	0.07183	uPVC	145	0
P-426	50.5	14.41	14.34	0.07718	J-295	J-340	236.64	-7,028.93	6,251.46	110	0.01	0	0.07718	uPVC	145	0
P-427	121	14.343	14.194	-0.17982	J-293	J-341	236.65	-6,999.23	6,237.63	110	0.02	0.01	0.17982	uPVC	145	0
P-428	30.5	14.194	14.151	3.5366	J-341	J-313	236.8	-6,951.50	6,348.83	110	0.37	1.43	3.5366	uPVC	145	0.04
P-429	26.5	14.151	14.157	3.3622	J-313	J-342	236.8	-6,926.35	6,331.53	110	0.35	1.3	3.3622	uPVC	145	0.03
P-43	18	16.956	16.941	2.69582	J-35	J-32	236.46	-7,386.45	6,020.23	110	0.28	0.86	2.69582	uPVC	145	0.02
P-430	29.5	14.157	14.176	2.95179	J-342	J-343	236.76	-6,903.99	6,316.88	110	0.31	1.02	2.95179	uPVC	145	0.03
P-431	33.5	14.176	14.209	2.63809	J-343	J-344	236.71	-6,879.82	6,299.67	110	0.28	0.83	2.63809	uPVC	145	0.03
P-432	30.5	14.209	14.299	2.25533	J-344	J-345	236.65	-6,856.47	6,275.51	110	0.24	0.62	2.25533	uPVC	145	0.02
P-433	33.5	14.299	14.445	1.84117	J-345	J-346	236.54	-6,837.22	6,251.75	110	0.19	0.43	1.84117	uPVC	145	0.01
P-434	26.5	14.445	14.5	1.15572	J-346	J-347	236.38	-6,817.14	6,225.12	110	0.12	0.18	1.15572	uPVC	145	0
P-435	53	14.5	14.662	1.03426	J-347	J-282	236.32	-6,799.12	6,205.87	110	0.11	0.15	1.03426	uPVC	145	0.01
P-436	63	14.622	14.445	-0.49758	J-283	J-346	236.2	-6,834.53	6,164.41	110	0.05	0.04	0.49758	uPVC	145	0
P-437	78.5	14.459	14.299	-0.19651	J-285	J-345	236.38	-6,863.54	6,177.72	110	0.02	0.01	0.19651	uPVC	145	0
P-438	93.5	14.318	14.209	-0.14221	J-287	J-344	236.54	-6,890.68	6,188.47	110	0.01	0	0.14221	uPVC	145	0
P-439	104.5	14.246	14.176	-0.05787	J-289	J-343	236.64	-6,920.89	6,203.84	110	0.01	0	0.05787	uPVC	145	0
P-44	47	16.941	16.71	8.9476	J-32	J-36	236.46	-7,377.03	6,035.39	125	0.73	4.27	8.9476	HDPE	145	0.2
P-440	111	14.266	14.157	-0.15536	J-291	J-342	236.65	-6,946.49	6,214.08	110	0.02	0	0.15536	uPVC	145	0
P-441	66	14.194	14.285	-4.04857	J-341	J-348	236.8	-6,951.50	6,348.83	110	0.43	1.83	4.04857	uPVC	145	0.12
P-442	9	14.285	14.293	-4.24721	J-348	J-349	236.83	-7,010.65	6,377.58	110	0.45	2.01	4.24721	uPVC	145	0.02
P-443	69	14.293	14.203	0.10542	J-349	J-350	236.84	-7,018.84	6,380.86	110	0.01	0	0.10542	uPVC	145	0
P-444	30	14.293	14.321	-4.5176	J-349	J-351	236.84	-7,018.84	6,380.86	110	0.48	2.25	4.5176	uPVC	145	0.07
P-445	124	14.321	14.571	-0.15027	J-351	J-300	236.88	-7,045.98	6,393.25	110	0.02	0	0.15027	uPVC	145	0
P-446	121	14.768	14.478	2.18573	J-304	J-352	236.65	-7,171.28	6,314.95	110	0.23	0.59	2.18573	uPVC	145	0.07
P-447	25.5	14.478	14.399	3.68461	J-352	J-353	236.87	-7,126.88	6,427.56	110	0.39	1.54	3.68461	uPVC	145	0.04
P-448	18.5	14.399	14.353	2.68243	J-353	J-354	236.91	-7,102.82	6,419.37	110	0.28	0.86	2.68243	uPVC	145	0.02
P-449	17.5	14.353	14.326	3.71831	J-354	J-355	236.94	-7,087.46	6,409.13	110	0.39	1.57	3.71831	uPVC	145	0.03
P-45	77.5	21.092	21.378	-7.96201	J-6	J-37	236.05	-8,059.08	6,096.18	125	0.65	3.44	7.96201	HDPE	145	0.27

Distribution Network Design Output: Zone 5

P-450	121.5	14.326	14.169	-1.1805	J-355	J-356	236.94	-7,070.56	6,405.03	110	0.12	0.19	1.1805	uPVC	145	0.02
P-451	18.5	14.169	14.139	0.02832	J-356	J-357	237.12	-7,017.31	6,514.10	110	0	0	0.02832	uPVC	145	0
P-452	27.5	14.321	14.326	-4.64452	J-351	J-355	236.88	-7,045.98	6,393.25	110	0.49	2.36	4.64452	uPVC	145	0.07
P-453	121.5	14.788	14.353	1.27644	J-302	J-354	236.53	-7,133.39	6,296.52	110	0.13	0.22	1.27644	uPVC	145	0.03
P-454	103.5	14.399	14.19	0.7769	J-353	J-358	236.91	-7,102.82	6,419.37	110	0.08	0.09	0.7769	uPVC	145	0.01
P-455	40.5	14.19	14.169	1.48449	J-358	J-356	237.11	-7,057.76	6,512.56	110	0.16	0.29	1.48449	uPVC	145	0.01
P-456	47.5	14.19	14.257	-1.00005	J-358	J-359	237.11	-7,057.76	6,512.56	110	0.11	0.14	1.00005	uPVC	145	0.01
P-457	52	14.257	14.391	-2.11533	J-359	J-360	237.05	-7,105.43	6,511.97	160	0.11	0.09	2.11533	uPVC	145	0
P-458	33	14.391	14.515	-3.42631	J-360	J-361	236.92	-7,131.22	6,467.51	110	0.36	1.35	3.42631	uPVC	145	0.04
P-459	19	14.515	14.478	1.75165	J-361	J-352	236.84	-7,143.39	6,437.10	110	0.18	0.39	1.75165	uPVC	145	0.01
P-46	84	21.378	21.416	-9.80518	J-37	J-3	236.03	-8,102.57	6,060.28	160	0.49	1.52	9.80518	HDPE	145	0.13
P-460	13.5	14.585	14.515	5.27803	J-255	J-361	236.81	-7,156.43	6,441.43	110	0.56	3	5.27803	uPVC	145	0.04
P-461	45	14.391	14.274	1.11241	J-360	J-362	236.92	-7,131.22	6,467.51	110	0.12	0.17	1.11241	uPVC	145	0.01
P-462	24.5	14.257	14.274	0.92589	J-359	J-362	237.05	-7,105.43	6,511.97	110	0.1	0.12	0.92589	uPVC	145	0
P-463	109	14.274	14.161	1.76569	J-362	J-363	237.03	-7,130.02	6,511.04	110	0.19	0.39	1.76569	uPVC	145	0.04
P-464	87.5	14.161	14.356	1.46559	J-363	J-364	237.1	-7,239.23	6,510.33	110	0.15	0.28	1.46559	uPVC	145	0.02
P-465	36.5	14.356	14.319	2.93752	J-364	J-365	236.88	-7,326.66	6,505.48	110	0.31	1.01	2.93752	uPVC	145	0.04
P-466	36.5	14.319	14.343	3.68408	J-365	J-366	236.88	-7,363.12	6,505.46	110	0.39	1.54	3.68408	uPVC	145	0.06
P-467	44.5	14.343	14.293	3.43678	J-366	J-367	236.8	-7,399.58	6,505.05	110	0.36	1.35	3.43678	uPVC	145	0.06
P-468	37.5	14.293	14.231	3.49627	J-367	J-368	236.79	-7,444.23	6,505.05	110	0.37	1.4	3.49627	uPVC	145	0.05
P-469	33.5	14.231	14.09	2.78057	J-368	J-369	236.8	-7,481.92	6,503.82	110	0.29	0.91	2.78057	uPVC	145	0.03
P-47	63	21.602	21.542	37.40508	J-2	J-38	236.12	-8,076.22	5,970.26	250	0.76	2.06	37.40508	HDPE	145	0.13
P-470	78	14.09	14.069	1.44457	J-369	J-370	236.91	-7,515.51	6,503.82	110	0.15	0.27	1.44457	uPVC	145	0.02
P-471	43.5	14.069	14.174	1.64267	J-370	J-371	236.91	-7,593.75	6,503.82	110	0.17	0.34	1.64267	uPVC	145	0.01
P-472	37.5	14.174	14.156	1.29204	J-371	J-372	236.79	-7,637.17	6,504.64	110	0.14	0.22	1.29204	uPVC	145	0.01
P-473	39.5	14.156	14.1	1.05357	J-372	J-373	236.8	-7,674.86	6,502.59	110	0.11	0.15	1.05357	uPVC	145	0.01
P-474	24	14.1	14.077	0.82231	J-373	J-374	236.85	-7,714.59	6,503.41	110	0.09	0.1	0.82231	uPVC	145	0
P-475	26.5	14.077	13.986	0.68349	J-374	J-375	236.87	-7,738.76	6,503.41	110	0.07	0.07	0.68349	uPVC	145	0
P-476	31	13.986	13.915	0.4636	J-375	J-376	236.96	-7,765.39	6,502.59	110	0.05	0.03	0.4636	uPVC	145	0
P-477	35	13.915	13.825	0.31097	J-376	J-377	237.03	-7,796.52	6,501.77	110	0.03	0.02	0.31097	uPVC	145	0
P-478	67	13.825	14.044	0.13088	J-377	J-378	237.12	-7,831.75	6,502.18	110	0.01	0	0.13088	uPVC	145	0
P-479	7.5	14.044	14.084	0.01705	J-378	J-379	236.9	-7,898.93	6,502.59	110	0	0	0.01705	uPVC	145	0
P-48	38.5	21.542	21.39	18.64374	J-38	J-39	236.05	-8,119.13	6,016.53	160	0.93	5	18.64374	HDPE	145	0.19
P-480	61.5	14.084	13.825	-0.08837	J-379	J-380	236.86	-7,899.75	6,495.22	110	0.01	0	0.08837	uPVC	145	0
P-481	35	13.825	13.825	0.02916	J-380	J-377	237.12	-7,844.04	6,469.41	110	0	0	0.02916	uPVC	145	0
P-482	35.5	13.825	13.925	-0.31914	J-380	J-381	237.12	-7,844.04	6,469.41	110	0.03	0.02	0.31914	uPVC	145	0

Distribution Network Design Output: Zone 5

P-483	49	13.925	13.915	0.02302	J-381	J-376	237.02	-7,811.68	6,455.08	110	0	0	0.02302	uPVC	145	0
P-484	25.5	13.925	14.056	-0.51019	J-381	J-382	237.02	-7,811.68	6,455.08	110	0.05	0.04	0.51019	uPVC	145	0
P-485	63.5	14.056	13.986	-0.03507	J-382	J-375	236.89	-7,789.15	6,443.61	110	0	0	0.03507	uPVC	145	0
P-486	29	14.056	14.077	-0.65536	J-382	J-383	236.89	-7,789.15	6,443.61	110	0.07	0.06	0.65536	uPVC	145	0
P-487	73.5	14.077	14.077	0.05058	J-383	J-374	236.87	-7,762.11	6,433.77	160	0	0	0.05058	uPVC	145	0
P-488	20.5	14.077	14.09	-0.89381	J-383	J-384	236.87	-7,762.11	6,433.77	110	0.09	0.11	0.89381	uPVC	145	0
P-489	83.5	14.09	14.1	-0.00674	J-384	J-373	236.86	-7,743.68	6,425.17	110	0	0	0.00674	uPVC	145	0
P-49	51	21.39	21.378	-1.51863	J-39	J-37	236.01	-8,144.81	6,044.88	125	0.12	0.16	1.51863	HDPE	145	0.01
P-490	36.5	14.09	14.116	-1.10167	J-384	J-385	236.86	-7,743.68	6,425.17	110	0.12	0.16	1.10167	uPVC	145	0.01
P-491	99	14.116	14.156	0.03033	J-385	J-372	236.84	-7,710.50	6,410.02	110	0	0	0.03033	uPVC	145	0
P-492	32.5	14.116	14.154	-1.38858	J-385	J-386	236.84	-7,710.50	6,410.02	110	0.15	0.25	1.38858	uPVC	145	0.01
P-493	117	14.154	14.174	-0.04824	J-386	J-371	236.81	-7,681.00	6,396.09	110	0.01	0	0.04824	uPVC	145	0
P-494	33	14.154	14.245	-1.61906	J-386	J-387	236.81	-7,681.00	6,396.09	110	0.17	0.34	1.61906	uPVC	145	0.01
P-495	127	14.245	14.099	-0.46038	J-387	J-388	236.73	-7,650.69	6,382.57	110	0.05	0.03	0.46038	uPVC	145	0
P-496	7	14.099	14.069	0.39437	J-388	J-370	236.88	-7,596.62	6,497.27	110	0.04	0.02	0.39437	uPVC	145	0
P-497	34.5	14.099	14.165	-1.11209	J-388	J-389	236.88	-7,596.62	6,497.27	110	0.12	0.17	1.11209	uPVC	145	0.01
P-498	31	14.165	14.202	-1.37502	J-389	J-390	236.82	-7,564.67	6,484.57	110	0.14	0.25	1.37502	uPVC	145	0.01
P-499	46.5	14.202	14.09	-1.09469	J-390	J-369	236.79	-7,536.81	6,471.46	110	0.12	0.16	1.09469	uPVC	145	0.01
P-5	195	21.246	21.529	1.18061	J-4	J-5	236.13	-8,005.44	6,033.44	110	0.12	0.19	1.18061	uPVC	145	0.04
P-50	44.5	21.39	21.278	19.95771	J-39	J-40	236.01	-8,144.81	6,044.88	180	0.78	3.2	19.95771	HDPE	145	0.14
P-500	36	14.245	14.334	-1.45801	J-387	J-391	236.73	-7,650.69	6,382.57	110	0.15	0.28	1.45801	uPVC	145	0.01
P-501	126	14.334	14.165	0.02954	J-391	J-389	236.65	-7,617.10	6,369.87	110	0	0	0.02954	uPVC	145	0
P-502	35	14.334	14.438	-1.78841	J-391	J-392	236.65	-7,617.10	6,369.87	110	0.19	0.4	1.78841	uPVC	145	0.01
P-503	125	14.438	14.202	0.58959	J-392	J-390	236.56	-7,585.15	6,355.94	110	0.06	0.05	0.58959	uPVC	145	0.01
P-504	33.5	14.438	14.627	-2.67352	J-392	J-393	236.56	-7,585.15	6,355.94	110	0.28	0.85	2.67352	uPVC	145	0.03
P-505	177	14.627	14.231	-0.33697	J-393	J-368	236.4	-7,554.42	6,342.42	110	0.04	0.02	0.33697	uPVC	145	0
P-506	35.5	14.627	14.807	-2.71222	J-393	J-394	236.4	-7,554.42	6,342.42	110	0.29	0.87	2.71222	uPVC	145	0.03
P-507	31.5	14.807	14.867	-2.81459	J-394	J-395	236.25	-7,522.66	6,326.53	110	0.3	0.94	2.81459	uPVC	145	0.03
P-508	163.5	14.867	14.293	0.43441	J-395	J-367	236.22	-7,509.14	6,355.21	110	0.05	0.03	0.43441	uPVC	145	0
P-509	38	14.867	15.112	-3.60482	J-395	J-396	236.22	-7,509.14	6,355.21	110	0.38	1.48	3.60482	uPVC	145	0.06
P-51	42	21.278	21.377	-10.51277	J-40	J-41	235.98	-8,189.06	6,039.78	140	0.68	3.32	10.51277	HDPE	145	0.14
P-510	180.5	15.112	14.343	0.15204	J-396	J-366	236.03	-7,473.91	6,340.46	110	0.02	0	0.15204	uPVC	145	0
P-511	32	15.112	15.303	-4.13941	J-396	J-397	236.03	-7,473.91	6,340.46	110	0.44	1.91	4.13941	uPVC	145	0.06
P-512	196	15.303	14.319	1.15735	J-397	J-365	235.9	-7,444.60	6,327.39	160	0.06	0.03	1.15735	uPVC	145	0.01
P-513	33	15.303	15.291	-5.69534	J-397	J-398	235.9	-7,444.60	6,327.39	160	0.28	0.56	5.69534	uPVC	145	0.02
P-514	38.5	15.291	15.379	-5.80458	J-398	J-399	235.93	-7,457.75	6,296.85	110	0.61	3.57	5.80458	uPVC	145	0.14

P-515	243.5	15.379	14.356	2.03312	J-399	J-364	235.98	-7,422.68	6,281.45	110	0.21	0.51	2.03312	uPVC	145	0.12
P-516	37	15.379	15.457	-8.32484	J-399	J-400	235.98	-7,422.68	6,281.45	125	0.68	3.74	8.32484	HDPE	145	0.14
P-517	55.5	15.457	15.356	-2.40514	J-400	J-401	236.04	-7,388.87	6,266.78	110	0.25	0.7	2.40514	uPVC	145	0.04
P-518	182	15.356	14.575	0.27796	J-401	J-402	236.18	-7,365.80	6,317.38	110	0.03	0.01	0.27796	uPVC	145	0
P-519	28	15.457	15.397	-6.10375	J-400	J-403	236.04	-7,388.87	6,266.78	110	0.64	3.92	6.10375	uPVC	145	0.11
P-52	31.5	21.377	21.465	-14.43287	J-41	J-42	236.02	-8,184.91	5,997.99	160	0.72	3.11	14.43287	HDPE	145	0.1
P-520	50	15.397	15.296	-6.31918	J-403	J-247	236.21	-7,363.32	6,254.77	110	0.66	4.18	6.31918	uPVC	145	0.21
P-53	16	21.465	21.494	-17.15835	J-42	J-43	236.03	-8,154.88	6,006.88	180	0.67	2.42	17.15835	HDPE	145	0.04
P-54	21	21.494	21.542	-18.57422	J-43	J-38	236.04	-8,139.27	6,010.91	180	0.73	2.8	18.57422	HDPE	145	0.06
P-55	104.5	21.494	21.374	1.19975	J-43	J-44	236.04	-8,139.27	6,010.91	110	0.13	0.19	1.19975	uPVC	145	0.02
P-56	3.5	21.374	21.386	-38.69307	J-44	J-45	236.14	-8,121.37	5,908.48	225	0.97	3.67	38.69307	HDPE	145	0.01
P-57	70	21.386	21.632	-49.82057	J-45	J-1	236.14	-8,118.58	5,910.19	250	1.01	3.51	49.82057	HDPE	145	0.25
P-58	91.5	21.386	21.134	10.8755	J-45	J-46	236.14	-8,118.58	5,910.19	140	0.71	3.53	10.8755	HDPE	145	0.32
P-59	24	21.134	21.022	10.66389	J-46	J-47	236.07	-8,083.64	5,825.80	140	0.69	3.41	10.66389	HDPE	145	0.08
P-6	82.5	21.246	21.092	44.45993	J-4	J-6	236.13	-8,005.44	6,033.44	250	0.91	2.84	44.45993	HDPE	145	0.23
P-60	27.5	21.022	21.092	-6.15824	J-47	J-48	236.1	-8,105.45	5,816.15	110	0.65	3.99	6.15824	uPVC	145	0.11
P-61	66	21.092	21.312	-15.00303	J-48	J-49	236.14	-8,114.68	5,841.95	160	0.75	3.34	15.00303	HDPE	145	0.22
P-62	16	21.374	21.312	39.70342	J-44	J-49	236.14	-8,121.37	5,908.48	225	1	3.85	39.70342	HDPE	145	0.06
P-63	7.5	21.312	21.277	24.56367	J-49	J-50	236.14	-8,136.49	5,904.03	180	0.97	4.7	24.56367	HDPE	145	0.04
P-64	105	21.277	21.465	-2.49257	J-50	J-42	236.14	-8,143.76	5,902.37	110	0.26	0.75	2.49257	uPVC	145	0.08
P-65	102	21.377	21.113	3.65207	J-41	J-51	236.02	-8,184.91	5,997.99	110	0.38	1.51	3.65207	uPVC	145	0.15
P-66	31.5	21.113	21.277	-26.8363	J-51	J-50	236.13	-8,174.65	5,896.34	180	1.05	5.53	26.8363	HDPE	145	0.17
P-67	19	21.113	21.035	30.25545	J-51	J-52	236.13	-8,174.65	5,896.34	200	0.96	4.13	30.25545	HDPE	145	0.08
P-68	147	21.035	21.22	-1.12949	J-52	J-53	236.13	-8,193.33	5,893.06	110	0.12	0.17	1.12949	uPVC	145	0.03
P-69	16.5	21.22	21.278	-30.31314	J-53	J-40	235.97	-8,205.78	6,039.55	200	0.96	4.15	30.31314	HDPE	145	0.07
P-7	216	21.092	20.018	51.84778	J-6	J-7	236.05	-8,059.08	6,096.18	250	1.06	3.78	51.84778	HDPE	145	0.82
P-70	34.5	21.22	21.109	28.88126	J-53	J-54	235.97	-8,205.78	6,039.55	200	0.92	3.79	28.88126	HDPE	145	0.13
P-71	148	21.109	20.911	1.60247	J-54	J-55	235.95	-8,240.52	6,039.88	110	0.17	0.33	1.60247	uPVC	145	0.05
P-72	108.5	20.911	20.517	16.94568	J-55	J-56	236.1	-8,232.00	5,892.08	160	0.84	4.19	16.94568	HDPE	145	0.45
P-73	39.5	20.517	20.4	10.75779	J-56	J-57	236.04	-8,224.46	5,783.94	140	0.7	3.46	10.75779	HDPE	145	0.14
P-74	44	20.4	21.19	-32.75901	J-57	J-58	236.02	-8,219.54	5,744.61	200	1.04	4.79	32.75901	HDPE	145	0.21
P-75	32.5	21.19	20.939	-33.14787	J-58	J-59	235.44	-8,181.20	5,765.91	200	1.06	4.9	33.14787	HDPE	145	0.16
P-76	36.5	20.939	20.789	-16.7618	J-59	J-60	235.85	-8,185.13	5,798.03	160	0.83	4.11	16.7618	HDPE	145	0.15
P-77	59	20.789	21.035	-8.4317	J-60	J-52	236.15	-8,188.08	5,834.40	125	0.69	3.83	8.4317	HDPE	145	0.23
P-78	74	20.789	21.092	-8.58897	J-60	J-48	236.15	-8,188.08	5,834.40	125	0.7	3.96	8.58897	HDPE	145	0.29
P-79	82.5	20.939	21.022	-16.61746	J-59	J-47	235.85	-8,185.13	5,798.03	160	0.83	4.04	16.61746	HDPE	145	0.33

P-8	177.5	20.018	19.193	51.2469	J-7	J-8	236.31	-7,846.40	6,105.35	250	1.04	3.7	51.2469	HDPE	145	0.66
P-80	15.5	21.19	21.08	0.24833	J-58	J-61	235.44	-8,181.20	5,765.91	110	0.03	0.01	0.24833	uPVC	145	0
P-81	29.5	21.08	20.87	0.04511	J-61	J-62	235.55	-8,167.76	5,773.45	110	0	0	0.04511	uPVC	145	0
P-82	9.5	20.4	20.335	43.37473	J-57	J-63	236.02	-8,219.54	5,744.61	250	0.88	2.72	43.37473	HDPE	145	0.03
P-83	67.5	20.335	19.898	32.46594	J-63	J-64	236.06	-8,214.95	5,736.09	200	1.03	4.71	32.46594	HDPE	145	0.32
P-84	11	19.898	19.798	31.98104	J-64	J-65	236.18	-8,157.93	5,700.37	200	1.02	4.58	31.98104	HDPE	145	0.05
P-85	38.5	19.798	19.555	31.70378	J-65	J-66	236.23	-8,150.72	5,692.18	200	1.01	4.51	31.70378	HDPE	145	0.17
P-86	29	19.555	19.482	33.26603	J-66	J-67	236.3	-8,125.49	5,663.34	200	1.06	4.93	33.26603	HDPE	145	0.14
P-87	43.5	19.482	19.375	32.61703	J-67	J-68	236.23	-8,105.83	5,642.04	200	1.04	4.75	32.61703	HDPE	145	0.21
P-88	13.5	19.375	19.332	22.35517	J-68	J-69	236.13	-8,073.71	5,612.87	180	0.88	3.94	22.35517	HDPE	145	0.05
P-89	40.5	19.332	19.246	22.86124	J-69	J-70	236.12	-8,064.21	5,603.37	180	0.9	4.11	22.86124	HDPE	145	0.17
P-9	41	19.193	19.027	19.16448	J-8	J-9	236.48	-7,809.04	6,264.29	160	0.95	5.26	19.16448	HDPE	145	0.22
P-90	48.5	19.246	19.313	11.58207	J-70	J-71	236.04	-8,036.03	5,574.53	140	0.75	3.97	11.58207	HDPE	145	0.19
P-91	41	19.313	19.448	-7.63628	J-71	J-72	235.78	-8,000.63	5,541.43	140	0.5	1.83	7.63628	HDPE	145	0.08
P-92	30.5	19.448	19.552	-3.56568	J-72	J-73	235.72	-7,968.84	5,567.65	110	0.38	1.45	3.56568	uPVC	145	0.04
P-93	34.5	19.552	19.564	-1.60017	J-73	J-74	235.66	-7,944.92	5,586.65	110	0.17	0.33	1.60017	uPVC	145	0.01
P-94	21.5	19.564	19.565	-0.66267	J-74	J-75	235.66	-7,917.72	5,607.63	110	0.07	0.06	0.66267	uPVC	145	0
P-95	6.5	19.565	19.565	0.01	J-75	J-76	235.66	-7,900.68	5,621.06	110	0	0	0.01	uPVC	145	0
P-96	104.5	19.565	19.377	-0.87504	J-75	J-77	235.66	-7,900.68	5,621.06	110	0.09	0.11	0.87504	uPVC	145	0.01
P-97	33.5	19.377	19.214	-1.25385	J-77	J-78	235.86	-7,966.88	5,702.01	110	0.13	0.21	1.25385	uPVC	145	0.01
P-98	32.5	19.214	19.135	-2.85574	J-78	J-79	236.03	-7,992.77	5,680.71	110	0.3	0.96	2.85574	uPVC	145	0.03
P-99	33	19.135	19.232	-5.50931	J-79	J-80	236.14	-8,017.35	5,659.73	110	0.58	3.24	5.50931	uPVC	145	0.11
PP-521	43	18.374	18.284	0.06573	J-142	PJ-404	235.66	-8,024.80	5,134.73	110	0.01	0	0.06573	HDPE	145	0
PP-522	52	18.142	18.071	1.28353	J-150	J-152	235.88	-7,980.15	5,102.77	110	0.14	0.22	1.28353	HDPE	145	0.01
PP-523	58	18.099	17.949	3.70137	J-145	J-154	235.97	-7,953.52	5,213.38	110	0.39	1.55	3.70137	HDPE	145	0.09
PP-524	18	17.877	17.867	0.02755	J-155	PJ-405	236.06	-7,914.19	5,166.27	110	0	0	0.02755	HDPE	145	0
PP-525	61.5	17.273	17.582	0.23604	J-156	PJ-406	236.35	-7,853.98	5,161.76	110	0.02	0.01	0.23604	HDPE	145	0
PP-526	46.5	17.582	17.362	0.07107	PJ-406	PJ-407	236.04	-7,907.22	5,130.65	110	0.01	0	0.07107	HDPE	145	0
PP-527	34.5	17.195	17.314	0.05275	J-158	PJ-408	236.32	-7,826.53	5,117.93	110	0.01	0	0.05275	HDPE	145	0
PP-528	20.5	16.685	16.755	-0.03137	PJ-409	J-161	236.65	-7,763.03	5,059.38	110	0	0	0.03137	HDPE	145	0
PP-529	22.5	16.755	16.677	3.24755	J-161	PJ-410	236.58	-7,764.68	5,074.92	110	0.34	1.22	3.24755	HDPE	145	0.03
PP-530	24.5	16.677	16.552	3.0138	PJ-410	J-163	236.63	-7,744.19	5,083.95	110	0.32	1.06	3.0138	HDPE	145	0.03
PP-531	38.5	16.552	17.032	4.84877	J-163	J-165	236.73	-7,721.25	5,092.53	110	0.51	2.56	4.84877	HDPE	145	0.1
PP-532	33	17.032	16.44	5.69196	J-165	J-167	236.15	-7,685.62	5,106.46	110	0.6	3.45	5.69196	HDPE	145	0.11
PP-533	60.5	16.44	17.374	3.89525	J-167	J-175	236.63	-7,654.07	5,115.88	110	0.41	1.71	3.89525	HDPE	145	0.1
PP-534	53	16.677	16.757	0.08099	PJ-410	PJ-411	236.63	-7,744.19	5,083.95	110	0.01	0	0.08099	HDPE	145	0

PP-535	59	16.592	16.996	3.56098	J-168	J-174	236.46	-7,684.39	5,162.17	110	0.37	1.45	3.56098	HDPE	145	0.09
PP-536	16.5	17.374	17.417	3.84769	J-175	J-173	235.59	-7,597.54	5,137.59	110	0.4	1.67	3.84769	HDPE	145	0.03
PP-537	19.5	17.417	17.237	0.02984	J-173	PJ-412	235.52	-7,581.98	5,143.33	110	0	0	0.02984	HDPE	145	0
PP-538	12.5	18.291	18.291	0.01916	J-130	PJ-413	236.15	-8,058.02	5,384.20	110	0	0	0.01916	HDPE	145	0
PP-539	25.5	19.062	19.072	0.03901	J-116	PJ-414	235.93	-8,125.20	5,505.46	110	0	0	0.03901	HDPE	145	0
PP-540	47	19.988	19.794	5.59403	J-192	J-194	236.19	-8,290.99	5,708.73	125	0.46	1.79	5.59403	HDPE	145	0.08
PP-541	18	20.123	20.335	-10.76367	J-190	J-63	236.21	-8,230.69	5,727.74	140	0.7	3.46	10.76367	HDPE	145	0.06
PP-542	44	21.08	20.82	0.06725	J-61	PJ-415	235.55	-8,167.76	5,773.45	110	0.01	0	0.06725	HDPE	145	0
PP-543	66	19.798	19.917	0.10084	J-65	PJ-416	236.23	-8,150.72	5,692.18	110	0.01	0	0.10084	HDPE	145	0
PP-544	38.5	20.911	21.035	-22.55084	J-55	J-52	236.1	-8,232.00	5,892.08	180	0.89	4.01	22.55084	HDPE	145	0.15
PP-545	102.5	21.509	21.529	-0.15657	PJ-417	J-5	235.83	-7,962.09	5,825.13	110	0.02	0	0.15657	HDPE	145	0
PP-546	72.5	21.529	21.597	0.45903	J-5	PJ-418	235.81	-7,878.84	5,884.81	110	0.05	0.03	0.45903	HDPE	145	0
PP-547	72.5	21.597	21.676	0.11077	PJ-418	PJ-419	235.74	-7,840.19	5,824.87	110	0.01	0	0.11077	HDPE	145	0
PP-548	41.5	21.647	21.597	-0.06344	PJ-420	PJ-418	235.69	-7,870.96	5,797.27	110	0.01	0	0.06344	HDPE	145	0
PP-549	11.5	21.134	21.154	0.01763	J-46	PJ-421	236.07	-8,083.64	5,825.80	110	0	0	0.01763	HDPE	145	0
PP-550	55	20.678	20.787	-4.63528	J-209	J-211	235.78	-8,453.98	6,031.48	110	0.49	2.36	4.63528	HDPE	145	0.13
PP-551	89.5	20.694	20.504	-2.11437	J-208	J-203	235.76	-8,437.59	5,982.32	110	0.22	0.55	2.11437	HDPE	145	0.05
PP-552	40.5	20.812	20.896	-4.33845	J-224	J-212	235.66	-8,445.38	6,101.53	110	0.46	2.08	4.33845	HDPE	145	0.08
PP-553	71.5	20.766	20.748	0.90197	J-225	J-226	235.66	-8,504.37	6,144.95	110	0.09	0.11	0.90197	HDPE	145	0.01
PP-554	53.5	20.805	20.762	-2.39229	J-215	PJ-422	235.73	-8,412.20	6,168.30	110	0.25	0.69	2.39229	HDPE	145	0.04
PP-555	49	20.762	20.706	-0.66193	PJ-422	J-221	235.81	-8,358.82	6,170.09	110	0.07	0.06	0.66193	HDPE	145	0
PP-556	73.5	20.919	20.762	1.99915	J-213	PJ-422	235.69	-8,353.21	6,096.61	110	0.21	0.5	1.99915	HDPE	145	0.04
PP-557	87.5	20.656	20.495	0.37444	J-216	J-219	235.85	-8,413.02	6,212.95	110	0.04	0.02	0.37444	HDPE	145	0
PP-558	30	20.397	20.327	0.04588	J-243	PJ-423	236.03	-8,356.49	6,243.67	110	0	0	0.04588	HDPE	145	0
PP-559	20.5	20.511	20.391	0.40712	J-220	PJ-424	236.01	-8,311.43	6,211.31	110	0.04	0.03	0.40712	HDPE	145	0
PP-560	108	20.391	20.151	0.16497	PJ-424	PJ-425	236.13	-8,291.44	6,215.45	110	0.02	0	0.16497	HDPE	145	0
PP-561	15	20.351	20.391	-0.02297	PJ-426	PJ-424	236.17	-8,276.23	6,215.19	110	0	0	0.02297	HDPE	145	0
PP-562	23	20.178	20.248	0.03519	J-236	PJ-427	236.13	-8,395.40	6,318.23	110	0	0	0.03519	HDPE	145	0
PP-563	18.5	20.143	20.143	0.02832	J-237	PJ-428	236.17	-8,388.44	6,318.23	110	0	0	0.02832	HDPE	145	0
PP-564	18.5	20.069	20.019	0.02832	J-241	PJ-429	236.29	-8,348.70	6,297.34	110	0	0	0.02832	HDPE	145	0
PP-565	33.5	19.953	19.953	0.05122	J-239	PJ-430	236.39	-8,343.79	6,324.78	110	0.01	0	0.05122	HDPE	145	0
PP-566	53	19.963	19.923	0.08099	J-240	PJ-431	236.38	-8,342.56	6,339.12	110	0.01	0	0.08099	HDPE	145	0
PP-567	27	20.439	20.439	0.0413	J-231	PJ-432	235.9	-8,471.19	6,285.05	110	0	0	0.0413	HDPE	145	0
PP-568	44	20.399	20.361	2.70926	J-232	PJ-433	235.9	-8,467.50	6,302.66	110	0.29	0.87	2.70926	HDPE	145	0.04
PP-569	28.5	20.361	20.361	0.04359	PJ-433	PJ-434	235.9	-8,511.13	6,309.88	110	0	0	0.04359	HDPE	145	0
PP-570	35.5	20.391	20.38	1.49169	J-233	PJ-435	235.9	-8,460.94	6,318.64	110	0.16	0.29	1.49169	HDPE	145	0.01

PP-571	23	20.38	20.355	1.37627	PJ-435	PJ-436	235.9	-8,454.61	6,353.26	110	0.14	0.25	1.37627	HDPE	145	0.01
PP-572	39	20.355	20.37	-1.76511	PJ-436	J-234	235.92	-8,431.79	6,352.99	110	0.19	0.39	1.76511	HDPE	145	0.02
PP-573	8.5	20.38	20.38	0.01305	PJ-435	PJ-437	235.9	-8,454.61	6,353.26	110	0	0	0.01305	HDPE	145	0
PP-574	140	20.355	20.242	2.83289	PJ-436	PJ-438	235.92	-8,431.79	6,352.99	110	0.3	0.95	2.83289	HDPE	145	0.13
PP-575	56	20.242	20.026	4.54279	PJ-438	PJ-439	235.9	-8,450.25	6,469.45	110	0.48	2.27	4.54279	HDPE	145	0.13
PP-576	24.5	20.026	19.916	4.29759	PJ-439	PJ-440	235.99	-8,394.25	6,468.40	110	0.45	2.05	4.29759	HDPE	145	0.05
PP-577	330	19.916	19.115	3.54242	PJ-440	PJ-441	236.05	-8,370.34	6,464.20	110	0.37	1.43	3.54242	HDPE	145	0.47
PP-578	223	19.115	19.157	-0.24636	PJ-441	PJ-442	236.38	-8,054.10	6,437.35	110	0.03	0.01	0.24636	HDPE	145	0
PP-579	78	19.157	19.193	-4.52323	PJ-442	J-8	236.34	-7,874.19	6,307.55	110	0.48	2.25	4.52323	HDPE	145	0.18
PP-580	116.5	19.193	18.396	26.92853	J-8	PJ-443	236.48	-7,809.04	6,264.29	180	1.06	5.57	26.92853	HDPE	145	0.65
PP-581	30	18.396	18.34	4.10359	PJ-443	J-25	236.63	-7,711.86	6,199.71	110	0.43	1.88	4.10359	HDPE	145	0.06
PP-582	70	19.916	19.836	0.10695	PJ-440	PJ-444	236.05	-8,370.34	6,464.20	110	0.01	0	0.10695	HDPE	145	0
PP-583	40	20.026	20.016	0.06115	PJ-439	PJ-445	235.99	-8,394.25	6,468.40	110	0.01	0	0.06115	HDPE	145	0
PP-584	134.5	20.242	20.323	-2.2146	PJ-438	PJ-446	235.9	-8,450.25	6,469.45	110	0.23	0.6	2.2146	HDPE	145	0.08
PP-585	63	20.323	19.537	-1.2062	PJ-446	PJ-447	235.9	-8,579.07	6,434.17	110	0.13	0.19	1.2062	HDPE	145	0.01
PP-586	54	19.537	18.683	-0.76383	PJ-447	PJ-448	236.7	-8,638.05	6,411.88	110	0.08	0.08	0.76383	HDPE	145	0
PP-587	86	18.683	20.366	-1.19149	PJ-448	PJ-449	237.56	-8,689.18	6,394.51	110	0.13	0.19	1.19149	HDPE	145	0.02
PP-588	101	20.366	20.559	-2.79309	PJ-449	J-246	235.89	-8,648.21	6,318.81	110	0.29	0.92	2.79309	HDPE	145	0.09
PP-589	230	20.559	20.686	-0.92487	J-246	J-210	235.79	-8,602.20	6,228.80	110	0.1	0.12	0.92487	HDPE	145	0.03
PP-590	320	20.686	20.332	1.90123	J-210	J-201	235.69	-8,504.37	6,020.83	110	0.2	0.45	1.90123	HDPE	145	0.14
PP-591	43.5	20.332	20.162	4.81505	J-201	J-193	235.9	-8,380.66	5,725.48	110	0.51	2.53	4.81505	HDPE	145	0.11
PP-592	46.5	20.162	20.076	7.00364	J-193	J-195	235.96	-8,364.07	5,685.14	125	0.57	2.71	7.00364	HDPE	145	0.13
PP-593	49	20.076	19.936	10.06772	J-195	J-196	235.92	-8,345.72	5,642.54	140	0.65	3.06	10.06772	HDPE	145	0.15
PP-594	83	19.936	19.628	11.58762	J-196	J-197	235.91	-8,324.42	5,598.62	140	0.75	3.97	11.58762	HDPE	145	0.33
PP-595	37	19.628	19.479	13.27699	J-197	J-183	235.89	-8,290.66	5,522.59	140	0.86	5.11	13.27699	HDPE	145	0.19
PP-596	54.5	19.479	19.334	21.79334	J-183	J-136	235.85	-8,275.86	5,488.68	180	0.86	3.76	21.79334	HDPE	145	0.2
PP-597	35.5	19.334	19.209	16.76443	J-136	J-133	235.79	-8,253.83	5,439.10	160	0.83	4.11	16.76443	HDPE	145	0.15
PP-598	57.5	19.209	18.825	14.00565	J-133	J-137	235.77	-8,239.90	5,406.32	140	0.91	5.64	14.00565	HDPE	145	0.32
PP-599	57.5	18.825	18.652	11.44058	J-137	J-138	235.83	-8,216.51	5,353.88	140	0.74	3.88	11.44058	HDPE	145	0.22
PP-600	211	18.652	18.179	4.36352	J-138	J-149	235.78	-8,193.16	5,301.45	110	0.46	2.11	4.36352	HDPE	145	0.44
PP-601	230	18.179	16.079	5.96433	J-149	J-177	235.81	-8,091.16	5,117.11	110	0.63	3.76	5.96433	HDPE	145	0.86
PP-602	16.5	16.079	15.675	2.7281	J-177	PJ-450	237.05	-7,990.74	4,910.38	110	0.29	0.88	2.7281	HDPE	145	0.01
PP-603	163.5	15.675	16.156	2.45319	PJ-450	J-181	237.44	-7,987.19	4,894.02	110	0.26	0.73	2.45319	HDPE	145	0.12
PP-604	37.5	16.156	16.325	2.57789	J-181	J-182	236.84	-7,827.90	4,929.84	110	0.27	0.79	2.57789	HDPE	145	0.03
PP-605	270	16.325	17.012	3.51935	J-182	PJ-451	236.64	-7,790.53	4,934.96	110	0.37	1.41	3.51935	HDPE	145	0.38
PP-606	25.5	17.012	16.66	2.74842	PJ-451	PJ-452	235.57	-7,525.94	4,988.65	110	0.29	0.9	2.74842	HDPE	145	0.02

PP-607	38	16.66	16.141	2.55645	PJ-452	PJ-453	235.9	-7,500.87	4,993.69	110	0.27	0.78	2.55645	HDPE	145	0.03
PP-608	39.5	16.141	15.646	2.3221	PJ-453	PJ-454	236.39	-7,463.60	5,001.88	110	0.24	0.65	2.3221	HDPE	145	0.03
PP-609	46	15.646	15.166	2.75254	PJ-454	PJ-455	236.86	-7,425.09	5,009.67	110	0.29	0.9	2.75254	HDPE	145	0.04
PP-610	248	15.166	15.698	3.50172	PJ-455	PJ-456	237.3	-7,379.62	5,017.45	110	0.37	1.4	3.50172	HDPE	145	0.35
PP-611	277	15.698	15.458	2.70006	PJ-456	PJ-457	236.42	-7,136.71	5,066.20	110	0.28	0.87	2.70006	HDPE	145	0.24
PP-612	327.5	15.458	15.328	1.777	PJ-457	PJ-458	236.42	-6,865.08	5,121.59	110	0.19	0.4	1.777	HDPE	145	0.13
PP-613	232.5	15.328	15.3	0.9219	PJ-458	PJ-459	236.42	-6,543.77	5,185.60	110	0.1	0.12	0.9219	HDPE	145	0.03
PP-614	193	15.3	15.298	0.27215	PJ-459	PJ-460	236.42	-6,315.91	5,231.04	110	0.03	0.01	0.27215	HDPE	145	0
PP-615	119.5	15.298	15.299	-0.20506	PJ-460	PJ-461	236.42	-6,126.46	5,267.53	110	0.02	0.01	0.20506	HDPE	145	0
PP-616	117	15.299	15.304	-0.56623	PJ-461	PJ-462	236.42	-6,153.57	5,383.80	110	0.06	0.05	0.56623	HDPE	145	0.01
PP-617	252.5	15.304	15.348	-1.13047	PJ-462	PJ-463	236.42	-6,263.91	5,422.12	110	0.12	0.17	1.13047	HDPE	145	0.04
PP-618	443.5	15.348	15.409	-2.19323	PJ-463	PJ-464	236.42	-6,503.86	5,501.34	110	0.23	0.59	2.19323	HDPE	145	0.26
PP-619	36	15.409	15.452	-3.57898	PJ-464	PJ-465	236.62	-6,911.09	5,669.35	110	0.38	1.46	3.57898	HDPE	145	0.05
PP-620	227.5	15.452	16.38	-1.87923	PJ-465	PJ-466	236.63	-6,941.61	5,688.76	110	0.2	0.44	1.87923	HDPE	145	0.1
PP-621	55.5	16.38	16.506	-1.49603	PJ-466	PJ-467	235.8	-7,130.65	5,562.15	110	0.16	0.29	1.49603	HDPE	145	0.02
PP-622	77.5	16.506	16.781	-2.87487	PJ-467	PJ-468	235.69	-7,173.66	5,526.82	110	0.3	0.97	2.87487	HDPE	145	0.08
PP-623	118	16.506	16.38	0.99554	PJ-467	PJ-466	235.69	-7,173.66	5,526.82	110	0.1	0.14	0.99554	HDPE	145	0.02
PP-624	35	17.21	17.165	3.31587	J-170	PJ-469	235.68	-7,689.30	5,294.89	110	0.35	1.27	3.31587	HDPE	145	0.04
PP-625	25	17.165	17.006	3.22418	PJ-469	PJ-470	235.68	-7,707.70	5,324.96	110	0.34	1.2	3.22418	HDPE	145	0.03
PP-626	20	17.006	17.015	0.03061	PJ-470	PJ-471	235.81	-7,691.31	5,343.96	110	0	0	0.03061	HDPE	145	0
PP-627	26	17.21	16.948	6.72	J-170	PJ-472	235.68	-7,689.30	5,294.89	110	0.71	4.69	6.72	HDPE	145	0.12
PP-628	43.5	16.948	17.006	-3.05838	PJ-472	PJ-470	235.82	-7,666.74	5,308.24	110	0.32	1.09	3.05838	HDPE	145	0.05
PP-629	28.5	16.948	16.848	7.59875	PJ-472	PJ-473	235.82	-7,666.74	5,308.24	125	0.62	3.16	7.59875	HDPE	145	0.09
PP-630	28.5	16.848	16.826	4.47591	PJ-473	PJ-474	235.83	-7,646.09	5,327.91	110	0.47	2.21	4.47591	HDPE	145	0.06
PP-631	147	16.826	16.698	4.11314	PJ-474	PJ-475	235.79	-7,625.77	5,347.57	110	0.43	1.89	4.11314	HDPE	145	0.28
PP-632	15	16.698	16.703	3.86572	PJ-475	PJ-476	235.64	-7,517.63	5,446.86	110	0.41	1.68	3.86572	HDPE	145	0.03
PP-633	34.5	16.703	16.686	1.97772	PJ-476	PJ-477	235.61	-7,504.85	5,439.00	110	0.21	0.49	1.97772	HDPE	145	0.02
PP-634	149.5	16.686	16.692	0.80737	PJ-477	PJ-478	235.61	-7,477.98	5,460.30	110	0.08	0.09	0.80737	HDPE	145	0.01
PP-635	70	16.692	16.661	0.38803	PJ-478	PJ-479	235.59	-7,354.10	5,544.19	110	0.04	0.02	0.38803	HDPE	145	0
PP-636	38.5	16.661	16.69	0.2223	PJ-479	PJ-480	235.62	-7,296.75	5,584.17	110	0.02	0.01	0.2223	HDPE	145	0
PP-637	28	16.69	16.68	0.45773	PJ-480	PJ-481	235.59	-7,276.76	5,551.08	110	0.05	0.03	0.45773	HDPE	145	0
PP-638	27.5	16.68	16.707	0.7779	PJ-481	PJ-482	235.6	-7,262.67	5,527.15	110	0.08	0.09	0.7779	HDPE	145	0
PP-639	31.5	16.707	16.781	1.18574	PJ-482	PJ-468	235.57	-7,248.25	5,503.56	110	0.12	0.19	1.18574	HDPE	145	0.01
PP-640	42	16.781	16.868	-1.12414	PJ-468	PJ-483	235.49	-7,232.55	5,476.13	110	0.12	0.17	1.12414	HDPE	145	0.01
PP-641	36.5	16.868	16.87	-0.62607	PJ-483	PJ-484	235.41	-7,211.55	5,439.65	110	0.07	0.06	0.62607	HDPE	145	0
PP-642	35.5	16.87	16.873	-0.73607	PJ-484	PJ-485	235.41	-7,191.88	5,408.85	110	0.08	0.08	0.73607	HDPE	145	0

PP-643	118	16.873	16.885	-0.86386	PJ-485	PJ-486	235.41	-7,222.36	5,390.83	110	0.09	0.1	0.86386	HDPE	145	0.01
PP-644	81.5	16.885	16.773	-0.82183	PJ-486	PJ-487	235.41	-7,321.99	5,327.91	110	0.09	0.1	0.82183	HDPE	145	0.01
PP-645	37.5	16.773	16.729	-1.00359	PJ-487	PJ-488	235.53	-7,390.80	5,284.32	110	0.11	0.14	1.00359	HDPE	145	0.01
PP-646	35.5	16.729	16.712	-2.35776	PJ-488	PJ-489	235.58	-7,414.07	5,313.49	110	0.25	0.67	2.35776	HDPE	145	0.02
PP-647	37.5	16.712	16.707	2.39064	PJ-489	PJ-490	235.62	-7,437.99	5,339.70	110	0.25	0.69	2.39064	HDPE	145	0.03
PP-648	24	16.707	16.713	1.03762	PJ-490	PJ-491	235.6	-7,459.95	5,369.85	110	0.11	0.15	1.03762	HDPE	145	0
PP-649	33	16.713	16.749	0.95052	PJ-491	PJ-492	235.59	-7,475.03	5,388.53	110	0.1	0.13	0.95052	HDPE	145	0
PP-650	61	16.749	16.799	1.07138	PJ-492	PJ-493	235.55	-7,446.19	5,404.26	110	0.11	0.16	1.07138	HDPE	145	0.01
PP-651	160	16.799	16.68	0.64928	PJ-493	PJ-481	235.49	-7,395.06	5,437.36	110	0.07	0.06	0.64928	HDPE	145	0.01
PP-652	32	16.71	16.74	-0.04893	PJ-494	PJ-495	235.59	-7,502.55	5,403.93	110	0.01	0	0.04893	HDPE	145	0
PP-653	48.5	16.74	16.752	1.06632	PJ-495	PJ-496	235.56	-7,476.01	5,421.63	110	0.11	0.15	1.06632	HDPE	145	0.01
PP-654	122.5	16.752	16.752	0.75303	PJ-496	PJ-497	235.54	-7,435.37	5,447.85	110	0.08	0.08	0.75303	HDPE	145	0.01
PP-655	66.5	16.752	16.69	0.43857	PJ-497	PJ-480	235.53	-7,332.80	5,515.03	110	0.05	0.03	0.43857	HDPE	145	0
PP-656	13	16.676	16.686	-0.01992	PJ-498	PJ-477	235.62	-7,490.76	5,463.25	110	0	0	0.01992	HDPE	145	0
PP-657	36	16.692	16.752	0.02916	PJ-478	PJ-497	235.59	-7,354.10	5,544.19	110	0	0	0.02916	HDPE	145	0
PP-658	33.5	16.703	16.74	1.76119	PJ-476	PJ-495	235.61	-7,504.85	5,439.00	110	0.19	0.39	1.76119	HDPE	145	0.01
PP-659	44.5	16.686	16.752	0.78163	PJ-477	PJ-496	235.61	-7,477.98	5,460.30	110	0.08	0.09	0.78163	HDPE	145	0
PP-660	41.5	16.752	16.799	0.70245	PJ-496	PJ-493	235.54	-7,435.37	5,447.85	110	0.07	0.07	0.70245	HDPE	145	0
PP-661	29	16.799	16.807	0.6794	PJ-493	PJ-499	235.49	-7,395.06	5,437.36	110	0.07	0.07	0.6794	HDPE	145	0
PP-662	49.5	16.807	16.864	0.62926	PJ-499	PJ-500	235.48	-7,367.46	5,428.94	110	0.07	0.06	0.62926	HDPE	145	0
PP-663	52	16.864	16.873	0.3516	PJ-500	PJ-501	235.42	-7,319.61	5,416.82	110	0.04	0.02	0.3516	HDPE	145	0
PP-664	49	16.873	16.873	0.18147	PJ-501	PJ-485	235.41	-7,269.47	5,403.38	110	0.02	0.01	0.18147	HDPE	145	0
PP-665	34.5	16.74	16.749	0.41914	PJ-495	PJ-492	235.56	-7,476.01	5,421.63	110	0.04	0.03	0.41914	HDPE	145	0
PP-666	23.5	16.749	16.749	0.06613	PJ-492	PJ-502	235.55	-7,446.19	5,404.26	110	0.01	0	0.06613	HDPE	145	0
PP-667	41.5	16.749	16.779	-0.10536	PJ-502	PJ-503	235.55	-7,426.12	5,391.58	110	0.01	0	0.10536	HDPE	145	0
PP-668	42	16.779	16.836	0.61783	PJ-503	PJ-504	235.52	-7,390.39	5,370.61	110	0.07	0.06	0.61783	HDPE	145	0
PP-669	39	16.836	16.885	0.40626	PJ-504	PJ-486	235.46	-7,355.00	5,348.33	110	0.04	0.03	0.40626	HDPE	145	0
PP-670	40	16.707	16.749	1.19797	PJ-490	PJ-502	235.6	-7,459.95	5,369.85	110	0.13	0.19	1.19797	HDPE	145	0.01
PP-671	69.5	16.749	16.807	1.10295	PJ-502	PJ-499	235.55	-7,426.12	5,391.58	110	0.12	0.17	1.10295	HDPE	145	0.01
PP-672	140.5	16.807	16.707	0.71252	PJ-499	PJ-482	235.48	-7,367.46	5,428.94	110	0.07	0.07	0.71252	HDPE	145	0.01
PP-673	105.5	16.781	16.864	-0.9567	PJ-468	PJ-500	235.49	-7,232.55	5,476.13	110	0.1	0.13	0.9567	HDPE	145	0.01
PP-674	84.5	16.864	16.779	-1.12419	PJ-500	PJ-503	235.42	-7,319.61	5,416.82	110	0.12	0.17	1.12419	HDPE	145	0.01
PP-675	57	16.779	16.712	-2.19098	PJ-503	PJ-489	235.52	-7,390.39	5,370.61	110	0.23	0.59	2.19098	HDPE	145	0.03
PP-676	36.5	16.712	16.776	-7.19367	PJ-489	PJ-505	235.62	-7,437.99	5,339.70	125	0.59	2.85	7.19367	HDPE	145	0.1
PP-677	113	16.776	16.789	-3.17927	PJ-505	PJ-506	235.66	-7,467.41	5,317.85	110	0.33	1.17	3.17927	HDPE	145	0.13
PP-678	23	16.789	16.823	-5.4768	PJ-506	PJ-507	235.78	-7,553.27	5,244.11	110	0.58	3.21	5.4768	HDPE	145	0.07

PP-679	15	16.823	16.883	-3.4297	PJ-507	PJ-508	235.82	-7,570.96	5,229.69	110	0.36	1.35	3.4297	HDPE	145	0.02
PP-680	44	16.883	17.083	-6.44381	PJ-508	J-172	235.78	-7,581.45	5,219.21	110	0.68	4.34	6.44381	HDPE	145	0.19
PP-681	68.5	16.729	16.836	1.13805	PJ-488	PJ-504	235.58	-7,414.07	5,313.49	110	0.12	0.17	1.13805	HDPE	145	0.01
PP-682	101.5	16.836	16.873	0.96631	PJ-504	PJ-501	235.46	-7,355.00	5,348.33	110	0.1	0.13	0.96631	HDPE	145	0.01
PP-683	68.5	16.873	16.868	0.72259	PJ-501	PJ-483	235.41	-7,269.47	5,403.38	110	0.08	0.08	0.72259	HDPE	145	0.01
PP-684	58.5	16.992	16.842	4.8511	J-171	PJ-509	235.9	-7,635.64	5,218.70	110	0.51	2.56	4.8511	HDPE	145	0.15
PP-685	55	16.842	16.948	-1.94595	PJ-509	PJ-472	235.9	-7,634.94	5,263.10	110	0.2	0.47	1.94595	HDPE	145	0.03
PP-686	18.5	16.848	16.858	0.02832	PJ-473	PJ-510	235.83	-7,646.09	5,327.91	110	0	0	0.02832	HDPE	145	0
PP-687	31	16.826	16.845	0.0474	PJ-474	PJ-511	235.79	-7,625.77	5,347.57	110	0	0	0.0474	HDPE	145	0
PP-688	13.5	16.842	16.781	6.60307	PJ-509	PJ-512	235.9	-7,634.94	5,263.10	110	0.69	4.54	6.60307	HDPE	145	0.06
PP-689	65	16.781	16.823	2.20443	PJ-512	PJ-507	235.9	-7,622.89	5,268.68	110	0.23	0.59	2.20443	HDPE	145	0.04
PP-690	28.5	16.781	16.755	4.2352	PJ-512	PJ-513	235.9	-7,622.89	5,268.68	110	0.45	1.99	4.2352	HDPE	145	0.06
PP-691	114	16.755	16.861	2.61663	PJ-513	PJ-514	235.87	-7,599.61	5,285.25	110	0.28	0.82	2.61663	HDPE	145	0.09
PP-692	29	16.861	16.851	2.39822	PJ-514	PJ-515	235.67	-7,515.41	5,362.24	110	0.25	0.69	2.39822	HDPE	145	0.02
PP-693	36.5	16.851	16.776	4.29847	PJ-515	PJ-505	235.66	-7,494.11	5,342.57	110	0.45	2.05	4.29847	HDPE	145	0.07
PP-694	29.5	16.755	16.747	3.78983	PJ-513	PJ-516	235.87	-7,599.61	5,285.25	110	0.4	1.62	3.78983	HDPE	145	0.05
PP-695	32.5	16.747	16.789	1.3497	PJ-516	PJ-506	235.83	-7,577.34	5,265.89	110	0.14	0.24	1.3497	HDPE	145	0.01
PP-696	113	16.747	16.851	2.17286	PJ-516	PJ-515	235.83	-7,577.34	5,265.89	110	0.23	0.58	2.17286	HDPE	145	0.07
PP-697	36.5	16.755	16.802	-2.48968	PJ-513	PJ-517	235.87	-7,599.61	5,285.25	110	0.26	0.75	2.48968	HDPE	145	0.03
PP-698	26.5	16.802	16.848	-2.93871	PJ-517	PJ-473	235.85	-7,626.50	5,310.13	110	0.31	1.01	2.93871	HDPE	145	0.03
PP-699	115.5	16.802	17.031	0.17642	PJ-517	PJ-518	235.85	-7,626.50	5,310.13	110	0.02	0.01	0.17642	HDPE	145	0
PP-700	87.5	16.883	16.922	2.79035	PJ-508	PJ-519	235.78	-7,581.45	5,219.21	110	0.29	0.92	2.79035	HDPE	145	0.08
PP-701	149.5	16.922	17.012	-0.0914	PJ-519	PJ-451	235.66	-7,560.62	5,134.15	110	0.01	0	0.0914	HDPE	145	0
PP-702	150	16.66	16.88	-0.13408	PJ-452	PJ-520	235.9	-7,500.87	4,993.69	110	0.01	0	0.13408	HDPE	145	0
PP-703	106	16.88	16.789	-0.75157	PJ-520	PJ-506	235.68	-7,531.10	5,140.70	110	0.08	0.08	0.75157	HDPE	145	0.01
PP-704	57.5	16.789	16.749	2.38867	PJ-506	PJ-521	235.78	-7,553.27	5,244.11	110	0.25	0.69	2.38867	HDPE	145	0.04
PP-705	41	16.749	17.107	1.47572	PJ-521	PJ-522	235.78	-7,507.06	5,210.07	110	0.16	0.28	1.47572	HDPE	145	0.01
PP-706	6	17.107	17.106	0.91399	PJ-522	PJ-523	235.41	-7,473.24	5,186.73	110	0.1	0.12	0.91399	HDPE	145	0
PP-707	32	17.106	16.998	1.38761	PJ-523	PJ-524	235.41	-7,469.05	5,182.54	110	0.15	0.25	1.38761	HDPE	145	0.01
PP-708	167	16.998	15.166	1.45313	PJ-524	PJ-455	235.51	-7,442.57	5,164.97	110	0.15	0.27	1.45313	HDPE	145	0.05
PP-709	154	15.646	16.848	-0.79618	PJ-454	PJ-525	236.86	-7,425.09	5,009.67	110	0.08	0.09	0.79618	HDPE	145	0.01
PP-710	24.5	16.848	17.106	0.56912	PJ-525	PJ-523	235.67	-7,462.89	5,158.71	110	0.06	0.05	0.56912	HDPE	145	0
PP-711	60.5	16.749	16.87	-0.35936	PJ-521	PJ-526	235.78	-7,507.06	5,210.07	110	0.04	0.02	0.35936	HDPE	145	0
PP-712	152	16.87	16.141	0.11613	PJ-526	PJ-453	235.66	-7,495.66	5,150.58	110	0.01	0	0.11613	HDPE	145	0
PP-713	30	16.922	16.88	2.47402	PJ-519	PJ-520	235.66	-7,560.62	5,134.15	110	0.26	0.74	2.47402	HDPE	145	0.02
PP-714	37	16.88	16.87	2.59826	PJ-520	PJ-526	235.68	-7,531.10	5,140.70	110	0.27	0.81	2.59826	HDPE	145	0.03

PP-715	34	16.87	16.848	1.68983	PJ-526	PJ-525	235.66	-7,495.66	5,150.58	110	0.18	0.36	1.68983	HDPE	145	0.01
PP-716	102	16.749	16.619	0.87373	PJ-521	PJ-527	235.78	-7,507.06	5,210.07	110	0.09	0.11	0.87373	HDPE	145	0.01
PP-717	39.5	16.619	16.796	0.65761	PJ-527	PJ-528	235.9	-7,445.21	5,290.97	110	0.07	0.06	0.65761	HDPE	145	0
PP-718	98.5	16.796	17.107	-0.33951	PJ-528	PJ-522	235.72	-7,414.80	5,266.06	110	0.04	0.02	0.33951	HDPE	145	0
PP-719	38.5	16.796	16.853	0.72755	PJ-528	PJ-529	235.72	-7,414.80	5,266.06	110	0.08	0.08	0.72755	HDPE	145	0
PP-720	98	16.853	16.998	0.51907	PJ-529	PJ-524	235.66	-7,383.87	5,243.25	110	0.05	0.04	0.51907	HDPE	145	0
PP-721	120	19.351	19.35	0.18329	J-84	PJ-530	235.66	-7,981.00	5,523.58	110	0.02	0.01	0.18329	HDPE	145	0
PP-722	110	19.174	19.174	0.16802	J-85	PJ-531	235.66	-7,955.77	5,498.35	110	0.02	0.01	0.16802	HDPE	145	0
PP-723	97.5	19.028	19.028	0.14894	J-86	PJ-532	235.66	-7,932.83	5,475.73	110	0.02	0	0.14894	HDPE	145	0
PP-724	68.5	18.885	18.885	0.10466	J-87	PJ-533	235.66	-7,908.58	5,452.14	110	0.01	0	0.10466	HDPE	145	0
PP-725	55	18.816	18.836	0.08405	J-88	PJ-534	235.65	-7,894.82	5,437.72	110	0.01	0	0.08405	HDPE	145	0
PP-726	44	18.787	18.797	0.06725	J-89	PJ-535	235.57	-7,876.47	5,407.57	110	0.01	0	0.06725	HDPE	145	0
PP-727	59.5	18.726	18.626	0.09092	J-90	PJ-536	235.51	-7,862.37	5,383.98	110	0.01	0	0.09092	HDPE	145	0
PP-728	60	18.67	18.501	0.09168	J-91	PJ-537	235.47	-7,849.92	5,365.62	110	0.01	0	0.09168	HDPE	145	0
PP-729	70	18.683	19.411	0.10695	PJ-448	PJ-538	237.56	-8,689.18	6,394.51	110	0.01	0	0.10695	HDPE	145	0
PP-730	51.5	20.366	20.346	1.23738	PJ-449	PJ-539	235.89	-8,648.21	6,318.81	110	0.13	0.2	1.23738	HDPE	145	0.01
PP-731	26	20.346	20.339	1.43286	PJ-539	PJ-540	235.9	-8,604.23	6,345.83	110	0.15	0.27	1.43286	HDPE	145	0.01
PP-732	48.5	20.339	19.537	0.69514	PJ-540	PJ-447	235.9	-8,615.05	6,369.43	110	0.07	0.07	0.69514	HDPE	145	0
PP-733	51.5	20.323	20.336	-1.38865	PJ-446	PJ-541	235.9	-8,579.07	6,434.17	110	0.15	0.25	1.38865	HDPE	145	0.01
PP-734	44	20.336	20.345	-1.27105	PJ-541	PJ-542	235.9	-8,555.08	6,388.76	110	0.13	0.21	1.27105	HDPE	145	0.01
PP-735	45.5	20.345	20.357	-1.408	PJ-542	PJ-543	235.9	-8,536.40	6,349.11	110	0.15	0.26	1.408	HDPE	145	0.01
PP-736	5	20.357	20.361	-2.54727	PJ-543	PJ-433	235.9	-8,516.08	6,308.47	110	0.27	0.77	2.54727	HDPE	145	0
PP-737	57	20.357	20.41	0.97507	PJ-543	PJ-544	235.9	-8,516.08	6,308.47	110	0.1	0.13	0.97507	HDPE	145	0.01
PP-738	47.5	20.41	20.346	0.74819	PJ-544	PJ-545	235.84	-8,570.48	6,290.78	110	0.08	0.08	0.74819	HDPE	145	0
PP-739	17	20.346	20.346	0.33984	PJ-545	PJ-539	235.9	-8,595.06	6,331.41	110	0.04	0.02	0.33984	HDPE	145	0
PP-740	63	20.339	20.336	0.52771	PJ-540	PJ-541	235.9	-8,615.05	6,369.43	110	0.06	0.04	0.52771	HDPE	145	0
PP-741	55	20.336	20.336	0.08405	PJ-541	PJ-546	235.9	-8,555.08	6,388.76	110	0.01	0	0.08405	HDPE	145	0
PP-742	61.5	20.346	20.345	0.21589	PJ-545	PJ-542	235.9	-8,595.06	6,331.41	110	0.02	0.01	0.21589	HDPE	145	0
PP-743	40	20.345	20.345	0.06115	PJ-542	PJ-547	235.9	-8,536.40	6,349.11	110	0.01	0	0.06115	HDPE	145	0
PP-744	22	20.41	20.449	0.03366	PJ-544	PJ-548	235.84	-8,570.48	6,290.78	110	0	0	0.03366	HDPE	145	0
PP-745	38	19.115	19.068	2.88634	PJ-441	PJ-549	236.38	-8,054.10	6,437.35	110	0.3	0.98	2.88634	HDPE	145	0.04
PP-746	22.5	19.068	19.028	0.03443	PJ-549	PJ-550	236.39	-8,026.61	6,463.44	110	0	0	0.03443	HDPE	145	0
PP-747	120.5	19.068	19.002	2.57549	PJ-549	PJ-551	236.39	-8,026.61	6,463.44	110	0.27	0.79	2.57549	HDPE	145	0.1
PP-748	29.5	19.002	18.965	2.19363	PJ-551	J-12	236.36	-7,931.99	6,388.47	110	0.23	0.59	2.19363	HDPE	145	0.02
PP-749	60	18.965	18.047	0.09168	J-12	PJ-552	236.38	-7,908.33	6,370.47	110	0.01	0	0.09168	HDPE	145	0
PP-750	50	19.002	18.543	0.07641	PJ-551	PJ-553	236.36	-7,931.99	6,388.47	110	0.01	0	0.07641	HDPE	145	0

PP-751	18	18.46	18.34	0.02755	J-15	PJ-554	236.79	-7,864.91	6,394.64	110	0	0	0.02755	HDPE	145	0
PP-752	36.5	19.157	19.049	3.76149	PJ-442	J-10	236.34	-7,874.19	6,307.55	110	0.4	1.6	3.76149	HDPE	145	0.06
PP-753	96.5	18.396	18.033	22.45384	PJ-443	PJ-555	236.63	-7,711.86	6,199.71	180	0.88	3.97	22.45384	HDPE	145	0.38
PP-754	35	18.033	17.923	4.86902	PJ-555	J-29	236.61	-7,631.31	6,146.38	110	0.51	2.58	4.86902	HDPE	145	0.09
PP-755	90	18.033	17.864	17.24656	PJ-555	PJ-556	236.61	-7,631.31	6,146.38	160	0.86	4.33	17.24656	HDPE	145	0.39
PP-756	33.5	17.864	17.79	4.46401	PJ-556	J-31	236.39	-7,556.76	6,095.99	110	0.47	2.2	4.46401	HDPE	145	0.07
PP-757	182.5	17.864	17.034	12.31526	PJ-556	PJ-557	236.39	-7,556.76	6,095.99	140	0.8	4.45	12.31526	HDPE	145	0.81
PP-758	31	17.034	16.956	2.77071	PJ-557	J-35	236.41	-7,404.37	5,995.22	110	0.29	0.91	2.77071	HDPE	145	0.03
PP-759	71.5	17.034	16.699	9.10933	PJ-557	PJ-558	236.41	-7,404.37	5,995.22	125	0.74	4.42	9.10933	HDPE	145	0.32
PP-760	158	16.699	15.754	6.4519	PJ-558	PJ-559	236.43	-7,344.57	5,955.89	110	0.68	4.35	6.4519	HDPE	145	0.69
PP-761	42.5	15.754	15.743	3.87327	PJ-559	PJ-560	236.69	-7,212.25	5,869.46	110	0.41	1.69	3.87327	HDPE	145	0.07
PP-762	42	15.743	15.704	2.78679	PJ-560	PJ-561	236.63	-7,176.20	5,846.52	110	0.29	0.92	2.78679	HDPE	145	0.04
PP-763	46	15.704	15.663	2.7664	PJ-561	PJ-562	236.63	-7,141.39	5,822.76	110	0.29	0.91	2.7664	HDPE	145	0.04
PP-764	110.5	15.663	15.533	3.6853	PJ-562	PJ-563	236.63	-7,103.29	5,797.37	110	0.39	1.54	3.6853	HDPE	145	0.17
PP-765	57.5	15.533	15.467	1.90149	PJ-563	PJ-564	236.59	-7,011.94	5,735.51	110	0.2	0.45	1.90149	HDPE	145	0.03
PP-766	27	15.467	15.452	2.14338	PJ-564	PJ-465	236.63	-6,963.60	5,704.38	110	0.23	0.56	2.14338	HDPE	145	0.02
PP-767	214	15.409	15.595	0.32682	PJ-464	PJ-565	236.62	-6,911.09	5,669.35	110	0.03	0.02	0.32682	HDPE	145	0
PP-768	74	15.467	15.889	-0.48396	PJ-564	PJ-566	236.63	-6,963.60	5,704.38	110	0.05	0.04	0.48396	HDPE	145	0
PP-769	40	15.889	16.138	-0.14545	PJ-566	PJ-567	236.21	-6,920.71	5,764.92	110	0.02	0	0.14545	HDPE	145	0
PP-770	20.5	16.138	16.068	0.03137	PJ-567	PJ-568	235.96	-6,898.18	5,797.69	110	0	0	0.03137	HDPE	145	0
PP-771	79	15.533	16.051	1.40661	PJ-563	PJ-569	236.59	-7,011.94	5,735.51	110	0.15	0.26	1.40661	HDPE	145	0.02
PP-772	55	16.051	15.889	0.59662	PJ-569	PJ-566	236.05	-6,964.23	5,798.71	110	0.06	0.05	0.59662	HDPE	145	0
PP-773	37.5	16.051	16.309	0.54806	PJ-569	PJ-570	236.05	-6,964.23	5,798.71	110	0.06	0.05	0.54806	HDPE	145	0
PP-774	53.5	16.309	16.138	0.35096	PJ-570	PJ-567	235.79	-6,941.70	5,828.92	110	0.04	0.02	0.35096	HDPE	145	0
PP-775	19	16.309	16.179	0.02908	PJ-570	PJ-571	235.79	-6,941.70	5,828.92	110	0	0	0.02908	HDPE	145	0
PP-776	117.5	15.663	17.047	-1.33733	PJ-562	PJ-572	236.63	-7,103.29	5,797.37	110	0.14	0.24	1.33733	HDPE	145	0.03
PP-777	45.5	17.047	17.163	-1.64284	PJ-572	PJ-573	235.27	-7,037.46	5,894.46	110	0.17	0.35	1.64284	HDPE	145	0.02
PP-778	41	17.163	15.483	-2.30593	PJ-573	PJ-574	235.17	-7,073.81	5,921.60	110	0.24	0.65	2.30593	HDPE	145	0.03
PP-779	38	15.483	15.499	-1.83873	PJ-574	PJ-575	236.88	-7,107.09	5,945.67	110	0.19	0.42	1.83873	HDPE	145	0.02
PP-780	123	15.499	15.754	-2.08462	PJ-575	PJ-559	236.88	-7,137.82	5,967.69	110	0.22	0.54	2.08462	HDPE	145	0.07
PP-781	121	15.743	15.483	0.77264	PJ-560	PJ-574	236.63	-7,176.20	5,846.52	110	0.08	0.09	0.77264	HDPE	145	0.01
PP-782	119.5	15.704	17.163	-0.2965	PJ-561	PJ-573	236.63	-7,141.39	5,822.76	110	0.03	0.01	0.2965	HDPE	145	0
PP-783	17	17.163	17.163	0.02603	PJ-573	PJ-576	235.17	-7,073.81	5,921.60	110	0	0	0.02603	HDPE	145	0
PP-784	18.5	17.047	16.998	0.02832	PJ-572	PJ-577	235.27	-7,037.46	5,894.46	110	0	0	0.02832	HDPE	145	0
PP-785	47.5	16.699	16.61	2.23442	PJ-558	PJ-578	236.43	-7,344.57	5,955.89	110	0.24	0.61	2.23442	HDPE	145	0.03
PP-786	24	16.61	16.71	-8.83912	PJ-578	J-36	236.49	-7,318.09	5,995.56	125	0.72	4.18	8.83912	HDPE	145	0.1

PP-787	27	16.541	16.61	-0.0413	PJ-579	PJ-578	236.56	-7,295.02	5,981.30	110	0	0	0.0413	HDPE	145	0
PP-788	44.5	16.61	16.375	10.81384	PJ-578	PJ-580	236.49	-7,318.09	5,995.56	140	0.7	3.49	10.81384	HDPE	145	0.16
PP-789	72.5	16.375	16.803	-24.09564	PJ-580	J-33	236.57	-7,292.29	6,032.06	180	0.95	4.53	24.09564	HDPE	145	0.33
PP-790	23	16.375	16.375	-0.03519	PJ-581	PJ-580	236.57	-7,272.73	6,020.12	110	0	0	0.03519	HDPE	145	0
PP-791	171.5	16.375	15.837	34.3986	PJ-580	J-306	236.57	-7,292.29	6,032.06	200	1.09	5.24	34.3986	HDPE	145	0.9
PP-792	65	15.837	15.296	10.94859	J-306	J-247	236.21	-7,266.01	6,197.69	140	0.71	3.58	10.94859	HDPE	145	0.23
PP-793	31.5	15.397	15.327	0.04817	J-403	PJ-582	236.21	-7,363.32	6,254.77	110	0.01	0	0.04817	HDPE	145	0
PP-794	93	15.356	14.936	-3.18779	J-401	J-249	236.18	-7,365.80	6,317.38	110	0.34	1.18	3.18779	HDPE	145	0.11
PP-795	23.5	14.577	14.547	0.03595	J-254	PJ-583	236.84	-7,172.81	6,449.62	110	0	0	0.03595	HDPE	145	0
PP-796	27.5	14.285	14.315	0.04206	J-348	PJ-584	236.83	-7,010.65	6,377.58	110	0	0	0.04206	HDPE	145	0
PP-797	19	14.353	14.264	0.02908	J-328	PJ-585	236.39	-6,635.73	6,001.07	110	0	0	0.02908	HDPE	145	0
PP-798	37	14.222	14.222	0.05656	J-330	PJ-586	236.52	-6,625.26	5,940.33	110	0.01	0	0.05656	HDPE	145	0
PP-799	27	14.221	14.221	0.0413	J-331	PJ-587	236.52	-6,593.00	5,928.55	110	0	0	0.0413	HDPE	145	0
PP-800	28	14.221	14.221	0.04282	J-332	PJ-588	236.52	-6,571.50	5,917.80	110	0	0	0.04282	HDPE	145	0
	47090.5															

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	27.5	110	PVC	355	HDPE	Replacement
P-10	J-9	J-10	76.5	110	PVC	110	uPVC	Retained
P-100	J-80	J-68	40	110	PVC	140	HDPE	Replacement
P-101	J-80	J-72	102.5	110	PVC	110	uPVC	Retained
P-102	J-73	J-79	103	110	PVC	110	uPVC	Retained
P-103	J-79	J-81	57	110	PVC	110	uPVC	Retained
P-104	J-82	J-78	52	110	PVC	110	uPVC	Retained
P-105	J-78	J-74	104.5	110	PVC	110	uPVC	Retained
P-106	J-77	J-83	55	110	PVC	110	uPVC	Retained
P-107	J-71	J-84	26.5	110	PVC	140	HDPE	Replacement
P-108	J-84	J-85	35.5	110	PVC	125	HDPE	Replacement
P-109	J-85	J-86	32	110	PVC	125	HDPE	Replacement
P-11	J-10	J-11	40.5	110	PVC	110	uPVC	Retained
P-110	J-86	J-87	34	110	PVC	125	HDPE	Replacement
P-111	J-87	J-88	20	110	PVC	125	HDPE	Replacement
P-112	J-88	J-89	35.5	110	PVC	125	HDPE	Replacement
P-113	J-89	J-90	27.5	110	PVC	110	uPVC	Retained
P-114	J-90	J-91	22	110	PVC	110	uPVC	Retained
P-115	J-91	J-92	67	110	PVC	110	uPVC	Retained
P-116	J-92	J-93	43	110	PVC	110	uPVC	Retained
P-117	J-92	J-94	36.5	110	PVC	110	uPVC	Retained
P-118	J-94	J-95	35	110	PVC	110	uPVC	Retained
P-119	J-95	J-96	79.5	110	PVC	110	uPVC	Retained
P-12	J-11	J-12	23.5	110	PVC	110	uPVC	Retained
P-120	J-96	J-97	38.5	110	PVC	110	uPVC	Retained
P-121	J-97	J-90	37.5	110	PVC	110	uPVC	Retained
P-122	J-98	J-97	60	110	PVC	110	uPVC	Retained
P-123	J-97	J-99	30.5	110	PVC	110	uPVC	Retained
P-124	J-99	J-100	35.5	110	PVC	140	HDPE	Replacement
P-125	J-100	J-71	158.5	110	PVC	125	HDPE	Replacement
P-126	J-89	J-99	39.5	110	PVC	110	uPVC	Retained
P-127	J-99	J-101	69	110	PVC	110	uPVC	Retained
P-128	J-101	J-102	18	110	PVC	110	uPVC	Retained
P-129	J-102	J-96	20	110	PVC	110	uPVC	Retained
P-13	J-12	J-13	9	110	PVC	110	uPVC	Retained
P-130	J-102	J-103	83.5	110	PVC	110	uPVC	Retained
P-131	J-103	J-95	26	110	PVC	110	uPVC	Retained
P-132	J-95	J-104	82.5	110	PVC	110	uPVC	Retained
P-133	J-104	J-105	26	110	PVC	125	HDPE	Replacement
P-134	J-105	J-106	24	110	PVC	110	uPVC	Retained
P-135	J-106	J-94	56	110	PVC	125	HDPE	Replacement
P-136	J-103	J-107	80.5	110	PVC	110	uPVC	Retained
P-137	J-107	J-104	30	110	PVC	125	HDPE	Replacement
P-138	J-106	J-108	137.5	110	PVC	110	uPVC	Retained
P-139	J-108	J-109	11	110	PVC	110	uPVC	Retained
P-14	J-11	J-14	35	110	PVC	125	HDPE	Replacement
P-140	J-109	J-110	52.5	110	PVC	110	uPVC	Retained
P-141	J-110	J-111	30	110	PVC	110	uPVC	Retained
P-142	J-111	J-112	40	110	PVC	125	HDPE	Replacement
P-143	J-112	J-105	16	110	PVC	140	HDPE	Replacement
P-144	J-88	J-100	39	110	PVC	110	uPVC	Retained
P-145	J-100	J-113	49.5	110	PVC	110	uPVC	Retained
P-146	J-113	J-114	101.5	110	PVC	110	uPVC	Retained
P-147	J-114	J-115	76	110	PVC	125	HDPE	Replacement
P-148	J-115	J-70	72	110	PVC	140	HDPE	Replacement
P-149	J-115	J-116	56	110	PVC	110	uPVC	Retained
P-15	J-14	J-15	8	110	PVC	110	uPVC	Retained
P-150	J-116	J-117	28.5	110	PVC	110	uPVC	Retained
P-151	J-117	J-118	57	110	PVC	125	HDPE	Replacement

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-118	J-119	53	110	PVC	125	HDPE	Replacement
P-153	J-119	J-120	40	110	PVC	110	uPVC	Retained
P-154	J-120	J-121	16	110	PVC	125	HDPE	Replacement
P-155	J-121	J-122	33.5	110	PVC	125	HDPE	Replacement
P-156	J-122	J-101	34.5	110	PVC	110	uPVC	Retained
P-157	J-120	J-113	48.5	110	PVC	110	uPVC	Retained
P-158	J-122	J-123	7	110	PVC	110	uPVC	Retained
P-159	J-123	J-124	106.5	110	PVC	110	uPVC	Retained
P-16	J-14	J-16	239.5	110	PVC	125	HDPE	Replacement
P-160	J-124	J-125	59.5	110	PVC	110	uPVC	Retained
P-161	J-125	J-107	31	110	PVC	140	HDPE	Replacement
P-162	J-123	J-126	29.5	110	PVC	110	uPVC	Retained
P-163	J-126	J-127	33.5	110	PVC	110	uPVC	Retained
P-164	J-127	J-128	37	110	PVC	110	uPVC	Retained
P-165	J-128	J-129	38.5	110	PVC	110	uPVC	Retained
P-166	J-129	J-121	26.5	110	PVC	110	uPVC	Retained
P-167	J-129	J-130	54	110	PVC	110	uPVC	Retained
P-168	J-130	J-119	24	75	PVC	110	HDPE	Replacement
P-169	J-128	J-131	37.5	110	PVC	110	uPVC	Retained
P-17	J-16	J-17	32	110	PVC	125	HDPE	Replacement
P-170	J-131	J-132	72.5	110	PVC	110	uPVC	Retained
P-171	J-132	J-118	57	110	PVC	110	uPVC	Retained
P-172	J-118	J-114	52	110	PVC	110	uPVC	Retained
P-173	J-117	J-133	153	110	PVC	110	uPVC	Retained
P-174	J-116	J-134	43.5	110	PVC	110	uPVC	Retained
P-175	J-134	J-135	43.5	110	PVC	110	uPVC	Retained
P-176	J-134	J-136	101	160	PVC	160	uPVC	Retained
P-177	J-137	J-132	112.5	110	PVC	110	uPVC	Retained
P-178	J-138	J-139	65	160	PVC	160	uPVC	Retained
P-179	J-139	J-140	30	110	PVC	110	uPVC	Retained
P-18	J-17	J-18	96	110	PVC	110	uPVC	Retained
P-180	J-140	J-131	21	110	PVC	110	uPVC	Retained
P-181	J-139	J-141	217	110	PVC	110	uPVC	Retained
P-182	J-141	J-142	11	110	PVC	110	uPVC	Retained
P-183	J-142	J-143	28.5	110	PVC	110	uPVC	Retained
P-184	J-143	J-144	145.5	110	PVC	110	uPVC	Retained
P-185	J-144	J-140	78	110	PVC	110	uPVC	Retained
P-186	J-144	J-127	34	110	PVC	110	uPVC	Retained
P-187	J-127	J-145	135	110	PVC	110	uPVC	Retained
P-188	J-145	J-146	7	110	PVC	110	uPVC	Retained
P-189	J-146	J-126	106.5	110	PVC	110	uPVC	Retained
P-19	J-17	J-19	95.5	110	PVC	110	uPVC	Retained
P-190	J-146	J-124	23.5	110	PVC	110	uPVC	Retained
P-191	J-147	J-148	110	110	PVC	110	uPVC	Retained
P-192	J-148	J-141	34.5	110	PVC	110	uPVC	Retained
P-193	J-149	J-148	23.5	110	PVC	110	uPVC	Retained
P-194	J-143	J-150	42	110	PVC	110	uPVC	Retained
P-195	J-143	J-151	54	110	PVC	110	uPVC	Retained
P-196	J-151	J-152	25.5	110	PVC	110	uPVC	Retained
P-197	J-152	J-153	16	110	PVC	110	uPVC	Retained
P-198	J-151	J-154	27	110	PVC	110	uPVC	Retained
P-199	J-154	J-155	9.5	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	13.5	110	PVC	315	HDPE	Replacement
P-20	J-19	J-20	98	110	PVC	110	uPVC	Retained
P-200	J-155	J-125	19	110	PVC	110	uPVC	Retained
P-201	J-107	J-156	33.5	110	PVC	110	uPVC	Retained
P-202	J-156	J-157	40.5	110	PVC	110	uPVC	Retained
P-203	J-157	J-158	11.5	110	PVC	110	uPVC	Retained
P-204	J-158	J-159	64.5	110	PVC	110	uPVC	Retained
P-205	J-157	J-160	31.5	110	PVC	110	uPVC	Retained

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-206	J-160	J-104	71.5	110	PVC	110	uPVC	Retained
P-207	J-161	J-160	80	110	PVC	110	uPVC	Retained
P-208	J-160	J-162	43.5	110	PVC	110	uPVC	Retained
P-209	J-162	J-163	83.5	110	PVC	110	uPVC	Retained
P-21	J-20	J-21	151.5	110	PVC	110	uPVC	Retained
P-210	J-112	J-162	75	110	PVC	110	uPVC	Retained
P-211	J-162	J-164	38.5	110	PVC	110	uPVC	Retained
P-212	J-164	J-165	84	110	PVC	110	uPVC	Retained
P-213	J-111	J-164	80.5	110	PVC	110	uPVC	Retained
P-214	J-164	J-166	32	110	PVC	110	uPVC	Retained
P-215	J-166	J-110	83.5	110	PVC	110	uPVC	Retained
P-216	J-167	J-168	55.5	110	PVC	110	uPVC	Retained
P-217	J-168	J-166	33	110	PVC	110	uPVC	Retained
P-218	J-166	J-169	56.5	110	PVC	110	uPVC	Retained
P-219	J-169	J-109	91	110	PVC	110	uPVC	Retained
P-22	J-19	J-22	12	110	PVC	110	uPVC	Retained
P-220	J-109	J-170	15	110	PVC	140	HDPE	Replacement
P-221	J-170	J-171	93	110	PVC	110	uPVC	Retained
P-222	J-171	J-172	37.5	110	PVC	110	uPVC	Retained
P-223	J-172	J-173	55	110	PVC	110	uPVC	Retained
P-224	J-171	J-169	15	110	PVC	140	HDPE	Replacement
P-225	J-169	J-174	35	110	PVC	110	uPVC	Retained
P-226	J-174	J-175	56	110	PVC	110	uPVC	Retained
P-227	J-175	J-176	14.5	110	PVC	110	uPVC	Retained
P-228	J-177	J-178	161	110	PVC	110	uPVC	Retained
P-229	J-178	J-179	39.5	110	PVC	110	uPVC	Retained
P-23	J-22	J-23	43.5	110	PVC	110	uPVC	Retained
P-230	J-179	J-180	28.5	110	PVC	110	uPVC	Retained
P-231	J-178	J-181	47	110	PVC	110	uPVC	Retained
P-232	J-179	J-182	57	110	PVC	110	uPVC	Retained
P-233	J-183	J-184	108	160	PVC	160	uPVC	Retained
P-234	J-184	J-69	133	110	PVC	110	uPVC	Retained
P-235	J-184	J-185	36	110	PVC	140	HDPE	Replacement
P-236	J-185	J-186	30.5	110	PVC	140	HDPE	Replacement
P-237	J-186	J-67	108.5	110	PVC	110	uPVC	Retained
P-238	J-186	J-187	42.5	110	PVC	140	HDPE	Replacement
P-239	J-187	J-66	100	110	PVC	110	uPVC	Retained
P-24	J-23	J-16	93	110	PVC	125	HDPE	Replacement
P-240	J-187	J-188	46	110	PVC	160	HDPE	Replacement
P-241	J-188	J-64	86.5	110	PVC	110	uPVC	Retained
P-242	J-188	J-189	47	110	PVC	160	HDPE	Replacement
P-243	J-189	J-190	32	110	PVC	140	HDPE	Replacement
P-244	J-189	J-191	5.5	110	PVC	110	uPVC	Retained
P-245	J-191	J-192	26	110	PVC	140	HDPE	Replacement
P-246	J-192	J-193	77	110	PVC	110	uPVC	Retained
P-247	J-188	J-194	33.5	110	PVC	110	uPVC	Retained
P-248	J-194	J-195	76.5	110	PVC	110	uPVC	Retained
P-249	J-187	J-196	109.5	110	PVC	110	uPVC	Retained
P-25	J-16	J-24	45	110	PVC	125	HDPE	Replacement
P-250	J-185	J-197	108	110	PVC	110	uPVC	Retained
P-251	J-191	J-198	65.5	110	PVC	160	HDPE	Replacement
P-252	J-198	J-199	107	110	PVC	110	uPVC	Retained
P-253	J-199	J-200	153	110	PVC	110	uPVC	Retained
P-254	J-200	J-54	48	110	PVC	200	HDPE	Replacement
P-255	J-199	J-55	47.5	110	PVC	125	HDPE	Replacement
P-256	J-198	J-56	47	110	PVC	110	uPVC	Retained
P-257	J-201	J-202	86	110	PVC	110	uPVC	Retained
P-258	J-202	J-203	201	110	PVC	110	uPVC	Retained
P-259	J-203	J-204	60.5	110	PVC	110	uPVC	Retained
P-26	J-24	J-9	118.5	110	PVC	160	HDPE	Replacement

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-260	J-204	J-205	37.5	160	PVC	160	uPVC	Retained
P-261	J-205	J-200	27	160	PVC	200	HDPE	Replacement
P-262	J-202	J-206	160	110	PVC	110	uPVC	Retained
P-263	J-206	J-207	52.5	110	PVC	110	uPVC	Retained
P-264	J-207	J-208	23.5	110	PVC	110	uPVC	Retained
P-265	J-208	J-209	52	110	PVC	110	uPVC	Retained
P-266	J-209	J-210	51.5	110	PVC	110	uPVC	Retained
P-267	J-207	J-206	78.5	110	PVC	110	uPVC	Retained
P-268	J-204	J-211	48.5	160	PVC	160	uPVC	Retained
P-269	J-211	J-212	52	160	PVC	160	uPVC	Retained
P-27	J-24	J-25	19.5	110	PVC	110	uPVC	Retained
P-270	J-212	J-213	52	110	PVC	110	uPVC	Retained
P-271	J-213	J-214	45	110	PVC	110	uPVC	Retained
P-272	J-214	J-205	50	160	PVC	160	uPVC	Retained
P-273	J-212	J-215	71	160	PVC	160	uPVC	Retained
P-274	J-215	J-216	44.5	160	PVC	160	uPVC	Retained
P-275	J-216	J-217	25	160	PVC	160	uPVC	Retained
P-276	J-217	J-218	58	110	PVC	110	uPVC	Retained
P-277	J-218	J-219	34.5	110	PVC	110	uPVC	Retained
P-278	J-219	J-220	16.5	110	PVC	110	uPVC	Retained
P-279	J-220	J-221	40	110	PVC	110	uPVC	Retained
P-28	J-24	J-26	97.5	110	PVC	140	HDPE	Replacement
P-280	J-221	J-214	77.5	110	PVC	110	uPVC	Retained
P-281	J-217	J-222	49.5	110	PVC	110	uPVC	Retained
P-282	J-222	J-223	23.5	110	PVC	110	uPVC	Retained
P-283	J-223	J-224	123	110	PVC	110	uPVC	Retained
P-284	J-224	J-225	77	110	PVC	110	uPVC	Retained
P-285	J-225	J-226	60.5	110	PVC	110	uPVC	Retained
P-286	J-226	J-227	48.5	110	PVC	110	uPVC	Retained
P-287	J-227	J-228	49	110	PVC	110	uPVC	Retained
P-288	J-228	J-229	7	110	PVC	110	uPVC	Retained
P-289	J-229	J-222	12.5	110	PVC	110	uPVC	Retained
P-29	J-26	J-23	43	110	PVC	110	uPVC	Retained
P-290	J-228	J-223	35	110	PVC	110	uPVC	Retained
P-291	J-229	J-230	21.5	110	PVC	110	uPVC	Retained
P-292	J-230	J-231	17.5	110	PVC	110	uPVC	Retained
P-293	J-231	J-232	18	110	PVC	110	uPVC	Retained
P-294	J-232	J-233	17.5	110	PVC	110	uPVC	Retained
P-295	J-233	J-234	24.5	110	PVC	110	uPVC	Retained
P-296	J-234	J-235	41	110	PVC	110	uPVC	Retained
P-297	J-235	J-236	8	110	PVC	110	uPVC	Retained
P-298	J-236	J-237	7	110	PVC	110	uPVC	Retained
P-299	J-237	J-238	41	110	PVC	110	uPVC	Retained
P-3	J-2	J-3	42.5	110	PVC	250	HDPE	Replacement
P-30	J-23	J-27	93.5	110	PVC	125	HDPE	Replacement
P-300	J-238	J-239	12	110	PVC	110	uPVC	Retained
P-301	J-239	J-240	14.5	110	PVC	110	uPVC	Retained
P-302	J-238	J-241	16	110	PVC	110	uPVC	Retained
P-303	J-241	J-242	47.5	110	PVC	110	uPVC	Retained
P-304	J-242	J-243	6.5	110	PVC	110	uPVC	Retained
P-305	J-243	J-218	15.5	110	PVC	110	uPVC	Retained
P-306	J-242	J-230	119.5	110	PVC	110	uPVC	Retained
P-307	J-232	J-244	70	110	PVC	110	uPVC	Retained
P-308	J-244	J-235	20	110	PVC	110	uPVC	Retained
P-309	J-244	J-245	19.5	110	PVC	110	uPVC	Retained
P-31	J-27	J-28	42	110	PVC	110	uPVC	Retained
P-310	J-227	J-246	72.5	110	PVC	110	uPVC	Retained
P-311	J-247	J-248	60	110	PVC	110	uPVC	Retained
P-312	J-248	J-249	13.5	110	PVC	125	HDPE	Replacement
P-313	J-249	J-250	63.5	110	PVC	110	uPVC	Retained

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-314	J-250	J-251	79.5	110	PVC	110	uPVC	Retained
P-315	J-251	J-252	46	110	PVC	110	uPVC	Retained
P-316	J-252	J-253	62.5	110	PVC	110	uPVC	Retained
P-317	J-253	J-254	17.5	110	PVC	110	uPVC	Retained
P-318	J-254	J-255	18.5	110	PVC	110	uPVC	Retained
P-319	J-255	J-256	123.5	110	PVC	110	uPVC	Retained
P-32	J-28	J-22	96.5	110	PVC	110	uPVC	Retained
P-320	J-256	J-257	8	110	PVC	110	uPVC	Retained
P-321	J-257	J-258	25	110	PVC	110	uPVC	Retained
P-322	J-258	J-250	37	110	PVC	110	uPVC	Retained
P-323	J-258	J-259	74	110	PVC	110	uPVC	Retained
P-324	J-259	J-253	48.5	110	PVC	110	uPVC	Retained
P-325	J-251	J-259	54.5	110	PVC	110	uPVC	Retained
P-326	J-248	J-260	44	110	PVC	110	uPVC	Retained
P-327	J-260	J-261	33	110	PVC	140	HDPE	Replacement
P-328	J-261	J-262	38.5	110	PVC	125	HDPE	Replacement
P-329	J-262	J-263	37.5	110	PVC	110	uPVC	Retained
P-33	J-29	J-26	15.5	110	PVC	110	uPVC	Retained
P-330	J-263	J-264	42	110	PVC	110	uPVC	Retained
P-331	J-264	J-265	37	110	PVC	110	uPVC	Retained
P-332	J-265	J-266	36.5	110	PVC	110	uPVC	Retained
P-333	J-266	J-267	35	110	PVC	110	uPVC	Retained
P-334	J-267	J-268	38	110	PVC	110	uPVC	Retained
P-335	J-268	J-269	33.5	110	PVC	110	uPVC	Retained
P-336	J-269	J-270	37	110	PVC	110	uPVC	Retained
P-337	J-270	J-271	32	110	PVC	110	uPVC	Retained
P-338	J-271	J-272	37	110	PVC	110	uPVC	Retained
P-339	J-272	J-273	31	110	PVC	110	uPVC	Retained
P-34	J-26	J-30	90	110	PVC	140	HDPE	Replacement
P-340	J-273	J-274	27.5	110	PVC	110	uPVC	Retained
P-341	J-274	J-275	26	110	PVC	110	uPVC	Retained
P-342	J-275	J-276	31.5	110	PVC	110	uPVC	Retained
P-343	J-276	J-277	71	110	PVC	110	uPVC	Retained
P-344	J-277	J-278	29	110	PVC	110	uPVC	Retained
P-345	J-278	J-279	29	110	PVC	110	uPVC	Retained
P-346	J-279	J-280	26	110	PVC	110	uPVC	Retained
P-347	J-280	J-281	28.5	110	PVC	110	uPVC	Retained
P-348	J-281	J-282	7.5	110	PVC	110	uPVC	Retained
P-349	J-282	J-283	20	110	PVC	110	uPVC	Retained
P-35	J-30	J-27	43.5	110	PVC	110	uPVC	Retained
P-350	J-283	J-284	7.5	110	PVC	110	uPVC	Retained
P-351	J-284	J-285	24.5	110	PVC	110	uPVC	Retained
P-352	J-285	J-286	12.5	110	PVC	110	uPVC	Retained
P-353	J-286	J-287	17	110	PVC	110	uPVC	Retained
P-354	J-287	J-288	20.5	110	PVC	110	uPVC	Retained
P-355	J-288	J-289	13.5	110	PVC	110	uPVC	Retained
P-356	J-289	J-290	18.5	110	PVC	110	uPVC	Retained
P-357	J-290	J-291	9.5	110	PVC	110	uPVC	Retained
P-358	J-291	J-292	29.5	110	PVC	110	uPVC	Retained
P-359	J-292	J-293	28	110	PVC	110	uPVC	Retained
P-36	J-31	J-30	18	110	PVC	110	uPVC	Retained
P-360	J-293	J-294	7	110	PVC	110	uPVC	Retained
P-361	J-294	J-295	26	110	PVC	110	uPVC	Retained
P-362	J-295	J-296	10.5	110	PVC	110	uPVC	Retained
P-363	J-296	J-297	7.5	110	PVC	110	uPVC	Retained
P-364	J-297	J-298	20.5	110	PVC	110	uPVC	Retained
P-365	J-298	J-299	9.5	110	PVC	110	uPVC	Retained
P-366	J-299	J-300	19.5	110	PVC	110	uPVC	Retained
P-367	J-300	J-301	21.5	110	PVC	110	uPVC	Retained
P-368	J-301	J-302	24.5	110	PVC	110	uPVC	Retained

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-369	J-302	J-303	12.5	110	PVC	110	uPVC	Retained
P-37	J-30	J-32	182.5	110	PVC	140	HDPE	Replacement
P-370	J-303	J-304	29.5	110	PVC	110	uPVC	Retained
P-371	J-304	J-305	9.5	110	PVC	110	uPVC	Retained
P-372	J-305	J-256	25	110	PVC	110	uPVC	Retained
P-373	J-306	J-260	71	110	PVC	180	HDPE	Replacement
P-374	J-260	J-257	73	110	PVC	110	uPVC	Retained
P-375	J-307	J-261	69	110	PVC	110	uPVC	Retained
P-376	J-261	J-305	74	110	PVC	110	uPVC	Retained
P-377	J-303	J-262	72.5	110	PVC	110	uPVC	Retained
P-378	J-262	J-308	69.5	110	PVC	110	uPVC	Retained
P-379	J-309	J-263	71	110	PVC	110	uPVC	Retained
P-38	J-32	J-33	46.5	110	PVC	110	uPVC	Retained
P-380	J-263	J-301	71.5	110	PVC	110	uPVC	Retained
P-381	J-299	J-264	72	110	PVC	110	uPVC	Retained
P-382	J-264	J-310	69.5	110	PVC	110	uPVC	Retained
P-383	J-311	J-265	73.5	110	PVC	110	uPVC	Retained
P-384	J-265	J-296	70.5	110	PVC	110	uPVC	Retained
P-385	J-294	J-266	70	110	PVC	110	uPVC	Retained
P-386	J-266	J-312	72.5	110	PVC	110	uPVC	Retained
P-387	J-313	J-292	116	110	PVC	110	uPVC	Retained
P-388	J-292	J-267	71.5	110	PVC	110	uPVC	Retained
P-389	J-267	J-314	69	110	PVC	110	uPVC	Retained
P-39	J-33	J-27	180.5	110	PVC	140	HDPE	Replacement
P-390	J-315	J-268	70.5	110	PVC	110	uPVC	Retained
P-391	J-268	J-290	72	110	PVC	110	uPVC	Retained
P-392	J-288	J-269	71	110	PVC	110	uPVC	Retained
P-393	J-269	J-316	70.5	110	PVC	110	uPVC	Retained
P-394	J-286	J-270	71.5	110	PVC	110	uPVC	Retained
P-395	J-270	J-317	69	110	PVC	110	uPVC	Retained
P-396	J-318	J-271	72.5	110	PVC	110	uPVC	Retained
P-397	J-271	J-284	70	110	PVC	110	uPVC	Retained
P-398	J-281	J-272	72.5	110	PVC	110	uPVC	Retained
P-399	J-272	J-319	70	110	PVC	110	uPVC	Retained
P-4	J-3	J-4	52.5	110	PVC	250	HDPE	Replacement
P-40	J-20	J-28	33	110	PVC	110	uPVC	Retained
P-400	J-320	J-273	68	110	PVC	110	uPVC	Retained
P-401	J-273	J-280	71	110	PVC	110	uPVC	Retained
P-402	J-280	J-321	44.5	110	PVC	110	uPVC	Retained
P-403	J-279	J-274	69.5	110	PVC	110	uPVC	Retained
P-404	J-274	J-322	72.5	110	PVC	110	uPVC	Retained
P-405	J-323	J-275	71	110	PVC	110	uPVC	Retained
P-406	J-275	J-278	69	110	PVC	110	uPVC	Retained
P-407	J-324	J-325	23	110	PVC	110	uPVC	Retained
P-408	J-325	J-276	48.5	110	PVC	110	uPVC	Retained
P-409	J-276	J-326	35	110	PVC	110	uPVC	Retained
P-41	J-28	J-34	179	110	PVC	125	HDPE	Replacement
P-410	J-326	J-327	35.5	110	PVC	110	uPVC	Retained
P-411	J-327	J-328	33	110	PVC	110	uPVC	Retained
P-412	J-328	J-329	51.5	110	PVC	110	uPVC	Retained
P-413	J-329	J-330	32.5	110	PVC	110	uPVC	Retained
P-414	J-330	J-331	34.5	110	PVC	110	uPVC	Retained
P-415	J-331	J-332	24	110	PVC	110	uPVC	Retained
P-416	J-332	J-333	17.5	110	PVC	110	uPVC	Retained
P-417	J-325	J-334	36	110	PVC	110	uPVC	Retained
P-418	J-334	J-326	49	110	PVC	110	uPVC	Retained
P-419	J-326	J-335	54	110	PVC	110	uPVC	Retained
P-42	J-34	J-33	40.5	110	PVC	110	uPVC	Retained
P-420	J-334	J-336	36	110	PVC	110	uPVC	Retained
P-421	J-336	J-327	49	110	PVC	110	uPVC	Retained

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-422	J-327	J-337	36.5	110	PVC	110	uPVC	Retained
P-423	J-336	J-329	33	110	PVC	110	uPVC	Retained
P-424	J-298	J-338	48	110	PVC	110	uPVC	Retained
P-425	J-297	J-339	47	110	PVC	110	uPVC	Retained
P-426	J-295	J-340	50.5	110	PVC	110	uPVC	Retained
P-427	J-293	J-341	121	110	PVC	110	uPVC	Retained
P-428	J-341	J-313	30.5	110	PVC	110	uPVC	Retained
P-429	J-313	J-342	26.5	110	PVC	110	uPVC	Retained
P-43	J-35	J-32	18	110	PVC	110	uPVC	Retained
P-430	J-342	J-343	29.5	110	PVC	110	uPVC	Retained
P-431	J-343	J-344	33.5	110	PVC	110	uPVC	Retained
P-432	J-344	J-345	30.5	110	PVC	110	uPVC	Retained
P-433	J-345	J-346	33.5	110	PVC	110	uPVC	Retained
P-434	J-346	J-347	26.5	110	PVC	110	uPVC	Retained
P-435	J-347	J-282	53	110	PVC	110	uPVC	Retained
P-436	J-283	J-346	63	110	PVC	110	uPVC	Retained
P-437	J-285	J-345	78.5	110	PVC	110	uPVC	Retained
P-438	J-287	J-344	93.5	110	PVC	110	uPVC	Retained
P-439	J-289	J-343	104.5	110	PVC	110	uPVC	Retained
P-44	J-32	J-36	47	110	PVC	125	HDPE	Replacement
P-440	J-291	J-342	111	110	PVC	110	uPVC	Retained
P-441	J-341	J-348	66	110	PVC	110	uPVC	Retained
P-442	J-348	J-349	9	110	PVC	110	uPVC	Retained
P-443	J-349	J-350	69	110	PVC	110	uPVC	Retained
P-444	J-349	J-351	30	110	PVC	110	uPVC	Retained
P-445	J-351	J-300	124	110	PVC	110	uPVC	Retained
P-446	J-304	J-352	121	110	PVC	110	uPVC	Retained
P-447	J-352	J-353	25.5	110	PVC	110	uPVC	Retained
P-448	J-353	J-354	18.5	110	PVC	110	uPVC	Retained
P-449	J-354	J-355	17.5	110	PVC	110	uPVC	Retained
P-45	J-6	J-37	77.5	110	PVC	125	HDPE	Replacement
P-450	J-355	J-356	121.5	110	PVC	110	uPVC	Retained
P-451	J-356	J-357	18.5	110	PVC	110	uPVC	Retained
P-452	J-351	J-355	27.5	110	PVC	110	uPVC	Retained
P-453	J-302	J-354	121.5	110	PVC	110	uPVC	Retained
P-454	J-353	J-358	103.5	110	PVC	110	uPVC	Retained
P-455	J-358	J-356	40.5	110	PVC	110	uPVC	Retained
P-456	J-358	J-359	47.5	110	PVC	110	uPVC	Retained
P-457	J-359	J-360	52	160	PVC	160	uPVC	Retained
P-458	J-360	J-361	33	110	PVC	110	uPVC	Retained
P-459	J-361	J-352	19	110	PVC	110	uPVC	Retained
P-46	J-37	J-3	84	110	PVC	160	HDPE	Replacement
P-460	J-255	J-361	13.5	110	PVC	110	uPVC	Retained
P-461	J-360	J-362	45	110	PVC	110	uPVC	Retained
P-462	J-359	J-362	24.5	110	PVC	110	uPVC	Retained
P-463	J-362	J-363	109	110	PVC	110	uPVC	Retained
P-464	J-363	J-364	87.5	110	PVC	110	uPVC	Retained
P-465	J-364	J-365	36.5	110	PVC	110	uPVC	Retained
P-466	J-365	J-366	36.5	110	PVC	110	uPVC	Retained
P-467	J-366	J-367	44.5	110	PVC	110	uPVC	Retained
P-468	J-367	J-368	37.5	110	PVC	110	uPVC	Retained
P-469	J-368	J-369	33.5	110	PVC	110	uPVC	Retained
P-47	J-2	J-38	63	110	PVC	250	HDPE	Replacement
P-470	J-369	J-370	78	110	PVC	110	uPVC	Retained
P-471	J-370	J-371	43.5	110	PVC	110	uPVC	Retained
P-472	J-371	J-372	37.5	110	PVC	110	uPVC	Retained
P-473	J-372	J-373	39.5	110	PVC	110	uPVC	Retained
P-474	J-373	J-374	24	110	PVC	110	uPVC	Retained
P-475	J-374	J-375	26.5	110	PVC	110	uPVC	Retained
P-476	J-375	J-376	31	110	PVC	110	uPVC	Retained

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-477	J-376	J-377	35	110	PVC	110	uPVC	Retained
P-478	J-377	J-378	67	110	PVC	110	uPVC	Retained
P-479	J-378	J-379	7.5	110	PVC	110	uPVC	Retained
P-48	J-38	J-39	38.5	110	PVC	160	HDPE	Replacement
P-480	J-379	J-380	61.5	110	PVC	110	uPVC	Retained
P-481	J-380	J-377	35	110	PVC	110	uPVC	Retained
P-482	J-380	J-381	35.5	110	PVC	110	uPVC	Retained
P-483	J-381	J-376	49	110	PVC	110	uPVC	Retained
P-484	J-381	J-382	25.5	110	PVC	110	uPVC	Retained
P-485	J-382	J-375	63.5	110	PVC	110	uPVC	Retained
P-486	J-382	J-383	29	110	PVC	110	uPVC	Retained
P-487	J-383	J-374	73.5	160	PVC	160	uPVC	Retained
P-488	J-383	J-384	20.5	110	PVC	110	uPVC	Retained
P-489	J-384	J-373	83.5	110	PVC	110	uPVC	Retained
P-49	J-39	J-37	51	110	PVC	125	HDPE	Replacement
P-490	J-384	J-385	36.5	110	PVC	110	uPVC	Retained
P-491	J-385	J-372	99	110	PVC	110	uPVC	Retained
P-492	J-385	J-386	32.5	110	PVC	110	uPVC	Retained
P-493	J-386	J-371	117	110	PVC	110	uPVC	Retained
P-494	J-386	J-387	33	110	PVC	110	uPVC	Retained
P-495	J-387	J-388	127	110	PVC	110	uPVC	Retained
P-496	J-388	J-370	7	110	PVC	110	uPVC	Retained
P-497	J-388	J-389	34.5	110	PVC	110	uPVC	Retained
P-498	J-389	J-390	31	110	PVC	110	uPVC	Retained
P-499	J-390	J-369	46.5	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	195	110	PVC	110	uPVC	Retained
P-50	J-39	J-40	44.5	110	PVC	180	HDPE	Replacement
P-500	J-387	J-391	36	110	PVC	110	uPVC	Retained
P-501	J-391	J-389	126	110	PVC	110	uPVC	Retained
P-502	J-391	J-392	35	110	PVC	110	uPVC	Retained
P-503	J-392	J-390	125	110	PVC	110	uPVC	Retained
P-504	J-392	J-393	33.5	110	PVC	110	uPVC	Retained
P-505	J-393	J-368	177	110	PVC	110	uPVC	Retained
P-506	J-393	J-394	35.5	110	PVC	110	uPVC	Retained
P-507	J-394	J-395	31.5	110	PVC	110	uPVC	Retained
P-508	J-395	J-367	163.5	110	PVC	110	uPVC	Retained
P-509	J-395	J-396	38	110	PVC	110	uPVC	Retained
P-51	J-40	J-41	42	110	PVC	140	HDPE	Replacement
P-510	J-396	J-366	180.5	110	PVC	110	uPVC	Retained
P-511	J-396	J-397	32	110	PVC	110	uPVC	Retained
P-512	J-397	J-365	196	160	PVC	160	uPVC	Retained
P-513	J-397	J-398	33	160	PVC	160	uPVC	Retained
P-514	J-398	J-399	38.5	110	PVC	110	uPVC	Retained
P-515	J-399	J-364	243.5	110	PVC	110	uPVC	Retained
P-516	J-399	J-400	37	110	PVC	125	HDPE	Replacement
P-517	J-400	J-401	55.5	110	PVC	110	uPVC	Retained
P-518	J-401	J-402	182	110	PVC	110	uPVC	Retained
P-519	J-400	J-403	28	110	PVC	110	uPVC	Retained
P-52	J-41	J-42	31.5	110	PVC	160	HDPE	Replacement
P-520	J-403	J-247	50	110	PVC	110	uPVC	Retained
P-53	J-42	J-43	16	110	PVC	180	HDPE	Replacement
P-54	J-43	J-38	21	110	PVC	180	HDPE	Replacement
P-55	J-43	J-44	104.5	110	PVC	110	uPVC	Retained
P-56	J-44	J-45	3.5	110	PVC	225	HDPE	Replacement
P-57	J-45	J-1	70	110	PVC	250	HDPE	Replacement
P-58	J-45	J-46	91.5	110	PVC	140	HDPE	Replacement
P-59	J-46	J-47	24	110	PVC	140	HDPE	Replacement
P-6	J-4	J-6	82.5	110	PVC	250	HDPE	Replacement
P-60	J-47	J-48	27.5	110	PVC	110	uPVC	Retained
P-61	J-48	J-49	66	110	PVC	160	HDPE	Replacement

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-62	J-44	J-49	16	110	PVC	225	HDPE	Replacement
P-63	J-49	J-50	7.5	110	PVC	180	HDPE	Replacement
P-64	J-50	J-42	105	110	PVC	110	uPVC	Retained
P-65	J-41	J-51	102	110	PVC	110	uPVC	Retained
P-66	J-51	J-50	31.5	110	PVC	180	HDPE	Replacement
P-67	J-51	J-52	19	110	PVC	200	HDPE	Replacement
P-68	J-52	J-53	147	110	PVC	110	uPVC	Retained
P-69	J-53	J-40	16.5	110	PVC	200	HDPE	Replacement
P-7	J-6	J-7	216	110	PVC	250	HDPE	Replacement
P-70	J-53	J-54	34.5	110	PVC	200	HDPE	Replacement
P-71	J-54	J-55	148	110	PVC	110	uPVC	Retained
P-72	J-55	J-56	108.5	110	PVC	160	HDPE	Replacement
P-73	J-56	J-57	39.5	110	PVC	140	HDPE	Replacement
P-74	J-57	J-58	44	160	PVC	200	HDPE	Replacement
P-75	J-58	J-59	32.5	110	PVC	200	HDPE	Replacement
P-76	J-59	J-60	36.5	110	PVC	160	HDPE	Replacement
P-77	J-60	J-52	59	110	PVC	125	HDPE	Replacement
P-78	J-60	J-48	74	110	PVC	125	HDPE	Replacement
P-79	J-59	J-47	82.5	110	PVC	160	HDPE	Replacement
P-8	J-7	J-8	177.5	110	PVC	250	HDPE	Replacement
P-80	J-58	J-61	15.5	110	PVC	110	uPVC	Retained
P-81	J-61	J-62	29.5	110	PVC	110	uPVC	Retained
P-82	J-57	J-63	9.5	110	PVC	250	HDPE	Replacement
P-83	J-63	J-64	67.5	110	PVC	200	HDPE	Replacement
P-84	J-64	J-65	11	160	PVC	200	HDPE	Replacement
P-85	J-65	J-66	38.5	160	PVC	200	HDPE	Replacement
P-86	J-66	J-67	29	160	PVC	200	HDPE	Replacement
P-87	J-67	J-68	43.5	160	PVC	200	HDPE	Replacement
P-88	J-68	J-69	13.5	110	PVC	180	HDPE	Replacement
P-89	J-69	J-70	40.5	110	PVC	180	HDPE	Replacement
P-9	J-8	J-9	41	110	PVC	160	HDPE	Replacement
P-90	J-70	J-71	48.5	110	PVC	140	HDPE	Replacement
P-91	J-71	J-72	41	110	PVC	140	HDPE	Replacement
P-92	J-72	J-73	30.5	110	PVC	110	uPVC	Retained
P-93	J-73	J-74	34.5	110	PVC	110	uPVC	Retained
P-94	J-74	J-75	21.5	110	PVC	110	uPVC	Retained
P-95	J-75	J-76	6.5	110	PVC	110	uPVC	Retained
P-96	J-75	J-77	104.5	110	PVC	110	uPVC	Retained
P-97	J-77	J-78	33.5	110	PVC	110	uPVC	Retained
P-98	J-78	J-79	32.5	110	PVC	110	uPVC	Retained
P-99	J-79	J-80	33	110	PVC	110	uPVC	Retained
PP-521	J-142	PJ-404	43	#N/A	#N/A	110	HDPE	New
PP-522	J-150	J-152	52	#N/A	#N/A	110	HDPE	New
PP-523	J-145	J-154	58	#N/A	#N/A	110	HDPE	New
PP-524	J-155	PJ-405	18	#N/A	#N/A	110	HDPE	New
PP-525	J-156	PJ-406	61.5	#N/A	#N/A	110	HDPE	New
PP-526	PJ-406	PJ-407	46.5	#N/A	#N/A	110	HDPE	New
PP-527	J-158	PJ-408	34.5	#N/A	#N/A	110	HDPE	New
PP-528	PJ-409	J-161	20.5	#N/A	#N/A	110	HDPE	New
PP-529	J-161	PJ-410	22.5	#N/A	#N/A	110	HDPE	New
PP-530	PJ-410	J-163	24.5	#N/A	#N/A	110	HDPE	New
PP-531	J-163	J-165	38.5	#N/A	#N/A	110	HDPE	New
PP-532	J-165	J-167	33	#N/A	#N/A	110	HDPE	New
PP-533	J-167	J-175	60.5	#N/A	#N/A	110	HDPE	New
PP-534	PJ-410	PJ-411	53	#N/A	#N/A	110	HDPE	New
PP-535	J-168	J-174	59	#N/A	#N/A	110	HDPE	New
PP-536	J-175	J-173	16.5	#N/A	#N/A	110	HDPE	New
PP-537	J-173	PJ-412	19.5	#N/A	#N/A	110	HDPE	New
PP-538	J-130	PJ-413	12.5	#N/A	#N/A	110	HDPE	New
PP-539	J-116	PJ-414	25.5	#N/A	#N/A	110	HDPE	New

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-540	J-192	J-194	47	#N/A	#N/A	125	HDPE	New
PP-541	J-190	J-63	18	#N/A	#N/A	140	HDPE	New
PP-542	J-61	PJ-415	44	#N/A	#N/A	110	HDPE	New
PP-543	J-65	PJ-416	66	#N/A	#N/A	110	HDPE	New
PP-544	J-55	J-52	38.5	#N/A	#N/A	180	HDPE	New
PP-545	PJ-417	J-5	102.5	#N/A	#N/A	110	HDPE	New
PP-546	J-5	PJ-418	72.5	#N/A	#N/A	110	HDPE	New
PP-547	PJ-418	PJ-419	72.5	#N/A	#N/A	110	HDPE	New
PP-548	PJ-420	PJ-418	41.5	#N/A	#N/A	110	HDPE	New
PP-549	J-46	PJ-421	11.5	#N/A	#N/A	110	HDPE	New
PP-550	J-209	J-211	55	#N/A	#N/A	110	HDPE	New
PP-551	J-208	J-203	89.5	#N/A	#N/A	110	HDPE	New
PP-552	J-224	J-212	40.5	#N/A	#N/A	110	HDPE	New
PP-553	J-225	J-226	71.5	#N/A	#N/A	110	HDPE	New
PP-554	J-215	PJ-422	53.5	#N/A	#N/A	110	HDPE	New
PP-555	PJ-422	J-221	49	#N/A	#N/A	110	HDPE	New
PP-556	J-213	PJ-422	73.5	#N/A	#N/A	110	HDPE	New
PP-557	J-216	J-219	87.5	#N/A	#N/A	110	HDPE	New
PP-558	J-243	PJ-423	30	#N/A	#N/A	110	HDPE	New
PP-559	J-220	PJ-424	20.5	#N/A	#N/A	110	HDPE	New
PP-560	PJ-424	PJ-425	108	#N/A	#N/A	110	HDPE	New
PP-561	PJ-426	PJ-424	15	#N/A	#N/A	110	HDPE	New
PP-562	J-236	PJ-427	23	#N/A	#N/A	110	HDPE	New
PP-563	J-237	PJ-428	18.5	#N/A	#N/A	110	HDPE	New
PP-564	J-241	PJ-429	18.5	#N/A	#N/A	110	HDPE	New
PP-565	J-239	PJ-430	33.5	#N/A	#N/A	110	HDPE	New
PP-566	J-240	PJ-431	53	#N/A	#N/A	110	HDPE	New
PP-567	J-231	PJ-432	27	#N/A	#N/A	110	HDPE	New
PP-568	J-232	PJ-433	44	#N/A	#N/A	110	HDPE	New
PP-569	PJ-433	PJ-434	28.5	#N/A	#N/A	110	HDPE	New
PP-570	J-233	PJ-435	35.5	#N/A	#N/A	110	HDPE	New
PP-571	PJ-435	PJ-436	23	#N/A	#N/A	110	HDPE	New
PP-572	PJ-436	J-234	39	#N/A	#N/A	110	HDPE	New
PP-573	PJ-435	PJ-437	8.5	#N/A	#N/A	110	HDPE	New
PP-574	PJ-436	PJ-438	140	#N/A	#N/A	110	HDPE	New
PP-575	PJ-438	PJ-439	56	#N/A	#N/A	110	HDPE	New
PP-576	PJ-439	PJ-440	24.5	#N/A	#N/A	110	HDPE	New
PP-577	PJ-440	PJ-441	330	#N/A	#N/A	110	HDPE	New
PP-578	PJ-441	PJ-442	223	#N/A	#N/A	110	HDPE	New
PP-579	PJ-442	J-8	78	#N/A	#N/A	110	HDPE	New
PP-580	J-8	PJ-443	116.5	#N/A	#N/A	180	HDPE	New
PP-581	PJ-443	J-25	30	#N/A	#N/A	110	HDPE	New
PP-582	PJ-440	PJ-444	70	#N/A	#N/A	110	HDPE	New
PP-583	PJ-439	PJ-445	40	#N/A	#N/A	110	HDPE	New
PP-584	PJ-438	PJ-446	134.5	#N/A	#N/A	110	HDPE	New
PP-585	PJ-446	PJ-447	63	#N/A	#N/A	110	HDPE	New
PP-586	PJ-447	PJ-448	54	#N/A	#N/A	110	HDPE	New
PP-587	PJ-448	PJ-449	86	#N/A	#N/A	110	HDPE	New
PP-588	PJ-449	J-246	101	#N/A	#N/A	110	HDPE	New
PP-589	J-246	J-210	230	#N/A	#N/A	110	HDPE	New
PP-590	J-210	J-201	320	#N/A	#N/A	110	HDPE	New
PP-591	J-201	J-193	43.5	#N/A	#N/A	110	HDPE	New
PP-592	J-193	J-195	46.5	#N/A	#N/A	125	HDPE	New
PP-593	J-195	J-196	49	#N/A	#N/A	140	HDPE	New
PP-594	J-196	J-197	83	#N/A	#N/A	140	HDPE	New
PP-595	J-197	J-183	37	#N/A	#N/A	140	HDPE	New
PP-596	J-183	J-136	54.5	#N/A	#N/A	180	HDPE	New
PP-597	J-136	J-133	35.5	#N/A	#N/A	160	HDPE	New
PP-598	J-133	J-137	57.5	#N/A	#N/A	140	HDPE	New
PP-599	J-137	J-138	57.5	#N/A	#N/A	140	HDPE	New

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-600	J-138	J-149	211	#N/A	#N/A	110	HDPE	New
PP-601	J-149	J-177	230	#N/A	#N/A	110	HDPE	New
PP-602	J-177	PJ-450	16.5	#N/A	#N/A	110	HDPE	New
PP-603	PJ-450	J-181	163.5	#N/A	#N/A	110	HDPE	New
PP-604	J-181	J-182	37.5	#N/A	#N/A	110	HDPE	New
PP-605	J-182	PJ-451	270	#N/A	#N/A	110	HDPE	New
PP-606	PJ-451	PJ-452	25.5	#N/A	#N/A	110	HDPE	New
PP-607	PJ-452	PJ-453	38	#N/A	#N/A	110	HDPE	New
PP-608	PJ-453	PJ-454	39.5	#N/A	#N/A	110	HDPE	New
PP-609	PJ-454	PJ-455	46	#N/A	#N/A	110	HDPE	New
PP-610	PJ-455	PJ-456	248	#N/A	#N/A	110	HDPE	New
PP-611	PJ-456	PJ-457	277	#N/A	#N/A	110	HDPE	New
PP-612	PJ-457	PJ-458	327.5	#N/A	#N/A	110	HDPE	New
PP-613	PJ-458	PJ-459	232.5	#N/A	#N/A	110	HDPE	New
PP-614	PJ-459	PJ-460	193	#N/A	#N/A	110	HDPE	New
PP-615	PJ-460	PJ-461	119.5	#N/A	#N/A	110	HDPE	New
PP-616	PJ-461	PJ-462	117	#N/A	#N/A	110	HDPE	New
PP-617	PJ-462	PJ-463	252.5	#N/A	#N/A	110	HDPE	New
PP-618	PJ-463	PJ-464	443.5	#N/A	#N/A	110	HDPE	New
PP-619	PJ-464	PJ-465	36	#N/A	#N/A	110	HDPE	New
PP-620	PJ-465	PJ-466	227.5	#N/A	#N/A	110	HDPE	New
PP-621	PJ-466	PJ-467	55.5	#N/A	#N/A	110	HDPE	New
PP-622	PJ-467	PJ-468	77.5	#N/A	#N/A	110	HDPE	New
PP-623	PJ-467	PJ-466	118	#N/A	#N/A	110	HDPE	New
PP-624	J-170	PJ-469	35	#N/A	#N/A	110	HDPE	New
PP-625	PJ-469	PJ-470	25	#N/A	#N/A	110	HDPE	New
PP-626	PJ-470	PJ-471	20	#N/A	#N/A	110	HDPE	New
PP-627	J-170	PJ-472	26	#N/A	#N/A	110	HDPE	New
PP-628	PJ-472	PJ-470	43.5	#N/A	#N/A	110	HDPE	New
PP-629	PJ-472	PJ-473	28.5	#N/A	#N/A	125	HDPE	New
PP-630	PJ-473	PJ-474	28.5	#N/A	#N/A	110	HDPE	New
PP-631	PJ-474	PJ-475	147	#N/A	#N/A	110	HDPE	New
PP-632	PJ-475	PJ-476	15	#N/A	#N/A	110	HDPE	New
PP-633	PJ-476	PJ-477	34.5	#N/A	#N/A	110	HDPE	New
PP-634	PJ-477	PJ-478	149.5	#N/A	#N/A	110	HDPE	New
PP-635	PJ-478	PJ-479	70	#N/A	#N/A	110	HDPE	New
PP-636	PJ-479	PJ-480	38.5	#N/A	#N/A	110	HDPE	New
PP-637	PJ-480	PJ-481	28	#N/A	#N/A	110	HDPE	New
PP-638	PJ-481	PJ-482	27.5	#N/A	#N/A	110	HDPE	New
PP-639	PJ-482	PJ-468	31.5	#N/A	#N/A	110	HDPE	New
PP-640	PJ-468	PJ-483	42	#N/A	#N/A	110	HDPE	New
PP-641	PJ-483	PJ-484	36.5	#N/A	#N/A	110	HDPE	New
PP-642	PJ-484	PJ-485	35.5	#N/A	#N/A	110	HDPE	New
PP-643	PJ-485	PJ-486	118	#N/A	#N/A	110	HDPE	New
PP-644	PJ-486	PJ-487	81.5	#N/A	#N/A	110	HDPE	New
PP-645	PJ-487	PJ-488	37.5	#N/A	#N/A	110	HDPE	New
PP-646	PJ-488	PJ-489	35.5	#N/A	#N/A	110	HDPE	New
PP-647	PJ-489	PJ-490	37.5	#N/A	#N/A	110	HDPE	New
PP-648	PJ-490	PJ-491	24	#N/A	#N/A	110	HDPE	New
PP-649	PJ-491	PJ-492	33	#N/A	#N/A	110	HDPE	New
PP-650	PJ-492	PJ-493	61	#N/A	#N/A	110	HDPE	New
PP-651	PJ-493	PJ-481	160	#N/A	#N/A	110	HDPE	New
PP-652	PJ-494	PJ-495	32	#N/A	#N/A	110	HDPE	New
PP-653	PJ-495	PJ-496	48.5	#N/A	#N/A	110	HDPE	New
PP-654	PJ-496	PJ-497	122.5	#N/A	#N/A	110	HDPE	New
PP-655	PJ-497	PJ-480	66.5	#N/A	#N/A	110	HDPE	New
PP-656	PJ-498	PJ-477	13	#N/A	#N/A	110	HDPE	New
PP-657	PJ-478	PJ-497	36	#N/A	#N/A	110	HDPE	New
PP-658	PJ-476	PJ-495	33.5	#N/A	#N/A	110	HDPE	New
PP-659	PJ-477	PJ-496	44.5	#N/A	#N/A	110	HDPE	New

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-660	PJ-496	PJ-493	41.5	#N/A	#N/A	110	HDPE	New
PP-661	PJ-493	PJ-499	29	#N/A	#N/A	110	HDPE	New
PP-662	PJ-499	PJ-500	49.5	#N/A	#N/A	110	HDPE	New
PP-663	PJ-500	PJ-501	52	#N/A	#N/A	110	HDPE	New
PP-664	PJ-501	PJ-485	49	#N/A	#N/A	110	HDPE	New
PP-665	PJ-495	PJ-492	34.5	#N/A	#N/A	110	HDPE	New
PP-666	PJ-492	PJ-502	23.5	#N/A	#N/A	110	HDPE	New
PP-667	PJ-502	PJ-503	41.5	#N/A	#N/A	110	HDPE	New
PP-668	PJ-503	PJ-504	42	#N/A	#N/A	110	HDPE	New
PP-669	PJ-504	PJ-486	39	#N/A	#N/A	110	HDPE	New
PP-670	PJ-490	PJ-502	40	#N/A	#N/A	110	HDPE	New
PP-671	PJ-502	PJ-499	69.5	#N/A	#N/A	110	HDPE	New
PP-672	PJ-499	PJ-482	140.5	#N/A	#N/A	110	HDPE	New
PP-673	PJ-468	PJ-500	105.5	#N/A	#N/A	110	HDPE	New
PP-674	PJ-500	PJ-503	84.5	#N/A	#N/A	110	HDPE	New
PP-675	PJ-503	PJ-489	57	#N/A	#N/A	110	HDPE	New
PP-676	PJ-489	PJ-505	36.5	#N/A	#N/A	125	HDPE	New
PP-677	PJ-505	PJ-506	113	#N/A	#N/A	110	HDPE	New
PP-678	PJ-506	PJ-507	23	#N/A	#N/A	110	HDPE	New
PP-679	PJ-507	PJ-508	15	#N/A	#N/A	110	HDPE	New
PP-680	PJ-508	J-172	44	#N/A	#N/A	110	HDPE	New
PP-681	PJ-488	PJ-504	68.5	#N/A	#N/A	110	HDPE	New
PP-682	PJ-504	PJ-501	101.5	#N/A	#N/A	110	HDPE	New
PP-683	PJ-501	PJ-483	68.5	#N/A	#N/A	110	HDPE	New
PP-684	J-171	PJ-509	58.5	#N/A	#N/A	110	HDPE	New
PP-685	PJ-509	PJ-472	55	#N/A	#N/A	110	HDPE	New
PP-686	PJ-473	PJ-510	18.5	#N/A	#N/A	110	HDPE	New
PP-687	PJ-474	PJ-511	31	#N/A	#N/A	110	HDPE	New
PP-688	PJ-509	PJ-512	13.5	#N/A	#N/A	110	HDPE	New
PP-689	PJ-512	PJ-507	65	#N/A	#N/A	110	HDPE	New
PP-690	PJ-512	PJ-513	28.5	#N/A	#N/A	110	HDPE	New
PP-691	PJ-513	PJ-514	114	#N/A	#N/A	110	HDPE	New
PP-692	PJ-514	PJ-515	29	#N/A	#N/A	110	HDPE	New
PP-693	PJ-515	PJ-505	36.5	#N/A	#N/A	110	HDPE	New
PP-694	PJ-513	PJ-516	29.5	#N/A	#N/A	110	HDPE	New
PP-695	PJ-516	PJ-506	32.5	#N/A	#N/A	110	HDPE	New
PP-696	PJ-516	PJ-515	113	#N/A	#N/A	110	HDPE	New
PP-697	PJ-513	PJ-517	36.5	#N/A	#N/A	110	HDPE	New
PP-698	PJ-517	PJ-473	26.5	#N/A	#N/A	110	HDPE	New
PP-699	PJ-517	PJ-518	115.5	#N/A	#N/A	110	HDPE	New
PP-700	PJ-508	PJ-519	87.5	#N/A	#N/A	110	HDPE	New
PP-701	PJ-519	PJ-451	149.5	#N/A	#N/A	110	HDPE	New
PP-702	PJ-452	PJ-520	150	#N/A	#N/A	110	HDPE	New
PP-703	PJ-520	PJ-506	106	#N/A	#N/A	110	HDPE	New
PP-704	PJ-506	PJ-521	57.5	#N/A	#N/A	110	HDPE	New
PP-705	PJ-521	PJ-522	41	#N/A	#N/A	110	HDPE	New
PP-706	PJ-522	PJ-523	6	#N/A	#N/A	110	HDPE	New
PP-707	PJ-523	PJ-524	32	#N/A	#N/A	110	HDPE	New
PP-708	PJ-524	PJ-455	167	#N/A	#N/A	110	HDPE	New
PP-709	PJ-454	PJ-525	154	#N/A	#N/A	110	HDPE	New
PP-710	PJ-525	PJ-523	24.5	#N/A	#N/A	110	HDPE	New
PP-711	PJ-521	PJ-526	60.5	#N/A	#N/A	110	HDPE	New
PP-712	PJ-526	PJ-453	152	#N/A	#N/A	110	HDPE	New
PP-713	PJ-519	PJ-520	30	#N/A	#N/A	110	HDPE	New
PP-714	PJ-520	PJ-526	37	#N/A	#N/A	110	HDPE	New
PP-715	PJ-526	PJ-525	34	#N/A	#N/A	110	HDPE	New
PP-716	PJ-521	PJ-527	102	#N/A	#N/A	110	HDPE	New
PP-717	PJ-527	PJ-528	39.5	#N/A	#N/A	110	HDPE	New
PP-718	PJ-528	PJ-522	98.5	#N/A	#N/A	110	HDPE	New
PP-719	PJ-528	PJ-529	38.5	#N/A	#N/A	110	HDPE	New

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-720	PJ-529	PJ-524	98	#N/A	#N/A	110	HDPE	New
PP-721	J-84	PJ-530	120	#N/A	#N/A	110	HDPE	New
PP-722	J-85	PJ-531	110	#N/A	#N/A	110	HDPE	New
PP-723	J-86	PJ-532	97.5	#N/A	#N/A	110	HDPE	New
PP-724	J-87	PJ-533	68.5	#N/A	#N/A	110	HDPE	New
PP-725	J-88	PJ-534	55	#N/A	#N/A	110	HDPE	New
PP-726	J-89	PJ-535	44	#N/A	#N/A	110	HDPE	New
PP-727	J-90	PJ-536	59.5	#N/A	#N/A	110	HDPE	New
PP-728	J-91	PJ-537	60	#N/A	#N/A	110	HDPE	New
PP-729	PJ-448	PJ-538	70	#N/A	#N/A	110	HDPE	New
PP-730	PJ-449	PJ-539	51.5	#N/A	#N/A	110	HDPE	New
PP-731	PJ-539	PJ-540	26	#N/A	#N/A	110	HDPE	New
PP-732	PJ-540	PJ-447	48.5	#N/A	#N/A	110	HDPE	New
PP-733	PJ-446	PJ-541	51.5	#N/A	#N/A	110	HDPE	New
PP-734	PJ-541	PJ-542	44	#N/A	#N/A	110	HDPE	New
PP-735	PJ-542	PJ-543	45.5	#N/A	#N/A	110	HDPE	New
PP-736	PJ-543	PJ-433	5	#N/A	#N/A	110	HDPE	New
PP-737	PJ-543	PJ-544	57	#N/A	#N/A	110	HDPE	New
PP-738	PJ-544	PJ-545	47.5	#N/A	#N/A	110	HDPE	New
PP-739	PJ-545	PJ-539	17	#N/A	#N/A	110	HDPE	New
PP-740	PJ-540	PJ-541	63	#N/A	#N/A	110	HDPE	New
PP-741	PJ-541	PJ-546	55	#N/A	#N/A	110	HDPE	New
PP-742	PJ-545	PJ-542	61.5	#N/A	#N/A	110	HDPE	New
PP-743	PJ-542	PJ-547	40	#N/A	#N/A	110	HDPE	New
PP-744	PJ-544	PJ-548	22	#N/A	#N/A	110	HDPE	New
PP-745	PJ-441	PJ-549	38	#N/A	#N/A	110	HDPE	New
PP-746	PJ-549	PJ-550	22.5	#N/A	#N/A	110	HDPE	New
PP-747	PJ-549	PJ-551	120.5	#N/A	#N/A	110	HDPE	New
PP-748	PJ-551	J-12	29.5	#N/A	#N/A	110	HDPE	New
PP-749	J-12	PJ-552	60	#N/A	#N/A	110	HDPE	New
PP-750	PJ-551	PJ-553	50	#N/A	#N/A	110	HDPE	New
PP-751	J-15	PJ-554	18	#N/A	#N/A	110	HDPE	New
PP-752	PJ-442	J-10	36.5	#N/A	#N/A	110	HDPE	New
PP-753	PJ-443	PJ-555	96.5	#N/A	#N/A	180	HDPE	New
PP-754	PJ-555	J-29	35	#N/A	#N/A	110	HDPE	New
PP-755	PJ-555	PJ-556	90	#N/A	#N/A	160	HDPE	New
PP-756	PJ-556	J-31	33.5	#N/A	#N/A	110	HDPE	New
PP-757	PJ-556	PJ-557	182.5	#N/A	#N/A	140	HDPE	New
PP-758	PJ-557	J-35	31	#N/A	#N/A	110	HDPE	New
PP-759	PJ-557	PJ-558	71.5	#N/A	#N/A	125	HDPE	New
PP-760	PJ-558	PJ-559	158	#N/A	#N/A	110	HDPE	New
PP-761	PJ-559	PJ-560	42.5	#N/A	#N/A	110	HDPE	New
PP-762	PJ-560	PJ-561	42	#N/A	#N/A	110	HDPE	New
PP-763	PJ-561	PJ-562	46	#N/A	#N/A	110	HDPE	New
PP-764	PJ-562	PJ-563	110.5	#N/A	#N/A	110	HDPE	New
PP-765	PJ-563	PJ-564	57.5	#N/A	#N/A	110	HDPE	New
PP-766	PJ-564	PJ-465	27	#N/A	#N/A	110	HDPE	New
PP-767	PJ-464	PJ-565	214	#N/A	#N/A	110	HDPE	New
PP-768	PJ-564	PJ-566	74	#N/A	#N/A	110	HDPE	New
PP-769	PJ-566	PJ-567	40	#N/A	#N/A	110	HDPE	New
PP-770	PJ-567	PJ-568	20.5	#N/A	#N/A	110	HDPE	New
PP-771	PJ-563	PJ-569	79	#N/A	#N/A	110	HDPE	New
PP-772	PJ-569	PJ-566	55	#N/A	#N/A	110	HDPE	New
PP-773	PJ-569	PJ-570	37.5	#N/A	#N/A	110	HDPE	New
PP-774	PJ-570	PJ-567	53.5	#N/A	#N/A	110	HDPE	New
PP-775	PJ-570	PJ-571	19	#N/A	#N/A	110	HDPE	New
PP-776	PJ-562	PJ-572	117.5	#N/A	#N/A	110	HDPE	New
PP-777	PJ-572	PJ-573	45.5	#N/A	#N/A	110	HDPE	New
PP-778	PJ-573	PJ-574	41	#N/A	#N/A	110	HDPE	New
PP-779	PJ-574	PJ-575	38	#N/A	#N/A	110	HDPE	New

BOQ for Z5								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-780	PJ-575	PJ-559	123	#N/A	#N/A	110	HDPE	New
PP-781	PJ-560	PJ-574	121	#N/A	#N/A	110	HDPE	New
PP-782	PJ-561	PJ-573	119.5	#N/A	#N/A	110	HDPE	New
PP-783	PJ-573	PJ-576	17	#N/A	#N/A	110	HDPE	New
PP-784	PJ-572	PJ-577	18.5	#N/A	#N/A	110	HDPE	New
PP-785	PJ-558	PJ-578	47.5	#N/A	#N/A	110	HDPE	New
PP-786	PJ-578	J-36	24	#N/A	#N/A	125	HDPE	New
PP-787	PJ-579	PJ-578	27	#N/A	#N/A	110	HDPE	New
PP-788	PJ-578	PJ-580	44.5	#N/A	#N/A	140	HDPE	New
PP-789	PJ-580	J-33	72.5	#N/A	#N/A	180	HDPE	New
PP-790	PJ-581	PJ-580	23	#N/A	#N/A	110	HDPE	New
PP-791	PJ-580	J-306	171.5	#N/A	#N/A	200	HDPE	New
PP-792	J-306	J-247	65	#N/A	#N/A	140	HDPE	New
PP-793	J-403	PJ-582	31.5	#N/A	#N/A	110	HDPE	New
PP-794	J-401	J-249	93	#N/A	#N/A	110	HDPE	New
PP-795	J-254	PJ-583	23.5	#N/A	#N/A	110	HDPE	New
PP-796	J-348	PJ-584	27.5	#N/A	#N/A	110	HDPE	New
PP-797	J-328	PJ-585	19	#N/A	#N/A	110	HDPE	New
PP-798	J-330	PJ-586	37	#N/A	#N/A	110	HDPE	New
PP-799	J-331	PJ-587	27	#N/A	#N/A	110	HDPE	New
PP-800	J-332	PJ-588	28	#N/A	#N/A	110	HDPE	New
			47090.50					

Zone -6

Distribution Network Design Output: Zone 6

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	67.5	20.257	19.815	20.22704	J-1	J-2	233.67	-11,696.42	5,682.51	160	1.01	5.81	20.22704	HDPE	145	0.39
P-10	99	17.575	17.971	6.05298	J-5	J-10	235.24	-11,529.41	5,886.18	110	0.64	3.86	6.05298	uPVC	145	0.38
P-100	59.5	18.273	18.213	0.13038	J-81	J-82	233.52	-11,343.03	6,198.28	110	0.01	0	0.13038	uPVC	145	0
P-101	27	18.273	18.315	1.53512	J-81	J-83	233.52	-11,343.03	6,198.28	110	0.16	0.3	1.53512	uPVC	145	0.01
P-102	12.5	18.315	18.309	3.26493	J-83	J-84	233.47	-11,319.07	6,186.30	110	0.34	1.23	3.26493	uPVC	145	0.02
P-103	24	18.309	18.321	3.18477	J-84	J-85	233.46	-11,314.86	6,197.95	110	0.34	1.18	3.18477	uPVC	145	0.03
P-104	18.5	18.321	18.341	-0.23178	J-85	J-86	233.42	-11,292.84	6,188.89	110	0.02	0.01	0.23178	uPVC	145	0
P-105	29.5	18.341	18.343	-2.49963	J-86	J-87	233.4	-11,276.32	6,180.79	110	0.26	0.75	2.49963	uPVC	145	0.02
P-106	12	18.343	18.333	-2.59071	J-87	J-88	233.42	-11,286.36	6,152.94	110	0.27	0.8	2.59071	uPVC	145	0.01
P-107	31	18.333	18.302	-2.24039	J-88	J-89	233.44	-11,297.37	6,157.80	110	0.24	0.61	2.24039	uPVC	145	0.02
P-108	17	18.302	18.315	1.85364	J-89	J-83	233.49	-11,325.54	6,170.75	110	0.2	0.43	1.85364	uPVC	145	0.01
P-109	30	18.28	18.307	0.83499	J-75	J-90	233.57	-11,393.87	6,102.75	110	0.09	0.1	0.83499	uPVC	145	0
P-11	8.5	17.971	17.273	8.09759	J-10	J-11	234.46	-11,611.01	5,942.39	125	0.66	3.55	8.09759	HDPE	145	0.03
P-110	33.5	18.307	18.328	1.3905	J-90	J-91	233.54	-11,369.58	6,085.26	110	0.15	0.25	1.3905	uPVC	145	0.01
P-111	29	18.328	18.291	-0.89166	J-91	J-77	233.51	-11,355.01	6,115.38	110	0.09	0.11	0.89166	uPVC	145	0
P-112	32	18.328	18.331	2.07537	J-91	J-92	233.51	-11,355.01	6,115.38	110	0.22	0.53	2.07537	uPVC	145	0.02
P-113	30.5	18.331	18.302	2.83982	J-92	J-89	233.49	-11,338.50	6,142.90	110	0.3	0.95	2.83982	uPVC	145	0.03
P-114	30.5	18.295	18.331	0.96797	J-79	J-92	233.53	-11,364.40	6,158.77	110	0.1	0.13	0.96797	uPVC	145	0
P-115	39	18.333	18.325	-0.52982	J-88	J-93	233.44	-11,297.37	6,157.80	110	0.06	0.04	0.52982	uPVC	145	0
P-116	131	18.325	18.299	-2.14887	J-93	J-94	233.45	-11,313.89	6,122.50	110	0.23	0.57	2.14887	uPVC	145	0.07
P-117	73	18.307	18.264	-0.854	J-90	J-95	233.54	-11,369.58	6,085.26	110	0.09	0.1	0.854	uPVC	145	0.01
P-118	22	18.325	18.32	1.1994	J-93	J-96	233.45	-11,313.89	6,122.50	110	0.13	0.19	1.1994	uPVC	145	0
P-119	16	18.32	18.34	0.02773	J-96	J-97	233.45	-11,294.78	6,111.49	110	0	0	0.02773	uPVC	145	0
P-12	23	17.273	16.823	6.12115	J-11	J-12	235.13	-11,607.38	5,950.16	110	0.64	3.94	6.12115	uPVC	145	0.09
P-120	99	18.34	18.451	-0.22382	J-97	J-98	233.43	-11,301.26	6,096.60	110	0.02	0.01	0.22382	uPVC	145	0
P-121	18	18.451	18.449	2.30646	J-98	J-99	233.32	-11,216.42	6,045.76	110	0.24	0.65	2.30646	uPVC	145	0.01
P-122	103	18.449	18.32	-0.86336	J-99	J-96	233.31	-11,205.41	6,060.00	110	0.09	0.1	0.86336	uPVC	145	0.01
P-123	91	18.449	18.43	2.70649	J-99	J-100	233.31	-11,205.41	6,060.00	110	0.28	0.87	2.70649	uPVC	145	0.08
P-124	140.5	18.43	18.341	-1.85583	J-100	J-86	233.25	-11,147.44	6,130.27	110	0.2	0.43	1.85583	uPVC	145	0.06
P-125	81.5	18.321	18.258	3.14535	J-85	J-101	233.42	-11,292.84	6,188.89	110	0.33	1.15	3.14535	uPVC	145	0.09

P-126	41	18.258	18.223	0.85166	J-101	J-102	233.39	-11,262.40	6,264.34	110	0.09	0.1	0.85166	uPVC	145	0
P-127	55	18.223	18.203	0.12055	J-102	J-103	233.42	-11,302.88	6,258.83	110	0.01	0	0.12055	uPVC	145	0
P-128	44.5	18.223	18.162	0.42388	J-102	J-104	233.42	-11,302.88	6,258.83	110	0.04	0.03	0.42388	uPVC	145	0
P-129	28.5	18.162	18.132	0.0627	J-104	J-105	233.48	-11,335.91	6,243.61	110	0.01	0	0.0627	uPVC	145	0
P-13	33	16.823	17.135	5.77961	J-12	J-13	235.49	-11,593.65	5,968.82	110	0.61	3.54	5.77961	uPVC	145	0.12
P-130	46	18.162	18.062	0.1009	J-104	J-106	233.48	-11,335.91	6,243.61	110	0.01	0	0.1009	uPVC	145	0
P-131	44	18.258	18.267	1.9297	J-101	J-107	233.39	-11,262.40	6,264.34	110	0.2	0.46	1.9297	uPVC	145	0.02
P-132	7.5	18.267	18.274	1.88525	J-107	J-108	233.36	-11,218.81	6,271.23	110	0.2	0.45	1.88525	uPVC	145	0
P-133	45.5	18.274	18.289	0.87943	J-108	J-109	233.35	-11,211.69	6,272.85	110	0.09	0.11	0.87943	uPVC	145	0
P-134	52	18.289	18.247	0.53025	J-109	J-110	233.33	-11,178.01	6,303.62	110	0.06	0.04	0.53025	uPVC	145	0
P-135	8	18.247	18.237	0.01794	J-110	J-111	233.37	-11,225.29	6,314.95	110	0	0	0.01794	uPVC	145	0
P-136	36	18.247	18.217	0.07907	J-110	J-112	233.37	-11,225.29	6,314.95	110	0.01	0	0.07907	uPVC	145	0
P-137	51	18.247	18.217	0.11182	J-110	J-113	233.37	-11,225.29	6,314.95	110	0.01	0	0.11182	uPVC	145	0
P-138	31	18.289	18.269	0.06816	J-109	J-114	233.33	-11,178.01	6,303.62	110	0.01	0	0.06816	uPVC	145	0
P-139	57.5	18.267	18.297	-0.19399	J-107	J-115	233.36	-11,218.81	6,271.23	110	0.02	0.01	0.19399	uPVC	145	0
P-14	30.5	17.135	17.428	5.42825	J-13	J-14	235.06	-11,574.48	5,995.50	110	0.57	3.16	5.42825	uPVC	145	0.1
P-140	36	18.297	18.257	0.07907	J-115	J-116	233.33	-11,213.31	6,213.92	160	0	0	0.07907	HDPE	145	0
P-141	50.5	18.297	18.338	-0.58793	J-115	J-117	233.33	-11,213.31	6,213.92	160	0.03	0.01	0.58793	HDPE	145	0
P-142	87	18.338	18.3	0.77029	J-117	J-118	233.29	-11,170.24	6,188.01	110	0.08	0.08	0.77029	uPVC	145	0.01
P-143	34.5	18.3	18.274	-0.81431	J-118	J-108	233.32	-11,177.36	6,274.47	110	0.09	0.09	0.81431	uPVC	145	0
P-144	42	18.3	18.272	1.22717	J-118	J-119	233.32	-11,177.36	6,274.47	110	0.13	0.2	1.22717	uPVC	145	0.01
P-145	14	18.272	18.248	1.57249	J-119	J-120	233.34	-11,135.59	6,278.68	110	0.17	0.32	1.57249	uPVC	145	0
P-146	52	18.248	18.215	1.37068	J-120	J-121	233.36	-11,121.67	6,281.27	110	0.14	0.25	1.37068	uPVC	145	0.01
P-147	13	18.248	18.238	0.02886	J-120	J-122	233.36	-11,121.67	6,281.27	110	0	0	0.02886	uPVC	145	0
P-148	120.5	18.272	18.331	-0.73114	J-119	J-123	233.34	-11,135.59	6,278.68	110	0.08	0.08	0.73114	uPVC	145	0.01
P-149	7.5	18.331	18.351	-3.41132	J-123	J-124	233.29	-11,127.17	6,158.54	110	0.36	1.33	3.41132	uPVC	145	0.01
P-15	45	17.428	17.966	2.78609	J-14	J-15	234.67	-11,556.87	6,020.37	110	0.29	0.92	2.78609	uPVC	145	0.04
P-150	54	18.351	18.338	1.77678	J-124	J-117	233.28	-11,130.08	6,151.74	160	0.09	0.06	1.77678	HDPE	145	0
P-151	85.5	18.348	18.351	1.57316	J-125	J-124	233.31	-11,057.87	6,105.70	110	0.17	0.32	1.57316	uPVC	145	0.03
P-152	27.5	18.351	18.43	-3.99639	J-124	J-100	233.28	-11,130.08	6,151.74	110	0.42	1.79	3.99639	uPVC	145	0.05
P-153	106.5	18.451	18.494	-3.01871	J-98	J-126	233.32	-11,216.42	6,045.76	110	0.32	1.06	3.01871	uPVC	145	0.11
P-154	15	18.302	18.261	3.51715	J-80	J-127	233.52	-11,358.57	6,170.43	110	0.37	1.41	3.51715	uPVC	145	0.02
P-155	17	18.261	18.273	1.89194	J-127	J-81	233.54	-11,351.99	6,183.71	110	0.2	0.45	1.89194	uPVC	145	0.01
P-16	85	17.966	18.314	1.69785	J-15	J-16	234.09	-11,529.92	6,056.12	110	0.18	0.37	1.69785	uPVC	145	0.03
P-17	29.5	18.314	18.346	1.44739	J-16	J-17	233.71	-11,477.08	6,122.96	110	0.15	0.27	1.44739	uPVC	145	0.01
P-18	49.5	18.346	18.285	1.27444	J-17	J-18	233.67	-11,455.57	6,102.49	110	0.13	0.22	1.27444	uPVC	145	0.01

Distribution Network Design Output: Zone 6

P-19	33	18.285	18.138	-3.35273	J-18	J-19	233.72	-11,485.11	6,062.85	110	0.35	1.29	3.35273	uPVC	145	0.04
P-2	56.5	19.815	19.425	15.50649	J-2	J-3	233.72	-11,653.19	5,734.60	160	0.77	3.55	15.50649	HDPE	145	0.2
P-20	30.5	18.138	17.966	-1.34077	J-19	J-15	233.91	-11,506.09	6,037.47	110	0.14	0.24	1.34077	uPVC	145	0.01
P-21	24.5	17.966	17.838	-0.65691	J-15	J-20	234.09	-11,529.92	6,056.12	110	0.07	0.06	0.65691	uPVC	145	0
P-22	85.5	17.838	18.223	3.24106	J-20	J-21	234.22	-11,548.84	6,071.40	110	0.34	1.21	3.24106	uPVC	145	0.1
P-23	20.5	18.223	18.243	0.04523	J-21	J-22	233.73	-11,495.21	6,137.72	110	0	0	0.04523	uPVC	145	0
P-24	42.5	18.138	17.616	-2.24386	J-19	J-23	233.91	-11,506.09	6,037.47	110	0.24	0.61	2.24386	uPVC	145	0.03
P-25	32	17.616	17.428	-2.40699	J-23	J-14	234.46	-11,530.18	6,002.49	110	0.25	0.7	2.40699	uPVC	145	0.02
P-26	26	18.012	17.707	-2.07533	J-9	J-24	234.81	-11,474.74	5,848.09	110	0.22	0.53	2.07533	uPVC	145	0.01
P-27	105.5	17.707	18.466	-2.3629	J-24	J-25	235.13	-11,488.92	5,826.50	110	0.25	0.68	2.3629	uPVC	145	0.07
P-28	47.5	18.466	18.871	6.91775	J-25	J-26	234.44	-11,401.49	5,767.24	110	0.73	4.95	6.91775	uPVC	145	0.23
P-29	186	18.861	18.079	-1.80449	J-4	J-27	234.22	-11,579.66	5,822.19	110	0.19	0.41	1.80449	uPVC	145	0.08
P-3	58	19.425	18.861	9.08923	J-3	J-4	233.91	-11,617.25	5,777.99	125	0.74	4.4	9.08923	HDPE	145	0.26
P-30	50.5	18.079	18.466	9.72542	J-27	J-25	235.08	-11,430.64	5,726.11	125	0.79	4.99	9.72542	HDPE	145	0.25
P-31	34	18.079	17.796	-12.12095	J-27	J-28	235.08	-11,430.64	5,726.11	140	0.79	4.32	12.12095	HDPE	145	0.15
P-32	231	19.815	19.472	3.94501	J-2	J-29	233.72	-11,653.19	5,734.60	110	0.42	1.75	3.94501	uPVC	145	0.4
P-33	18.5	19.472	19.338	-2.64081	J-29	J-30	233.66	-11,826.01	5,887.86	110	0.28	0.83	2.64081	uPVC	145	0.02
P-34	25	19.338	19.479	-6.21525	J-30	J-31	233.81	-11,838.15	5,874.10	110	0.65	4.06	6.21525	uPVC	145	0.1
P-35	26	19.472	19.344	5.98386	J-29	J-32	233.66	-11,826.01	5,887.86	110	0.63	3.78	5.98386	uPVC	145	0.1
P-36	85	19.344	18.486	6.06905	J-32	J-33	233.69	-11,809.82	5,908.10	110	0.64	3.88	6.06905	uPVC	145	0.33
P-37	7	18.486	17.446	10.15547	J-33	J-34	234.22	-11,753.96	5,972.06	140	0.66	3.11	10.15547	HDPE	145	0.02
P-38	37.5	17.446	17.793	9.31358	J-34	J-35	235.24	-11,747.89	5,975.70	125	0.76	4.6	9.31358	HDPE	145	0.17
P-39	32	17.793	17.981	8.394	J-35	J-36	234.72	-11,723.60	6,004.44	125	0.68	3.8	8.394	HDPE	145	0.12
P-4	81.5	18.861	17.575	5.56178	J-4	J-5	234.22	-11,579.66	5,822.19	110	0.59	3.3	5.56178	uPVC	145	0.27
P-40	39.5	17.981	18.597	6.68164	J-36	J-37	234.41	-11,704.17	6,029.94	110	0.7	4.64	6.68164	uPVC	145	0.18
P-41	91	18.597	17.287	4.12478	J-37	J-38	233.61	-11,680.29	6,061.51	110	0.43	1.9	4.12478	uPVC	145	0.17
P-42	84.5	17.287	18.286	5.79107	J-38	J-39	234.75	-11,623.21	6,132.35	160	0.29	0.57	5.79107	HDPE	145	0.05
P-43	105	18.286	18.219	3.78355	J-39	J-40	233.7	-11,569.78	6,197.52	160	0.19	0.26	3.78355	HDPE	145	0.03
P-44	29	18.219	18.232	2.16076	J-40	J-41	233.74	-11,504.61	6,279.69	110	0.23	0.57	2.16076	uPVC	145	0.02
P-45	23	18.232	18.25	2.04675	J-41	J-42	233.71	-11,484.78	6,301.14	110	0.22	0.52	2.04675	uPVC	145	0.01
P-46	46	18.25	18.265	0.91234	J-42	J-43	233.68	-11,463.33	6,293.05	110	0.1	0.12	0.91234	uPVC	145	0.01
P-47	26	18.265	18.314	0.39849	J-43	J-44	233.66	-11,421.23	6,274.43	110	0.04	0.03	0.39849	uPVC	145	0
P-48	29	18.314	18.354	0.20105	J-44	J-45	233.61	-11,397.35	6,263.90	110	0.02	0.01	0.20105	uPVC	145	0
P-49	13	18.354	18.374	-0.22345	J-45	J-46	233.57	-11,384.80	6,289.81	110	0.02	0.01	0.22345	uPVC	145	0
P-5	39.5	17.575	18.094	-0.15938	J-5	J-6	235.24	-11,529.41	5,886.18	110	0.02	0	0.15938	uPVC	145	0
P-50	38	18.374	18.285	-0.40343	J-46	J-47	233.55	-11,378.73	6,301.14	110	0.04	0.03	0.40343	uPVC	145	0

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P-51	47	18.285	18.25	-0.88069	J-47	J-42	233.64	-11,416.37	6,297.50	110	0.09	0.11	0.88069	uPVC	145	0.01
P-52	36	18.219	18.251	1.25117	J-40	J-48	233.74	-11,504.61	6,279.69	110	0.13	0.21	1.25117	uPVC	145	0.01
P-53	27.5	18.251	18.265	2.22872	J-48	J-49	233.7	-11,477.09	6,256.21	110	0.23	0.61	2.22872	uPVC	145	0.02
P-54	9.5	18.265	18.263	3.18343	J-49	J-50	233.67	-11,456.45	6,238.40	110	0.33	1.17	3.18343	uPVC	145	0.01
P-55	49.5	18.263	18.265	-0.4367	J-50	J-43	233.66	-11,448.35	6,233.14	110	0.05	0.03	0.4367	uPVC	145	0
P-56	34	18.286	18.166	1.51909	J-39	J-51	233.7	-11,569.78	6,197.52	110	0.16	0.3	1.51909	uPVC	145	0.01
P-57	104	18.166	18.251	1.34372	J-51	J-48	233.81	-11,543.47	6,176.07	110	0.14	0.24	1.34372	uPVC	145	0.02
P-58	27.5	18.166	18.187	2.43424	J-51	J-52	233.81	-11,543.47	6,176.07	110	0.26	0.71	2.43424	uPVC	145	0.02
P-59	103	18.187	18.265	1.26084	J-52	J-49	233.77	-11,522.02	6,158.66	110	0.13	0.21	1.26084	uPVC	145	0.02
P-6	24.5	18.094	18.403	-0.29958	J-6	J-7	234.72	-11,505.83	5,918.04	110	0.03	0.02	0.29958	uPVC	145	0
P-60	34	18.187	18.223	0.81378	J-52	J-21	233.77	-11,522.02	6,158.66	110	0.09	0.09	0.81378	uPVC	145	0
P-61	43.5	18.223	18.199	3.6085	J-21	J-53	233.73	-11,495.21	6,137.72	110	0.38	1.48	3.6085	uPVC	145	0.06
P-62	30.5	18.199	18.22	1.44708	J-53	J-54	233.69	-11,467.37	6,171.21	110	0.15	0.27	1.44708	uPVC	145	0.01
P-63	17.5	18.22	18.242	-0.73998	J-54	J-55	233.66	-11,447.54	6,194.28	110	0.08	0.08	0.73998	uPVC	145	0
P-64	31	18.242	18.263	-3.42317	J-55	J-50	233.64	-11,437.02	6,208.45	110	0.36	1.34	3.42317	uPVC	145	0.04
P-65	34.5	18.597	17.788	2.19614	J-37	J-56	233.61	-11,680.29	6,061.51	110	0.23	0.59	2.19614	uPVC	145	0.02
P-66	91	17.788	17.505	3.58868	J-56	J-57	234.4	-11,653.17	6,040.06	110	0.38	1.47	3.58868	uPVC	145	0.13
P-67	28	17.505	17.667	-1.85526	J-57	J-58	234.55	-11,596.50	6,111.30	110	0.2	0.43	1.85526	uPVC	145	0.01
P-68	34.5	17.667	17.838	1.37899	J-58	J-20	234.4	-11,575.05	6,093.49	110	0.15	0.25	1.37899	uPVC	145	0.01
P-69	90.5	17.838	16.737	-3.03251	J-20	J-59	234.22	-11,548.84	6,071.40	110	0.32	1.07	3.03251	uPVC	145	0.1
P-7	61	18.403	18.845	-0.48673	J-7	J-8	234.41	-11,491.06	5,937.47	110	0.05	0.04	0.48673	uPVC	145	0
P-70	34	16.737	18.796	-3.3048	J-59	J-60	235.42	-11,606.21	6,001.61	110	0.35	1.26	3.3048	uPVC	145	0.04
P-71	90.5	18.796	17.667	3.56876	J-60	J-58	233.4	-11,632.52	6,023.46	110	0.38	1.45	3.56876	uPVC	145	0.13
P-72	26.5	18.796	17.788	1.72486	J-60	J-56	233.4	-11,632.52	6,023.46	110	0.18	0.38	1.72486	uPVC	145	0.01
P-73	59.5	17.981	18.953	1.42588	J-36	J-61	234.41	-11,704.17	6,029.94	110	0.15	0.27	1.42588	uPVC	145	0.02
P-74	41	18.953	18.796	9.01809	J-61	J-60	233.42	-11,658.43	5,991.89	125	0.73	4.34	9.01809	HDPE	145	0.18
P-75	66	17.273	18.953	1.76311	J-11	J-61	235.13	-11,607.38	5,950.16	110	0.19	0.39	1.76311	uPVC	145	0.03
P-76	32.5	18.953	19.067	-6.26404	J-61	J-62	233.42	-11,658.43	5,991.89	110	0.66	4.11	6.26404	uPVC	145	0.13
P-77	68.5	19.067	18.956	2.7425	J-62	J-63	233.44	-11,678.67	5,966.39	110	0.29	0.89	2.7425	uPVC	145	0.06
P-78	25	18.956	17.971	2.33437	J-63	J-10	233.49	-11,626.05	5,922.67	110	0.25	0.66	2.33437	uPVC	145	0.02
P-79	59	17.793	19.067	0.63857	J-35	J-62	234.72	-11,723.60	6,004.44	110	0.07	0.06	0.63857	uPVC	145	0
P-8	67.5	18.845	18.012	-0.76775	J-8	J-9	233.97	-11,438.99	5,905.35	110	0.08	0.08	0.76775	uPVC	145	0.01
P-80	36.5	19.067	19.118	-8.79745	J-62	J-64	233.44	-11,678.67	5,966.39	125	0.72	4.14	8.79745	HDPE	145	0.15
P-81	16.5	19.118	19.23	-3.4322	J-64	J-65	233.54	-11,701.34	5,938.06	110	0.36	1.35	3.4322	uPVC	145	0.02
P-82	43.5	19.23	17.446	-0.64928	J-65	J-34	233.45	-11,714.69	5,947.37	110	0.07	0.06	0.64928	uPVC	145	0
P-83	16.5	19.118	19.271	-5.51746	J-64	J-66	233.54	-11,701.34	5,938.06	110	0.58	3.25	5.51746	uPVC	145	0.05

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P-84	16	19.271	19.291	0.03541	J-66	J-67	233.44	-11,689.19	5,927.13	110	0	0	0.03541	uPVC	145	0
P-85	46.5	18.956	18.776	0.102	J-63	J-68	233.49	-11,626.05	5,922.67	110	0.01	0	0.102	uPVC	145	0
P-86	17.5	19.271	19.111	-5.66251	J-66	J-69	233.44	-11,689.19	5,927.13	110	0.6	3.41	5.66251	uPVC	145	0.06
P-87	48.5	19.111	18.982	-1.84778	J-69	J-70	233.66	-11,699.72	5,913.36	110	0.19	0.43	1.84778	uPVC	145	0.02
P-88	27	18.982	18.882	0.05942	J-70	J-71	233.81	-11,731.29	5,876.53	110	0.01	0	0.05942	uPVC	145	0
P-89	64.5	19.23	18.531	-3.05521	J-65	J-72	233.45	-11,714.69	5,947.37	110	0.32	1.09	3.05521	uPVC	145	0.07
P-9	66.5	18.012	17.575	0.95779	J-9	J-5	234.81	-11,474.74	5,848.09	110	0.1	0.13	0.95779	uPVC	145	0.01
P-90	23	18.531	19.23	0.05069	J-72	J-73	234.22	-11,755.58	5,897.58	110	0.01	0	0.05069	uPVC	145	0
P-91	151.5	19.111	18.861	-4.29006	J-69	J-4	233.66	-11,699.72	5,913.36	110	0.45	2.04	4.29006	uPVC	145	0.31
P-92	150.5	19.425	18.982	5.83823	J-3	J-70	233.91	-11,617.25	5,777.99	110	0.61	3.61	5.83823	uPVC	145	0.54
P-93	77	18.246	18.28	1.63446	J-74	J-75	233.63	-11,428.99	6,034.01	110	0.17	0.34	1.63446	uPVC	145	0.03
P-94	13	18.28	18.279	0.39462	J-75	J-76	233.57	-11,393.87	6,102.75	110	0.04	0.03	0.39462	uPVC	145	0
P-95	17.5	18.279	18.291	1.89903	J-76	J-77	233.57	-11,388.69	6,114.41	110	0.2	0.45	1.89903	uPVC	145	0.01
P-96	13	18.291	18.3	0.87699	J-77	J-78	233.55	-11,380.27	6,129.63	110	0.09	0.11	0.87699	uPVC	145	0
P-97	20	18.3	18.295	2.48891	J-78	J-79	233.54	-11,374.12	6,141.28	110	0.26	0.75	2.48891	uPVC	145	0.01
P-98	13	18.295	18.302	1.38182	J-79	J-80	233.53	-11,364.40	6,158.77	110	0.15	0.25	1.38182	uPVC	145	0
PP-156	370	18.215	18.074	0.44888	J-121	PJ-128	233.38	-11,125.55	6,333.08	110	0.05	0.03	0.44888	HDPE	145	0.01
PP-157	387.5	18.074	18.348	-1.2054	PJ-128	J-125	233.51	-10,760.62	6,350.54	110	0.13	0.19	1.2054	HDPE	145	0.08
PP-158	333.5	18.348	19.053	-4.53982	J-125	PJ-129	233.31	-11,057.87	6,105.70	110	0.48	2.27	4.53982	HDPE	145	0.76
PP-159	316.5	19.053	18.681	-5.95941	PJ-129	PJ-130	233.36	-11,250.57	5,851.12	110	0.63	3.75	5.95941	HDPE	145	1.19
PP-160	430	18.681	18.85	-2.8432	PJ-130	PJ-131	234.92	-11,318.87	5,542.82	110	0.3	0.95	2.8432	HDPE	145	0.41
PP-161	36.5	18.85	19.311	-3.86216	PJ-131	PJ-132	235.16	-11,254.99	5,121.45	110	0.41	1.68	3.86216	HDPE	145	0.06
PP-162	17	19.311	20.497	-5.15428	PJ-132	PJ-133	234.76	-11,286.42	5,102.85	110	0.54	2.87	5.15428	HDPE	145	0.05
PP-163	103	20.497	20.446	3.33182	PJ-133	PJ-134	233.62	-11,302.17	5,097.05	110	0.35	1.28	3.33182	HDPE	145	0.13
PP-164	143.5	20.446	18.697	2.79318	PJ-134	PJ-135	233.54	-11,333.02	5,195.09	110	0.29	0.92	2.79318	HDPE	145	0.13
PP-165	236.5	18.697	18.26	1.71371	PJ-135	PJ-136	235.16	-11,366.80	5,331.67	110	0.18	0.37	1.71371	HDPE	145	0.09
PP-166	64.5	18.26	18.681	4.88729	PJ-136	PJ-130	235.51	-11,378.48	5,567.35	110	0.51	2.6	4.88729	HDPE	145	0.17
PP-167	61	18.26	20.453	-3.96439	PJ-136	PJ-137	235.51	-11,378.48	5,567.35	110	0.42	1.76	3.96439	HDPE	145	0.11
PP-168	71.5	20.453	20.403	-7.12824	PJ-137	PJ-138	233.42	-11,435.47	5,588.72	125	0.58	2.8	7.12824	HDPE	145	0.2
PP-169	52	20.403	20.413	0.114	PJ-138	PJ-139	233.67	-11,481.46	5,533.99	110	0.01	0	0.114	HDPE	145	0
PP-170	82	20.453	19.993	2.69507	PJ-137	PJ-140	233.42	-11,435.47	5,588.72	110	0.28	0.86	2.69507	HDPE	145	0.07
PP-171	32.5	19.993	20.006	-10.77642	PJ-140	PJ-141	233.81	-11,512.22	5,617.54	140	0.7	3.47	10.77642	HDPE	145	0.11
PP-172	137.5	20.006	19.784	-2.29797	PJ-141	PJ-142	233.91	-11,542.66	5,628.87	110	0.24	0.64	2.29797	HDPE	145	0.09
PP-173	16.5	19.784	20.456	3.77899	PJ-142	PJ-143	234.22	-11,672.51	5,674.21	110	0.4	1.61	3.77899	HDPE	145	0.03
PP-174	9	20.456	20.257	13.93707	PJ-143	J-1	233.52	-11,687.73	5,680.04	140	0.91	5.59	13.93707	HDPE	145	0.05
PP-175	14	20.257	20.358	-6.48802	J-1	PJ-144	233.67	-11,696.42	5,682.51	110	0.68	4.39	6.48802	HDPE	145	0.06

Distribution Network Design Output: Zone 6

PP-176	97.5	20.358	20.358	2.24223	PJ-144	PJ-145	233.63	-11,710.08	5,686.19	110	0.24	0.61	2.24223	HDPE	145	0.06
PP-177	14.5	20.358	20.281	10.09538	PJ-145	PJ-146	233.57	-11,804.31	5,711.45	125	0.82	5.34	10.09538	HDPE	145	0.08
PP-178	28	20.281	20.235	4.62942	PJ-146	PJ-147	233.57	-11,818.23	5,715.98	110	0.49	2.35	4.62942	HDPE	145	0.07
PP-179	20.5	20.235	20.151	12.54756	PJ-147	PJ-148	233.55	-11,845.44	5,723.43	140	0.82	4.6	12.54756	HDPE	145	0.09
PP-180	25.5	20.151	20.068	8.21888	PJ-148	PJ-149	233.54	-11,864.54	5,731.20	125	0.67	3.65	8.21888	HDPE	145	0.09
PP-181	7	20.068	19.943	9.82303	PJ-149	PJ-150	233.53	-11,889.15	5,738.33	125	0.8	5.08	9.82303	HDPE	145	0.04
PP-182	36.5	19.943	19.896	5.70769	PJ-150	PJ-151	233.62	-11,895.63	5,740.27	110	0.6	3.46	5.70769	HDPE	145	0.13
PP-183	34.5	19.896	19.858	8.6561	PJ-151	PJ-152	233.54	-11,930.60	5,749.98	125	0.71	4.02	8.6561	HDPE	145	0.14
PP-184	28	19.858	19.61	4.72737	PJ-152	PJ-153	233.44	-11,913.44	5,780.10	110	0.5	2.44	4.72737	HDPE	145	0.07
PP-185	33	19.61	19.89	1.46068	PJ-153	PJ-154	233.62	-11,896.92	5,802.44	110	0.15	0.28	1.46068	HDPE	145	0.01
PP-186	29	19.89	19.809	-1.51086	PJ-154	PJ-155	233.33	-11,876.85	5,828.35	110	0.16	0.3	1.51086	HDPE	145	0.01
PP-187	6.5	19.809	19.479	-5.24897	PJ-155	J-31	233.42	-11,858.39	5,850.69	110	0.55	2.97	5.24897	HDPE	145	0.02
PP-188	32.5	19.479	19.987	-11.60442	J-31	PJ-156	233.77	-11,853.13	5,854.27	140	0.75	3.98	11.60442	HDPE	145	0.13
PP-189	35	19.987	20.145	-8.2367	PJ-156	PJ-157	233.39	-11,827.95	5,833.53	125	0.67	3.67	8.2367	HDPE	145	0.13
PP-190	40	20.145	20.239	-4.62507	PJ-157	PJ-158	233.36	-11,800.10	5,812.48	110	0.49	2.35	4.62507	HDPE	145	0.09
PP-191	64	20.239	20.268	0.1402	PJ-158	PJ-159	233.36	-11,769.01	5,787.55	110	0.01	0	0.1402	HDPE	145	0
PP-192	115.5	19.943	19.987	3.76773	PJ-150	PJ-156	233.62	-11,895.63	5,740.27	110	0.4	1.61	3.76773	HDPE	145	0.19
PP-193	103.5	20.151	20.145	4.00181	PJ-148	PJ-157	233.54	-11,864.54	5,731.20	110	0.42	1.79	4.00181	HDPE	145	0.19
PP-194	87	20.281	20.239	5.18275	PJ-146	PJ-158	233.57	-11,818.23	5,715.98	110	0.55	2.9	5.18275	HDPE	145	0.25
PP-195	32	18.531	18.982	-3.36727	J-72	J-70	234.22	-11,755.58	5,897.58	110	0.35	1.3	3.36727	HDPE	145	0.04
PP-196	50	16.823	17.152	0.10964	J-12	PJ-160	235.49	-11,593.65	5,968.82	110	0.01	0	0.10964	HDPE	145	0
PP-197	48.5	17.135	17.435	0.10636	J-13	PJ-161	235.06	-11,574.48	5,995.50	110	0.01	0	0.10636	HDPE	145	0
PP-198	34	17.287	17.505	-2.12415	J-38	J-57	234.75	-11,623.21	6,132.35	110	0.22	0.55	2.12415	HDPE	145	0.02
PP-199	83.5	17.505	18.166	2.80297	J-57	J-51	234.55	-11,596.50	6,111.30	110	0.29	0.93	2.80297	HDPE	145	0.08
PP-200	23.5	18.265	18.285	-0.2399	J-43	J-47	233.66	-11,421.23	6,274.43	110	0.03	0.01	0.2399	HDPE	145	0
PP-201	17.5	18.314	18.304	0.03868	J-44	PJ-162	233.61	-11,397.35	6,263.90	110	0	0	0.03868	HDPE	145	0
PP-202	15.5	18.374	18.384	0.03432	J-46	PJ-163	233.55	-11,378.73	6,301.14	110	0	0	0.03432	HDPE	145	0
PP-203	76	18.354	18.483	0.1664	J-45	PJ-164	233.57	-11,384.80	6,289.81	110	0.02	0.01	0.1664	HDPE	145	0
PP-204	32.5	18.28	18.23	0.07143	J-75	PJ-165	233.57	-11,393.87	6,102.75	110	0.01	0	0.07143	HDPE	145	0
PP-205	98	18.279	18.199	-1.78543	J-76	J-53	233.57	-11,388.69	6,114.41	110	0.19	0.4	1.78543	HDPE	145	0.04
PP-206	91	18.22	18.3	1.88311	J-54	J-78	233.66	-11,447.54	6,194.28	110	0.2	0.44	1.88311	HDPE	145	0.04
PP-207	87	18.242	18.302	2.38688	J-55	J-80	233.64	-11,437.02	6,208.45	110	0.25	0.69	2.38688	HDPE	145	0.06
PP-208	51	18.331	18.259	2.2889	J-123	PJ-166	233.29	-11,127.17	6,158.54	110	0.24	0.64	2.2889	HDPE	145	0.03
PP-209	31	18.259	18.223	1.15279	PJ-166	PJ-167	233.33	-11,088.71	6,192.31	110	0.12	0.18	1.15279	HDPE	145	0.01
PP-210	32	18.223	18.18	0.85548	PJ-167	PJ-168	233.36	-11,064.88	6,212.25	110	0.09	0.1	0.85548	HDPE	145	0
PP-211	29	18.18	18.159	0.45411	PJ-168	PJ-169	233.4	-11,040.27	6,232.98	110	0.05	0.03	0.45411	HDPE	145	0

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PP-212	25	18.159	18.129	0.22584	PJ-169	PJ-170	233.42	-11,017.73	6,251.11	110	0.02	0.01	0.22584	HDPE	145	0
PP-213	60	18.129	18.139	0.03979	PJ-170	PJ-171	233.45	-10,999.08	6,267.95	110	0	0	0.03979	HDPE	145	0
PP-214	24	18.139	18.159	-0.14408	PJ-171	PJ-172	233.44	-11,039.23	6,312.77	110	0.02	0	0.14408	HDPE	145	0
PP-215	61	18.159	18.159	0.02328	PJ-172	PJ-169	233.42	-11,057.62	6,297.23	110	0	0	0.02328	HDPE	145	0
PP-216	29	18.159	18.19	-0.41672	PJ-172	PJ-173	233.42	-11,057.62	6,297.23	110	0.04	0.03	0.41672	HDPE	145	0
PP-217	60	18.19	18.18	-0.13672	PJ-173	PJ-168	233.39	-11,079.39	6,278.31	110	0.01	0	0.13672	HDPE	145	0
PP-218	30.5	18.19	18.221	-0.54137	PJ-173	PJ-174	233.39	-11,079.39	6,278.31	110	0.06	0.04	0.54137	HDPE	145	0
PP-219	31.5	18.221	18.223	-0.67721	PJ-174	PJ-175	233.36	-11,102.18	6,257.85	110	0.07	0.07	0.67721	HDPE	145	0
PP-220	27.5	18.223	18.223	-0.09925	PJ-175	PJ-167	233.36	-11,083.01	6,232.98	110	0.01	0	0.09925	HDPE	145	0
PP-221	28	18.259	18.256	0.89548	PJ-166	PJ-176	233.33	-11,088.71	6,192.31	110	0.09	0.11	0.89548	HDPE	145	0
PP-222	29	18.256	18.223	0.77056	PJ-176	PJ-175	233.33	-11,105.55	6,214.59	110	0.08	0.08	0.77056	HDPE	145	0
PP-223	63	18.285	18.246	4.30903	J-18	J-74	233.72	-11,485.11	6,062.85	110	0.45	2.06	4.30903	HDPE	145	0.13
PP-224	34	18.246	18.264	2.29421	J-74	J-95	233.63	-11,428.99	6,034.01	110	0.24	0.64	2.29421	HDPE	145	0.02
PP-225	28.5	18.264	18.299	1.14391	J-95	J-94	233.59	-11,398.40	6,018.88	110	0.12	0.18	1.14391	HDPE	145	0.01
PP-226	109.5	18.299	18.494	-1.59273	J-94	J-126	233.55	-11,373.15	6,005.60	110	0.17	0.33	1.59273	HDPE	145	0.04
PP-227	63	18.494	18.629	-5.22104	J-126	PJ-177	233.39	-11,275.31	5,956.83	110	0.55	2.94	5.22104	HDPE	145	0.19
PP-228	197	18.629	18.184	0.43057	PJ-177	PJ-178	233.44	-11,301.68	5,899.78	110	0.05	0.03	0.43057	HDPE	145	0.01
PP-229	29.5	18.261	18.302	1.49047	J-127	J-89	233.54	-11,351.99	6,183.71	110	0.16	0.29	1.49047	HDPE	145	0.01
PP-230	57	18.697	20.523	0.12492	PJ-135	PJ-179	235.16	-11,366.80	5,331.67	110	0.01	0	0.12492	HDPE	145	0
PP-231	102	19.993	17.796	12.99834	PJ-140	J-28	233.81	-11,512.22	5,617.54	140	0.84	4.91	12.99834	HDPE	145	0.5
PP-232	61.5	17.796	18.213	0.44572	J-28	PJ-180	235.51	-11,449.09	5,697.29	110	0.05	0.03	0.44572	HDPE	145	0
PP-233	19	18.213	18.343	0.04196	PJ-180	PJ-181	235.09	-11,397.75	5,663.61	110	0	0	0.04196	HDPE	145	0
PP-234	52	18.213	17.595	0.114	PJ-180	PJ-182	235.09	-11,397.75	5,663.61	110	0.01	0	0.114	HDPE	145	0
PP-235	136	18.871	18.629	6.51665	J-26	PJ-177	233.8	-11,354.86	5,774.68	110	0.69	4.43	6.51665	HDPE	145	0.6
PP-236	112.5	19.858	19.467	3.54619	PJ-152	PJ-183	233.44	-11,913.44	5,780.10	110	0.37	1.43	3.54619	HDPE	145	0.16
PP-237	34.5	19.467	19.39	2.56071	PJ-183	PJ-184	233.67	-12,000.66	5,851.25	110	0.27	0.79	2.56071	HDPE	145	0.03
PP-238	84	19.39	19.137	2.50854	PJ-184	PJ-185	233.72	-12,025.76	5,875.13	110	0.26	0.76	2.50854	HDPE	145	0.06
PP-239	32.5	19.137	18.821	1.30399	PJ-185	PJ-186	233.91	-12,092.45	5,926.06	110	0.14	0.22	1.30399	HDPE	145	0.01
PP-240	94.5	18.821	17.789	1.02624	PJ-186	PJ-187	234.22	-12,122.29	5,939.53	110	0.11	0.14	1.02624	HDPE	145	0.01
PP-241	30.5	17.789	18.3	1.43008	PJ-187	PJ-188	235.24	-12,081.79	6,024.64	110	0.15	0.27	1.43008	HDPE	145	0.01
PP-242	11.5	18.3	18.607	1.25665	PJ-188	PJ-189	234.72	-12,109.48	6,037.07	110	0.13	0.21	1.25665	HDPE	145	0
PP-243	120.5	18.607	19.044	0.26356	PJ-189	PJ-190	234.41	-12,114.78	6,027.13	110	0.03	0.01	0.26356	HDPE	145	0
PP-244	18.5	18.3	18.21	0.04087	PJ-188	PJ-191	234.72	-12,109.48	6,037.07	110	0	0	0.04087	HDPE	145	0
PP-245	46.5	18.607	18.554	0.60291	PJ-189	PJ-192	234.41	-12,114.78	6,027.13	110	0.06	0.05	0.60291	HDPE	145	0
PP-246	62.5	18.554	17.886	0.13693	PJ-192	PJ-193	234.46	-12,156.51	6,047.49	110	0.01	0	0.13693	HDPE	145	0
PP-247	52	17.526	18.554	-0.114	PJ-194	PJ-192	235.49	-12,204.80	6,067.39	110	0.01	0	0.114	HDPE	145	0

PP-248	45.5	17.789	17.968	0.16068	PJ-187	PJ-195	235.24	-12,081.79	6,024.64	110	0.02	0	0.16068	HDPE	145	0
PP-249	44.5	17.968	18.218	0.09763	PJ-195	PJ-196	235.06	-12,063.25	6,066.35	110	0.01	0	0.09763	HDPE	145	0
PP-250	36.5	17.968	18.567	-0.21361	PJ-195	PJ-197	235.06	-12,063.25	6,066.35	110	0.02	0.01	0.21361	HDPE	145	0
PP-251	32.5	18.567	17.9	-0.36473	PJ-197	PJ-198	234.46	-12,047.71	6,099.30	110	0.04	0.02	0.36473	HDPE	145	0
PP-252	16.5	17.9	17.541	-0.57745	PJ-198	PJ-199	235.13	-12,018.28	6,086.04	110	0.06	0.05	0.57745	HDPE	145	0
PP-253	67	17.541	17.973	-0.52531	PJ-199	PJ-200	235.49	-12,024.91	6,071.12	110	0.06	0.04	0.52531	HDPE	145	0
PP-254	31.5	17.973	17.789	1.006	PJ-200	PJ-187	235.06	-12,053.72	6,010.40	110	0.11	0.14	1.006	HDPE	145	0
PP-255	24	17.9	19.406	0.05287	PJ-198	PJ-201	235.13	-12,018.28	6,086.04	110	0.01	0	0.05287	HDPE	145	0
PP-256	36.5	17.541	19.697	-0.31461	PJ-199	PJ-202	235.49	-12,024.91	6,071.12	110	0.03	0.02	0.31461	HDPE	145	0
PP-257	65.5	19.697	19.67	-0.51831	PJ-202	PJ-203	233.33	-11,992.37	6,054.12	110	0.05	0.04	0.51831	HDPE	145	0
PP-258	37.5	19.67	17.973	0.26266	PJ-203	PJ-200	233.36	-12,019.52	5,994.64	110	0.03	0.01	0.26266	HDPE	145	0
PP-259	31.5	17.973	19.64	-1.63481	PJ-200	PJ-204	235.06	-12,053.72	6,010.40	110	0.17	0.34	1.63481	HDPE	145	0.01
PP-260	61.5	19.64	19.137	-0.81546	PJ-204	PJ-185	233.4	-12,065.94	5,981.38	110	0.09	0.09	0.81546	HDPE	145	0.01
PP-261	72	19.64	19.634	-1.18006	PJ-204	PJ-205	233.4	-12,065.94	5,981.38	110	0.12	0.19	1.18006	HDPE	145	0.01
PP-262	41	19.634	19.595	1.2723	PJ-205	PJ-206	233.42	-12,009.78	5,936.62	110	0.13	0.21	1.2723	HDPE	145	0.01
PP-263	22	19.595	19.594	1.98904	PJ-206	PJ-207	233.45	-11,980.77	5,965.84	110	0.21	0.49	1.98904	HDPE	145	0.01
PP-264	27	19.594	19.67	1.06527	PJ-207	PJ-203	233.44	-11,996.10	5,981.59	110	0.11	0.15	1.06527	HDPE	145	0
PP-265	73	19.594	19.63	0.65694	PJ-207	PJ-208	233.44	-11,996.10	5,981.59	110	0.07	0.06	0.65694	HDPE	145	0
PP-266	46	19.63	19.647	0.56546	PJ-208	PJ-209	233.4	-11,949.68	6,037.75	110	0.06	0.05	0.56546	HDPE	145	0
PP-267	12	19.647	19.697	0.04567	PJ-209	PJ-202	233.38	-11,986.78	6,064.90	110	0	0	0.04567	HDPE	145	0
PP-268	32.5	19.647	19.637	0.32173	PJ-209	PJ-210	233.38	-11,986.78	6,064.90	110	0.03	0.02	0.32173	HDPE	145	0
PP-269	22	19.637	19.667	0.17287	PJ-210	PJ-211	233.39	-11,968.12	6,091.43	110	0.02	0.01	0.17287	HDPE	145	0
PP-270	75	19.667	19.717	-0.03938	PJ-211	PJ-212	233.36	-11,952.99	6,107.59	110	0	0	0.03938	HDPE	145	0
PP-271	27	19.717	19.697	-0.26255	PJ-212	PJ-213	233.31	-11,891.03	6,065.11	110	0.03	0.01	0.26255	HDPE	145	0
PP-272	77.5	19.697	19.637	0.1398	PJ-213	PJ-210	233.33	-11,907.40	6,043.56	110	0.01	0	0.1398	HDPE	145	0
PP-273	21.5	19.63	19.59	-0.21574	PJ-208	PJ-214	233.4	-11,949.68	6,037.75	110	0.02	0.01	0.21574	HDPE	145	0
PP-274	7	19.59	19.15	0.78182	PJ-214	PJ-215	233.44	-11,932.48	6,024.49	110	0.08	0.09	0.78182	HDPE	145	0
PP-275	29.5	19.15	19.697	0.69538	PJ-215	PJ-213	233.88	-11,926.26	6,020.97	110	0.07	0.07	0.69538	HDPE	145	0
PP-276	76	19.595	19.59	1.22619	PJ-206	PJ-214	233.45	-11,980.77	5,965.84	110	0.13	0.2	1.22619	HDPE	145	0.02
PP-277	25.5	19.15	19.699	-0.04939	PJ-215	PJ-216	233.88	-11,926.26	6,020.97	110	0.01	0	0.04939	HDPE	145	0
PP-278	6.5	19.699	17.939	1.98772	PJ-216	PJ-217	233.33	-11,906.99	6,004.18	110	0.21	0.49	1.98772	HDPE	145	0
PP-279	22	17.939	18.069	0.04851	PJ-217	PJ-218	235.09	-11,902.01	6,000.24	110	0.01	0	0.04851	HDPE	145	0
PP-280	32	19.595	17.361	-2.31675	PJ-206	PJ-219	233.45	-11,980.77	5,965.84	110	0.24	0.65	2.31675	HDPE	145	0.02
PP-281	38	17.361	19.384	1.60008	PJ-219	PJ-220	235.71	-11,957.76	5,943.66	110	0.17	0.33	1.60008	HDPE	145	0.01
PP-282	41	19.384	19.699	2.19696	PJ-220	PJ-216	233.67	-11,931.85	5,971.43	110	0.23	0.59	2.19696	HDPE	145	0.02
PP-283	26	17.939	19.296	1.81975	PJ-217	PJ-221	235.09	-11,902.01	6,000.24	110	0.19	0.42	1.81975	HDPE	145	0.01

Distribution Network Design Output: Zone 6

PP-284	7.5	19.296	19.118	-3.64434	PJ-221	PJ-222	233.72	-11,881.91	5,983.87	110	0.38	1.51	3.64434	HDPE	145	0.01
PP-285	43	19.118	18.839	-2.42109	PJ-222	PJ-223	233.91	-11,876.73	5,978.27	110	0.25	0.71	2.42109	HDPE	145	0.03
PP-286	34.5	18.839	19.384	0.84515	PJ-223	PJ-220	234.22	-11,906.99	5,947.81	110	0.09	0.1	0.84515	HDPE	145	0
PP-287	38	18.839	17.855	-2.75297	PJ-223	PJ-224	234.22	-11,906.99	5,947.81	110	0.29	0.9	2.75297	HDPE	145	0.03
PP-288	34.5	17.855	17.361	2.45771	PJ-224	PJ-219	235.24	-11,932.89	5,920.04	110	0.26	0.73	2.45771	HDPE	145	0.03
PP-289	43.5	17.361	18.366	-1.78271	PJ-219	PJ-225	235.71	-11,957.76	5,943.66	110	0.19	0.4	1.78271	HDPE	145	0.02
PP-290	32.5	18.366	19.634	2.7705	PJ-225	PJ-205	234.72	-11,988.23	5,912.57	110	0.29	0.91	2.7705	HDPE	145	0.03
PP-291	53	18.366	19.39	-1.99872	PJ-225	PJ-184	234.72	-11,988.23	5,912.57	110	0.21	0.5	1.99872	HDPE	145	0.03
PP-292	80.5	19.39	18.762	-2.49721	PJ-184	PJ-226	233.72	-12,025.76	5,875.13	110	0.26	0.75	2.49721	HDPE	145	0.06
PP-293	28	19.467	19.166	0.60294	PJ-183	PJ-227	233.67	-12,000.66	5,851.25	110	0.06	0.05	0.60294	HDPE	145	0
PP-294	26	19.166	18.31	2.3947	PJ-227	PJ-228	233.97	-11,981.39	5,871.33	110	0.25	0.69	2.3947	HDPE	145	0.02
PP-295	34	18.31	18.366	2.91083	PJ-228	PJ-225	234.81	-11,962.73	5,889.78	110	0.31	1	2.91083	HDPE	145	0.03
PP-296	42.5	17.855	18.31	-2.24749	PJ-224	PJ-228	235.24	-11,932.89	5,920.04	110	0.24	0.62	2.24749	HDPE	145	0.03
PP-297	30	18.31	18.692	-3.05337	PJ-228	PJ-229	234.81	-11,962.73	5,889.78	110	0.32	1.09	3.05337	HDPE	145	0.03
PP-298	84.5	18.692	19.89	-2.65121	PJ-229	PJ-154	234.46	-11,942.01	5,868.02	110	0.28	0.84	2.65121	HDPE	145	0.07
PP-299	33	19.166	18.025	-1.98218	PJ-227	PJ-230	233.97	-11,981.39	5,871.33	110	0.21	0.49	1.98218	HDPE	145	0.02
PP-300	76	18.025	19.61	-2.96712	PJ-230	PJ-153	235.13	-11,955.48	5,851.02	110	0.31	1.03	2.96712	HDPE	145	0.08
PP-301	21.5	18.025	18.692	0.69955	PJ-230	PJ-229	235.13	-11,955.48	5,851.02	110	0.07	0.07	0.69955	HDPE	145	0
PP-302	102	17.855	19.809	-3.43744	PJ-224	PJ-155	235.24	-11,932.89	5,920.04	110	0.36	1.35	3.43744	HDPE	145	0.14
PP-303	68	19.338	17.574	3.33053	J-30	PJ-231	233.81	-11,838.15	5,874.10	110	0.35	1.28	3.33053	HDPE	145	0.09
PP-304	33	17.574	18.839	0.83796	PJ-231	PJ-223	235.49	-11,883.15	5,924.80	110	0.09	0.1	0.83796	HDPE	145	0
PP-305	34.5	19.118	17.979	-1.4093	PJ-222	PJ-232	233.91	-11,876.73	5,978.27	110	0.15	0.26	1.4093	HDPE	145	0.01
PP-306	62.5	17.979	19.344	0.46446	PJ-232	J-32	235.06	-11,852.27	5,954.23	110	0.05	0.03	0.46446	HDPE	145	0
PP-307	42.5	17.574	17.979	2.1788	PJ-231	PJ-232	235.49	-11,883.15	5,924.80	110	0.23	0.58	2.1788	HDPE	145	0.02
PP-308	31.5	19.296	18.512	5.32171	PJ-221	PJ-233	233.72	-11,881.91	5,983.87	110	0.56	3.04	5.32171	HDPE	145	0.1
PP-309	35.5	18.512	18.848	5.17495	PJ-233	PJ-234	234.41	-11,859.11	6,005.42	110	0.54	2.89	5.17495	HDPE	145	0.1
PP-310	29	18.848	17.989	2.48167	PJ-234	PJ-235	233.97	-11,836.11	5,978.69	110	0.26	0.74	2.48167	HDPE	145	0.02
PP-311	49.5	17.989	18.306	2.30981	PJ-235	PJ-236	234.81	-11,819.94	5,954.44	110	0.24	0.65	2.30981	HDPE	145	0.03
PP-312	29	18.306	17.655	-2.27424	PJ-236	PJ-237	234.46	-11,777.87	5,980.55	110	0.24	0.63	2.27424	HDPE	145	0.02
PP-313	49	17.655	18.848	-2.44501	PJ-237	PJ-234	235.13	-11,794.24	6,004.59	110	0.26	0.72	2.44501	HDPE	145	0.04
PP-314	28.5	18.306	18.486	4.34997	PJ-236	J-33	234.46	-11,777.87	5,980.55	110	0.46	2.09	4.34997	HDPE	145	0.06
PP-315	176.5	17.68	18.762	-0.38582	PJ-238	PJ-226	235.49	-12,246.07	5,877.37	110	0.04	0.02	0.38582	HDPE	145	0
PP-316	163.5	18.762	19.896	-3.80155	PJ-226	PJ-151	234.41	-12,080.45	5,816.00	110	0.4	1.63	3.80155	HDPE	145	0.27
PP-317	78	19.896	18.615	-7.4327	PJ-151	PJ-239	233.54	-11,930.60	5,749.98	125	0.61	3.03	7.4327	HDPE	145	0.24
PP-318	78.5	18.615	20.527	-10.40547	PJ-239	PJ-240	235.06	-11,975.75	5,686.40	140	0.68	3.25	10.40547	HDPE	145	0.26
PP-319	160	20.527	21.076	-10.92665	PJ-240	PJ-241	233.4	-12,022.38	5,623.26	140	0.71	3.56	10.92665	HDPE	145	0.57

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PP-320	39	21.076	21.217	-9.10325	PJ-241	PJ-242	233.42	-12,120.68	5,497.15	125	0.74	4.41	9.10325	HDPE	145	0.17
PP-321	51	21.217	21.127	0.11182	PJ-242	PJ-243	233.45	-12,088.66	5,474.52	110	0.01	0	0.11182	HDPE	145	0
PP-322	43.5	21.217	21.435	-9.50701	PJ-242	PJ-244	233.45	-12,088.66	5,474.52	125	0.77	4.78	9.50701	HDPE	145	0.21
PP-323	43.5	21.435	21.326	-3.79413	PJ-244	PJ-245	233.44	-12,053.68	5,448.36	110	0.4	1.63	3.79413	HDPE	145	0.07
PP-324	24.5	21.326	21.658	-3.94306	PJ-245	PJ-246	233.62	-12,028.30	5,483.85	110	0.41	1.75	3.94306	HDPE	145	0.04
PP-325	28.5	21.658	21.699	-6.7002	PJ-246	PJ-247	233.33	-12,008.35	5,469.60	125	0.55	2.5	6.7002	HDPE	145	0.07
PP-326	27	21.699	21.785	-9.38077	PJ-247	PJ-248	233.36	-11,985.81	5,452.50	125	0.76	4.66	9.38077	HDPE	145	0.13
PP-327	29.5	21.785	21.922	-13.5743	PJ-248	PJ-249	233.4	-11,964.83	5,435.66	140	0.88	5.32	13.5743	HDPE	145	0.16
PP-328	45	21.922	21.743	7.79493	PJ-249	PJ-250	233.42	-11,940.47	5,419.34	125	0.64	3.31	7.79493	HDPE	145	0.15
PP-329	27	21.743	21.667	7.63726	PJ-250	PJ-251	233.45	-11,969.49	5,384.89	125	0.62	3.19	7.63726	HDPE	145	0.09
PP-330	26.5	21.667	21.607	7.44032	PJ-251	PJ-252	233.44	-11,991.51	5,400.43	125	0.61	3.04	7.44032	HDPE	145	0.08
PP-331	27	21.607	21.563	7.04124	PJ-252	PJ-253	233.42	-12,012.49	5,416.75	125	0.57	2.74	7.04124	HDPE	145	0.07
PP-332	25	21.563	21.435	7.56505	PJ-253	PJ-244	233.39	-12,034.51	5,432.56	125	0.62	3.13	7.56505	HDPE	145	0.08
PP-333	22.5	21.435	21.508	1.55804	PJ-244	PJ-254	233.44	-12,053.68	5,448.36	110	0.16	0.31	1.55804	HDPE	145	0.01
PP-334	23	21.508	21.512	1.38789	PJ-254	PJ-255	233.36	-12,067.67	5,431.00	110	0.15	0.25	1.38789	HDPE	145	0.01
PP-335	24	21.512	21.607	-7.55523	PJ-255	PJ-256	233.35	-12,080.37	5,412.09	125	0.62	3.12	7.55523	HDPE	145	0.07
PP-336	27.5	21.607	21.554	-6.05362	PJ-256	PJ-257	233.33	-12,060.94	5,398.10	125	0.49	2.07	6.05362	HDPE	145	0.06
PP-337	27	21.554	21.157	-3.71225	PJ-257	PJ-258	233.44	-12,038.14	5,382.56	110	0.39	1.56	3.71225	HDPE	145	0.04
PP-338	42.5	21.157	21.667	-3.86446	PJ-258	PJ-251	233.88	-12,016.90	5,366.24	110	0.41	1.68	3.86446	HDPE	145	0.07
PP-339	44	21.667	21.785	-3.97364	PJ-251	PJ-248	233.44	-11,991.51	5,400.43	110	0.42	1.77	3.97364	HDPE	145	0.08
PP-340	44.5	21.699	21.607	2.46177	PJ-247	PJ-252	233.36	-11,985.81	5,452.50	110	0.26	0.73	2.46177	HDPE	145	0.03
PP-341	42.5	21.607	21.554	2.55363	PJ-252	PJ-257	233.42	-12,012.49	5,416.75	110	0.27	0.78	2.55363	HDPE	145	0.03
PP-342	43.5	21.607	21.563	-1.70949	PJ-256	PJ-253	233.33	-12,060.94	5,398.10	110	0.18	0.37	1.70949	HDPE	145	0.02
PP-343	45.5	21.563	21.658	-2.54161	PJ-253	PJ-246	233.39	-12,034.51	5,432.56	110	0.27	0.77	2.54161	HDPE	145	0.04
PP-344	16	21.508	21.538	0.03541	PJ-254	PJ-259	233.36	-12,067.67	5,431.00	110	0	0	0.03541	HDPE	145	0
PP-345	84	21.512	19.438	8.65664	PJ-255	PJ-260	233.35	-12,080.37	5,412.09	125	0.71	4.02	8.65664	HDPE	145	0.34
PP-346	44	19.438	21.076	2.3544	PJ-260	PJ-241	235.09	-12,147.72	5,462.35	110	0.25	0.67	2.3544	HDPE	145	0.03
PP-347	157	19.438	19.28	5.67954	PJ-260	PJ-261	235.09	-12,147.72	5,462.35	125	0.46	1.84	5.67954	HDPE	145	0.29
PP-348	151.5	19.28	18.311	5.00554	PJ-261	PJ-262	234.96	-12,242.58	5,337.11	125	0.41	1.46	5.00554	HDPE	145	0.22
PP-349	103	18.311	20.226	4.44943	PJ-262	PJ-263	235.71	-12,348.84	5,229.34	125	0.36	1.17	4.44943	HDPE	145	0.12
PP-350	32	20.226	20.143	4.15422	PJ-263	PJ-264	233.67	-12,421.70	5,156.48	125	0.34	1.03	4.15422	HDPE	145	0.03
PP-351	65.5	20.143	19.893	3.94087	PJ-264	PJ-265	233.72	-12,436.88	5,128.14	125	0.32	0.94	3.94087	HDPE	145	0.06
PP-352	40	19.893	19.583	0.08781	PJ-265	PJ-266	233.91	-12,453.57	5,064.89	110	0.01	0	0.08781	HDPE	145	0
PP-353	144	19.893	18.384	3.30787	PJ-265	PJ-267	233.91	-12,453.57	5,064.89	110	0.35	1.26	3.30787	HDPE	145	0.18
PP-354	61	18.384	18.884	1.5424	PJ-267	PJ-268	235.24	-12,425.24	4,924.74	110	0.16	0.31	1.5424	HDPE	145	0.02
PP-355	55	18.884	19.185	1.05895	PJ-268	PJ-269	234.72	-12,372.62	4,955.10	110	0.11	0.15	1.05895	HDPE	145	0.01

PP-356	71	19.185	19.624	0.15549	PJ-269	PJ-270	234.41	-12,323.54	4,979.38	110	0.02	0	0.15549	HDPE	145	0
PP-357	52.5	18.794	18.884	-0.1151	PJ-271	PJ-268	234.81	-12,399.43	5,000.13	110	0.01	0	0.1151	HDPE	145	0
PP-358	41.5	19.185	19.134	0.5373	PJ-269	PJ-272	234.41	-12,323.54	4,979.38	110	0.06	0.04	0.5373	HDPE	145	0
PP-359	157.5	19.134	18.462	0.34434	PJ-272	PJ-273	234.46	-12,302.29	4,943.97	110	0.04	0.02	0.34434	HDPE	145	0
PP-360	139	19.134	18.112	-0.54545	PJ-272	PJ-274	234.46	-12,302.29	4,943.97	110	0.06	0.04	0.54545	HDPE	145	0.01
PP-361	112.5	18.112	18.542	-0.26097	PJ-274	PJ-275	235.49	-12,239.04	4,820.00	110	0.03	0.01	0.26097	HDPE	145	0
PP-362	181	18.542	18.384	-0.92227	PJ-275	PJ-267	235.06	-12,337.71	4,766.37	110	0.1	0.12	0.92227	HDPE	145	0.02
PP-363	191	18.542	19.196	-0.39695	PJ-275	PJ-276	235.06	-12,337.71	4,766.37	110	0.04	0.02	0.39695	HDPE	145	0
PP-364	26.5	19.196	19.638	-0.87228	PJ-276	PJ-277	234.41	-12,264.34	4,590.29	110	0.09	0.11	0.87228	HDPE	145	0
PP-365	89.5	19.638	18.829	-1.6199	PJ-277	PJ-278	233.97	-12,240.05	4,601.42	110	0.17	0.34	1.6199	HDPE	145	0.03
PP-366	188.5	18.829	18.112	1.24558	PJ-278	PJ-274	234.81	-12,163.14	4,647.46	110	0.13	0.21	1.24558	HDPE	145	0.04
PP-367	122.5	18.829	19.372	-3.74035	PJ-278	PJ-279	234.81	-12,163.14	4,647.46	110	0.39	1.58	3.74035	HDPE	145	0.19
PP-368	147	19.372	19.086	-4.89296	PJ-279	PJ-280	234.46	-12,053.85	4,703.12	110	0.51	2.6	4.89296	HDPE	145	0.38
PP-369	109	19.086	18.955	-4.35351	PJ-280	PJ-281	235.13	-11,924.83	4,773.45	110	0.46	2.1	4.35351	HDPE	145	0.23
PP-370	57.5	18.955	19.473	-3.71661	PJ-281	PJ-282	235.49	-11,829.20	4,825.57	110	0.39	1.56	3.71661	HDPE	145	0.09
PP-371	172	19.473	21.154	0.81967	PJ-282	PJ-283	235.06	-11,779.11	4,853.90	110	0.09	0.1	0.81967	HDPE	145	0.02
PP-372	101.5	21.154	21.113	0.22207	PJ-283	PJ-284	233.36	-11,839.32	5,014.80	110	0.02	0.01	0.22207	HDPE	145	0
PP-373	7	19.473	21.129	-5.05309	PJ-282	PJ-285	235.06	-11,779.11	4,853.90	110	0.53	2.76	5.05309	HDPE	145	0.02
PP-374	68	21.129	21.478	-7.3839	PJ-285	PJ-286	233.42	-11,773.04	4,857.44	110	0.78	5.58	7.3839	HDPE	145	0.38
PP-375	6	21.478	21.525	-14.60191	PJ-286	PJ-287	233.45	-11,712.32	4,887.80	140	0.95	6.1	14.60191	HDPE	145	0.04
PP-376	160.5	21.525	21.541	0.35089	PJ-287	PJ-288	233.44	-11,707.55	4,891.58	110	0.04	0.02	0.35089	HDPE	145	0
PP-377	45.5	21.525	21.734	-15.41612	PJ-287	PJ-289	233.44	-11,707.55	4,891.58	160	0.77	3.52	15.41612	HDPE	145	0.16
PP-378	77	21.734	22.048	-21.56362	PJ-289	PJ-290	233.39	-11,666.36	4,911.43	180	0.85	3.69	21.56362	HDPE	145	0.28
PP-379	162	22.048	22.831	-24.98389	PJ-290	PJ-291	233.36	-11,599.07	4,948.36	180	0.98	4.84	24.98389	HDPE	145	0.78
PP-380	41.5	22.831	22.61	17.34073	PJ-291	PJ-292	233.36	-11,656.75	5,099.14	160	0.86	4.37	17.34073	HDPE	145	0.18
PP-381	16	22.61	22.504	16.76013	PJ-292	PJ-293	233.4	-11,620.32	5,119.38	160	0.83	4.1	16.76013	HDPE	145	0.07
PP-382	164	22.504	21.954	15.62513	PJ-293	PJ-294	233.44	-11,606.15	5,126.97	160	0.78	3.6	15.62513	HDPE	145	0.59
PP-383	59	21.954	22.048	-2.76918	PJ-294	PJ-290	233.4	-11,546.44	4,975.18	110	0.29	0.91	2.76918	HDPE	145	0.05
PP-384	104	22.61	22.649	0.22753	PJ-292	PJ-295	233.4	-11,620.32	5,119.38	110	0.02	0.01	0.22753	HDPE	145	0
PP-385	24	22.504	22.543	0.68915	PJ-293	PJ-296	233.44	-11,606.15	5,126.97	110	0.07	0.07	0.68915	HDPE	145	0
PP-386	30	22.543	22.503	0.06597	PJ-296	PJ-297	233.4	-11,584.45	5,137.51	110	0.01	0	0.06597	HDPE	145	0
PP-387	115.5	22.543	22.541	0.25264	PJ-296	PJ-298	233.4	-11,584.45	5,137.51	110	0.03	0.01	0.25264	HDPE	145	0
PP-388	134	22.831	23.43	-43.06194	PJ-291	PJ-299	233.36	-11,656.75	5,099.14	225	1.08	4.48	43.06194	HDPE	145	0.6
PP-389	**95**	**1.796**	**23.43**	**149.6**	**T-1**	**PJ-299**	**235.5**	**-11,807.75**	**5,191.63**	**355**	**1.51**	**4.88**	**149.6**	HDPE	**145**	**0.46**
PP-390	121	23.43	22.835	105.77346	PJ-299	PJ-300	233.36	-11,716.93	5,218.70	315	1.36	4.59	105.77346	HDPE	145	0.56
PP-391	27	22.835	22.646	35.47358	PJ-300	PJ-301	233.4	-11,771.06	5,326.84	200	1.13	5.55	35.47358	HDPE	145	0.15

PP-392	97	22.646	22.685	0.21225	PJ-301	PJ-302	233.44	-11,746.26	5,337.97	110	0.02	0.01	0.21225	HDPE	145	0
PP-393	113	19.638	20.205	0.24718	PJ-277	PJ-303	233.97	-12,240.05	4,601.42	110	0.03	0.01	0.24718	HDPE	145	0
PP-394	129	19.372	20.389	0.28211	PJ-279	PJ-304	234.46	-12,053.85	4,703.12	110	0.03	0.01	0.28211	HDPE	145	0
PP-395	245	19.086	20.936	-1.63373	PJ-280	PJ-305	235.13	-11,924.83	4,773.45	110	0.17	0.34	1.63373	HDPE	145	0.08
PP-396	71	20.936	20.895	0.15549	PJ-305	PJ-306	233.36	-11,769.08	4,585.12	110	0.02	0	0.15549	HDPE	145	0
PP-397	61.5	20.936	20.986	-2.61387	PJ-305	PJ-307	233.36	-11,769.08	4,585.12	110	0.28	0.82	2.61387	HDPE	145	0.05
PP-398	82.5	20.986	20.955	-2.21982	PJ-307	PJ-308	233.36	-11,719.29	4,621.15	110	0.23	0.6	2.21982	HDPE	145	0.05
PP-399	29.5	20.955	21.015	-2.33553	PJ-308	PJ-309	233.44	-11,758.96	4,693.61	110	0.25	0.66	2.33553	HDPE	145	0.02
PP-400	82.5	21.015	21.046	-1.73695	PJ-309	PJ-310	233.4	-11,773.13	4,719.51	110	0.18	0.38	1.73695	HDPE	145	0.03
PP-401	37.5	21.046	18.955	1.08275	PJ-310	PJ-281	233.4	-11,813.20	4,791.56	110	0.11	0.16	1.08275	HDPE	145	0.01
PP-402	68.5	21.046	21.169	-3.23171	PJ-310	PJ-311	233.4	-11,813.20	4,791.56	110	0.34	1.21	3.23171	HDPE	145	0.08
PP-403	29.5	21.169	21.168	-3.42186	PJ-311	PJ-312	233.36	-11,753.29	4,824.35	110	0.36	1.34	3.42186	HDPE	145	0.04
PP-404	33.5	21.168	21.281	-6.61729	PJ-312	PJ-313	233.4	-11,726.17	4,836.09	110	0.7	4.55	6.61729	HDPE	145	0.15
PP-405	42	21.281	21.361	0.09217	PJ-313	PJ-314	233.44	-11,695.81	4,849.85	110	0.01	0	0.09217	HDPE	145	0
PP-406	41.5	21.478	21.281	6.96537	PJ-286	PJ-313	233.45	-11,712.32	4,887.80	110	0.73	5.01	6.96537	HDPE	145	0.21
PP-407	38.5	21.129	21.169	2.08253	PJ-285	PJ-311	233.42	-11,773.04	4,857.44	110	0.22	0.54	2.08253	HDPE	145	0.02
PP-408	35.5	21.169	21.073	1.89668	PJ-311	PJ-315	233.36	-11,753.29	4,824.35	110	0.2	0.45	1.89668	HDPE	145	0.02
PP-409	28	21.073	21.173	-2.4779	PJ-315	PJ-316	233.44	-11,736.70	4,793.18	110	0.26	0.74	2.4779	HDPE	145	0.02
PP-410	33.5	21.173	21.168	-2.98427	PJ-316	PJ-312	233.36	-11,711.60	4,806.13	110	0.31	1.04	2.98427	HDPE	145	0.03
PP-411	85	21.173	21.173	0.18605	PJ-316	PJ-317	233.36	-11,711.60	4,806.13	110	0.02	0.01	0.18605	HDPE	145	0
PP-412	47	21.073	21.024	4.13286	PJ-315	PJ-318	233.44	-11,736.70	4,793.18	110	0.43	1.9	4.13286	HDPE	145	0.09
PP-413	65.5	21.024	21.015	0.98658	PJ-318	PJ-309	233.4	-11,715.65	4,751.08	110	0.1	0.13	0.98658	HDPE	145	0.01
PP-414	65	20.955	21.036	-0.27119	PJ-308	PJ-319	233.44	-11,758.96	4,693.61	110	0.03	0.01	0.27119	HDPE	145	0
PP-415	29	21.036	21.024	-2.83687	PJ-319	PJ-318	233.36	-11,702.29	4,725.18	110	0.3	0.95	2.83687	HDPE	145	0.03
PP-416	67.5	20.986	20.913	-0.85628	PJ-307	PJ-320	233.36	-11,719.29	4,621.15	110	0.09	0.1	0.85628	HDPE	145	0.01
PP-417	73.5	20.913	21.036	-2.19951	PJ-320	PJ-319	233.44	-11,665.45	4,661.63	110	0.23	0.59	2.19951	HDPE	145	0.04
PP-418	30	20.913	20.909	0.96941	PJ-320	PJ-321	233.44	-11,665.45	4,661.63	110	0.1	0.13	0.96941	HDPE	145	0
PP-419	77	20.909	21.164	-4.55041	PJ-321	PJ-322	233.44	-11,641.57	4,679.44	110	0.48	2.28	4.55041	HDPE	145	0.18
PP-420	45.5	21.164	21.255	-5.18123	PJ-322	PJ-323	233.36	-11,606.36	4,733.68	110	0.55	2.9	5.18123	HDPE	145	0.13
PP-421	142	21.255	21.734	-5.56956	PJ-323	PJ-289	233.4	-11,620.52	4,776.99	110	0.59	3.31	5.56956	HDPE	145	0.47
PP-422	188.5	21.255	21.221	-0.43304	PJ-323	PJ-324	233.4	-11,620.52	4,776.99	110	0.05	0.03	0.43304	HDPE	145	0.01
PP-423	146.5	21.221	21.688	-7.64603	PJ-324	PJ-325	233.44	-11,451.73	4,860.78	125	0.62	3.19	7.64603	HDPE	145	0.47
PP-424	49.5	21.688	21.954	-17.7989	PJ-325	PJ-294	233.44	-11,502.33	4,998.00	160	0.89	4.59	17.7989	HDPE	145	0.23
PP-425	83	21.164	21.123	0.18168	PJ-322	PJ-326	233.36	-11,606.36	4,733.68	110	0.02	0.01	0.18168	HDPE	145	0
PP-426	53.5	20.909	20.755	5.16894	PJ-321	PJ-327	233.44	-11,641.57	4,679.44	110	0.54	2.88	5.16894	HDPE	145	0.15
PP-427	157	20.755	20.807	1.13964	PJ-327	PJ-328	233.44	-11,611.51	4,635.16	110	0.12	0.18	1.13964	HDPE	145	0.03

Distribution Network Design Output: Zone 6

PP-428	77.5	20.807	20.808	-2.06773	PJ-328	PJ-329	233.36	-11,479.39	4,719.03	110	0.22	0.53	2.06773	HDPE	145	0.04
PP-429	111	20.808	21.221	-6.23879	PJ-329	PJ-324	233.4	-11,412.03	4,756.91	110	0.66	4.08	6.23879	HDPE	145	0.45
PP-430	57.5	20.808	20.682	3.63351	PJ-329	PJ-330	233.4	-11,412.03	4,756.91	110	0.38	1.5	3.63351	HDPE	145	0.09
PP-431	108	20.682	20.664	2.09462	PJ-330	PJ-331	233.44	-11,392.92	4,702.51	110	0.22	0.54	2.09462	HDPE	145	0.06
PP-432	131	20.664	20.622	0.28648	PJ-331	PJ-332	233.4	-11,329.78	4,789.94	110	0.03	0.01	0.28648	HDPE	145	0
PP-433	78.5	20.682	20.671	1.00571	PJ-330	PJ-333	233.44	-11,392.92	4,702.51	110	0.11	0.14	1.00571	HDPE	145	0.01
PP-434	39.5	20.671	20.77	-1.9598	PJ-333	PJ-334	233.44	-11,442.47	4,641.31	110	0.21	0.48	1.9598	HDPE	145	0.02
PP-435	46.5	20.77	20.807	-2.5934	PJ-334	PJ-328	233.36	-11,459.96	4,676.93	110	0.27	0.8	2.5934	HDPE	145	0.04
PP-436	47.5	20.755	20.73	3.46555	PJ-327	PJ-335	233.44	-11,611.51	4,635.16	110	0.36	1.37	3.46555	HDPE	145	0.07
PP-437	148	20.73	20.77	-0.12225	PJ-335	PJ-334	233.4	-11,584.30	4,596.30	110	0.01	0	0.12225	HDPE	145	0
PP-438	30	20.73	20.656	3.095	PJ-335	PJ-336	233.4	-11,584.30	4,596.30	110	0.33	1.11	3.095	HDPE	145	0.03
PP-439	138	20.656	20.679	-0.37191	PJ-336	PJ-337	233.44	-11,567.47	4,571.36	110	0.04	0.02	0.37191	HDPE	145	0
PP-440	14	20.679	20.671	-2.67684	PJ-337	PJ-333	233.42	-11,444.74	4,627.71	110	0.28	0.85	2.67684	HDPE	145	0.01
PP-441	96.5	20.656	20.663	1.01978	PJ-336	PJ-338	233.44	-11,567.47	4,571.36	110	0.11	0.14	1.01978	HDPE	145	0.01
PP-442	71	20.663	20.718	0.65361	PJ-338	PJ-339	233.42	-11,646.18	4,515.49	110	0.07	0.06	0.65361	HDPE	145	0
PP-443	73.5	20.718	20.658	-0.15003	PJ-339	PJ-340	233.36	-11,589.71	4,472.74	110	0.02	0	0.15003	HDPE	145	0
PP-444	34.5	20.658	20.718	0.0758	PJ-340	PJ-341	233.42	-11,530.38	4,516.01	110	0.01	0	0.0758	HDPE	145	0
PP-445	29	20.656	20.664	1.80587	PJ-336	PJ-342	233.44	-11,567.47	4,571.36	110	0.19	0.41	1.80587	HDPE	145	0.01
PP-446	37.5	20.664	20.658	1.08379	PJ-342	PJ-340	233.42	-11,550.85	4,547.61	110	0.11	0.16	1.08379	HDPE	145	0.01
PP-447	47.5	20.658	20.717	0.43611	PJ-340	PJ-343	233.42	-11,530.38	4,516.01	110	0.05	0.03	0.43611	HDPE	145	0
PP-448	55	20.717	20.657	0.12977	PJ-343	PJ-344	233.36	-11,503.70	4,476.63	110	0.01	0	0.12977	HDPE	145	0
PP-449	61.5	20.657	20.718	-0.35342	PJ-344	PJ-339	233.42	-11,540.48	4,435.70	110	0.04	0.02	0.35342	HDPE	145	0
PP-450	29	20.657	20.717	0.16506	PJ-344	PJ-345	233.42	-11,540.48	4,435.70	110	0.02	0	0.16506	HDPE	145	0
PP-451	49.5	20.717	20.657	-0.0068	PJ-345	PJ-346	233.36	-11,517.17	4,418.86	110	0	0	0.0068	HDPE	145	0
PP-452	17	20.657	20.657	-0.25984	PJ-346	PJ-347	233.42	-11,482.71	4,454.09	110	0.03	0.01	0.25984	HDPE	145	0
PP-453	13.5	20.657	20.717	-0.05261	PJ-347	PJ-343	233.42	-11,493.60	4,467.30	110	0.01	0	0.05261	HDPE	145	0
PP-454	22.5	20.657	20.657	-0.32342	PJ-347	PJ-348	233.42	-11,493.60	4,467.30	110	0.03	0.02	0.32342	HDPE	145	0
PP-455	97	20.657	20.722	-0.58886	PJ-348	PJ-349	233.42	-11,492.82	4,489.58	110	0.06	0.05	0.58886	HDPE	145	0.01
PP-456	77	20.722	20.664	-0.40831	PJ-349	PJ-342	233.36	-11,485.31	4,586.47	110	0.04	0.03	0.40831	HDPE	145	0
PP-457	37.5	20.722	20.725	-0.64278	PJ-349	PJ-350	233.36	-11,485.31	4,586.47	110	0.07	0.06	0.64278	HDPE	145	0
PP-458	48.5	20.725	20.658	0.99968	PJ-350	PJ-351	233.36	-11,449.04	4,595.28	110	0.11	0.14	0.99968	HDPE	145	0.01
PP-459	92	20.658	20.657	0.19678	PJ-351	PJ-348	233.42	-11,426.50	4,553.05	110	0.02	0.01	0.19678	HDPE	145	0
PP-460	108	20.657	20.777	-0.12842	PJ-346	PJ-352	233.42	-11,482.71	4,454.09	110	0.01	0	0.12842	HDPE	145	0
PP-461	30	20.777	20.658	-0.43018	PJ-352	PJ-351	233.3	-11,406.55	4,530.77	110	0.05	0.03	0.43018	HDPE	145	0
PP-462	32.5	20.725	20.679	-1.90165	PJ-350	PJ-337	233.36	-11,449.04	4,595.28	110	0.2	0.45	1.90165	HDPE	145	0.01
PP-463	62	20.664	20.693	1.15051	PJ-331	PJ-353	233.4	-11,329.78	4,789.94	110	0.12	0.18	1.15051	HDPE	145	0.01

PP-464	40	20.693	20.751	0.47057	PJ-353	PJ-354	233.36	-11,289.42	4,837.03	110	0.05	0.03	0.47057	HDPE	145	0
PP-465	107.5	20.751	20.693	-0.32836	PJ-354	PJ-355	233.3	-11,270.79	4,872.31	110	0.03	0.02	0.32836	HDPE	145	0
PP-466	140	20.693	19.311	-0.86919	PJ-355	PJ-132	233.36	-11,233.85	4,973.51	110	0.09	0.11	0.86919	HDPE	145	0.01
PP-467	109	20.751	20.75	0.23845	PJ-354	PJ-356	233.3	-11,270.79	4,872.31	110	0.03	0.01	0.23845	HDPE	145	0
PP-468	104.5	20.693	20.752	0.22862	PJ-353	PJ-357	233.36	-11,289.42	4,837.03	110	0.02	0.01	0.22862	HDPE	145	0
PP-469	223.5	21.688	20.497	9.23652	PJ-325	PJ-133	233.44	-11,502.33	4,998.00	125	0.75	4.53	9.23652	HDPE	145	1.01
PP-470	92.5	20.068	20.278	-1.87754	PJ-149	PJ-358	233.53	-11,889.15	5,738.33	110	0.2	0.44	1.87754	HDPE	145	0.04
PP-471	82.5	20.278	20.338	0.18059	PJ-358	PJ-359	233.36	-11,940.27	5,661.45	110	0.02	0.01	0.18059	HDPE	145	0
PP-472	43.5	18.615	20.278	2.53564	PJ-239	PJ-358	235.06	-11,975.75	5,686.40	110	0.27	0.77	2.53564	HDPE	145	0.03
PP-473	104	20.235	20.806	-8.25156	PJ-147	PJ-360	233.55	-11,845.44	5,723.43	125	0.67	3.68	8.25156	HDPE	145	0.38
PP-474	100	20.806	20.859	-2.07335	PJ-360	PJ-361	233.36	-11,903.67	5,637.16	110	0.22	0.53	2.07335	HDPE	145	0.05
PP-475	22.5	20.859	20.919	0.0496	PJ-361	PJ-362	233.36	-11,960.34	5,554.91	110	0.01	0	0.0496	HDPE	145	0
PP-476	43	20.859	20.891	-2.48475	PJ-361	PJ-363	233.36	-11,960.34	5,554.91	110	0.26	0.74	2.48475	HDPE	145	0.03
PP-477	23	20.891	20.951	0.05069	PJ-363	PJ-364	233.36	-11,925.37	5,530.30	110	0.01	0	0.05069	HDPE	145	0
PP-478	28.5	20.891	20.916	-2.74223	PJ-363	PJ-365	233.36	-11,925.37	5,530.30	110	0.29	0.89	2.74223	HDPE	145	0.03
PP-479	26	20.916	21.024	-3.0281	PJ-365	PJ-366	233.36	-11,909.50	5,553.94	110	0.32	1.07	3.0281	HDPE	145	0.03
PP-480	47	21.024	21.005	-3.35217	PJ-366	PJ-367	233.28	-11,894.61	5,575.31	110	0.35	1.29	3.35217	HDPE	145	0.06
PP-481	42.5	21.005	20.806	6.71685	PJ-367	PJ-360	233.36	-11,868.05	5,613.85	110	0.71	4.68	6.71685	HDPE	145	0.2
PP-482	116.5	20.358	21.005	-8.35249	PJ-145	PJ-367	233.57	-11,804.31	5,711.45	125	0.68	3.76	8.35249	HDPE	145	0.44
PP-483	78	21.005	21.489	-19.04202	PJ-367	PJ-368	233.36	-11,868.05	5,613.85	160	0.95	5.2	19.04202	HDPE	145	0.41
PP-484	28	21.489	21.529	-30.77229	PJ-368	PJ-369	233.28	-11,811.38	5,563.33	200	0.98	4.27	30.77229	HDPE	145	0.12
PP-485	27.5	21.529	21.657	-24.53224	PJ-369	PJ-370	233.36	-11,834.05	5,546.82	180	0.96	4.68	24.53224	HDPE	145	0.13
PP-486	86	21.657	22.147	-24.78051	PJ-370	PJ-371	233.36	-11,853.81	5,528.03	180	0.97	4.77	24.78051	HDPE	145	0.41
PP-487	29.5	22.147	22.039	50.82939	PJ-371	PJ-372	233.28	-11,805.23	5,457.12	250	1.04	3.64	50.82939	HDPE	145	0.11
PP-488	96	22.039	21.529	6.57128	PJ-372	PJ-369	233.28	-11,778.35	5,468.77	110	0.69	4.5	6.57128	HDPE	145	0.43
PP-489	38	20.916	20.916	0.08344	PJ-365	PJ-373	233.36	-11,909.50	5,553.94	110	0.01	0	0.08344	HDPE	145	0
PP-490	37.5	21.024	21.024	0.08235	PJ-366	PJ-374	233.28	-11,894.61	5,575.31	110	0.01	0	0.08235	HDPE	145	0
PP-491	26.5	21.489	21.377	17.04188	PJ-368	PJ-375	233.28	-11,811.38	5,563.33	160	0.85	4.23	17.04188	HDPE	145	0.11
PP-492	32	21.377	21.175	22.07873	PJ-375	PJ-376	233.28	-11,790.01	5,578.87	180	0.87	3.85	22.07873	HDPE	145	0.12
PP-493	5.5	21.175	21.233	21.99638	PJ-376	PJ-377	233.36	-11,765.08	5,598.63	180	0.86	3.83	21.99638	HDPE	145	0.02
PP-494	18.5	21.233	21.064	9.59188	PJ-377	PJ-378	233.28	-11,768.32	5,602.84	125	0.78	4.86	9.59188	HDPE	145	0.09
PP-495	34.5	21.064	21.144	0.0758	PJ-378	PJ-379	233.36	-11,778.68	5,618.06	110	0.01	0	0.0758	HDPE	145	0
PP-496	97.5	21.064	20.358	9.18703	PJ-378	PJ-144	233.36	-11,778.68	5,618.06	125	0.75	4.49	9.18703	HDPE	145	0.44
PP-497	48.5	20.456	20.885	-10.32012	PJ-143	PJ-380	233.52	-11,687.73	5,680.04	125	0.84	5.56	10.32012	HDPE	145	0.27
PP-498	63	20.885	21.233	-8.93774	PJ-380	PJ-377	233.36	-11,721.36	5,644.93	125	0.73	4.26	8.93774	HDPE	145	0.27
PP-499	16.5	21.233	21.134	3.24032	PJ-377	PJ-381	233.28	-11,768.32	5,602.84	110	0.34	1.21	3.24032	HDPE	145	0.02

Distribution Network Design Output: Zone 6

PP-500	62.5	21.134	20.971	8.49562	PJ-381	PJ-382	233.36	-11,756.66	5,591.18	125	0.69	3.88	8.49562	HDPE	145	0.24
PP-501	56	20.971	19.784	6.53592	PJ-382	PJ-142	233.28	-11,709.70	5,632.63	110	0.69	4.45	6.53592	HDPE	145	0.25
PP-502	17	20.885	20.971	-1.6634	PJ-380	PJ-382	233.36	-11,721.36	5,644.93	110	0.18	0.35	1.6634	HDPE	145	0.01
PP-503	101.5	21.134	21.478	-5.64985	PJ-381	PJ-383	233.36	-11,756.66	5,591.18	110	0.59	3.4	5.64985	HDPE	145	0.34
PP-504	29.5	21.478	21.398	10.16271	PJ-383	PJ-384	233.36	-11,697.08	5,509.25	125	0.83	5.41	10.16271	HDPE	145	0.16
PP-505	68	21.398	20.985	9.65446	PJ-384	PJ-385	233.28	-11,671.82	5,524.47	125	0.79	4.92	9.65446	HDPE	145	0.33
PP-506	98.5	20.985	20.006	9.06513	PJ-385	PJ-141	233.36	-11,618.39	5,566.24	125	0.74	4.38	9.06513	HDPE	145	0.43
PP-507	51.5	20.985	20.985	0.11291	PJ-385	PJ-386	233.36	-11,618.39	5,566.24	110	0.01	0	0.11291	HDPE	145	0
PP-508	34.5	21.398	21.318	0.21959	PJ-384	PJ-387	233.28	-11,671.82	5,524.47	110	0.02	0.01	0.21959	HDPE	145	0
PP-509	63	21.318	21.338	0.13802	PJ-387	PJ-388	233.36	-11,649.80	5,497.59	110	0.01	0	0.13802	HDPE	145	0
PP-510	103	21.318	21.4	-0.35665	PJ-387	PJ-389	233.36	-11,649.80	5,497.59	110	0.04	0.02	0.35665	HDPE	145	0
PP-511	63.5	21.4	21.136	5.49884	PJ-389	PJ-390	233.28	-11,620.33	5,416.96	110	0.58	3.23	5.49884	HDPE	145	0.21
PP-512	23	21.136	21.13	5.15839	PJ-390	PJ-391	233.34	-11,569.49	5,454.20	110	0.54	2.87	5.15839	HDPE	145	0.07
PP-513	47	21.13	20.891	8.39846	PJ-391	PJ-392	233.28	-11,552.00	5,469.10	125	0.68	3.8	8.39846	HDPE	145	0.18
PP-514	13.5	20.891	20.824	8.034	PJ-392	PJ-393	233.34	-11,517.03	5,500.18	125	0.65	3.5	8.034	HDPE	145	0.05
PP-515	35.5	20.824	20.403	7.58985	PJ-393	PJ-138	233.36	-11,506.02	5,508.28	125	0.62	3.15	7.58985	HDPE	145	0.11
PP-516	53	20.891	20.891	-0.11619	PJ-394	PJ-392	233.34	-11,547.79	5,543.25	110	0.01	0	0.11619	HDPE	145	0
PP-517	77	20.824	20.904	0.16859	PJ-393	PJ-395	233.36	-11,506.02	5,508.28	110	0.02	0.01	0.16859	HDPE	145	0
PP-518	34.5	21.136	21.136	0.0758	PJ-390	PJ-396	233.34	-11,569.49	5,454.20	110	0.01	0	0.0758	HDPE	145	0
PP-519	52	21.13	21.202	-3.5069	PJ-391	PJ-397	233.28	-11,552.00	5,469.10	110	0.37	1.41	3.5069	HDPE	145	0.07
PP-520	36	21.202	21.123	0.07907	PJ-397	PJ-398	233.28	-11,519.30	5,428.94	110	0.01	0	0.07907	HDPE	145	0
PP-521	95	21.202	21.341	-3.98598	PJ-397	PJ-399	233.28	-11,519.30	5,428.94	110	0.42	1.78	3.98598	HDPE	145	0.17
PP-522	56	21.341	21.4	-2.04605	PJ-399	PJ-389	233.31	-11,592.80	5,368.39	110	0.22	0.52	2.04605	HDPE	145	0.03
PP-523	35	21.4	21.475	-8.4642	PJ-389	PJ-400	233.28	-11,620.33	5,416.96	125	0.69	3.86	8.4642	HDPE	145	0.13
PP-524	113.5	21.475	21.551	-1.78617	PJ-400	PJ-401	233.34	-11,651.74	5,405.30	110	0.19	0.4	1.78617	HDPE	145	0.05
PP-525	6	21.551	21.478	16.11214	PJ-401	PJ-383	233.31	-11,702.58	5,506.66	160	0.8	3.82	16.11214	HDPE	145	0.02
PP-526	28	21.551	21.655	-18.22081	PJ-401	PJ-402	233.31	-11,702.58	5,506.66	160	0.91	4.79	18.22081	HDPE	145	0.13
PP-527	27	21.655	21.833	-26.80154	PJ-402	PJ-403	233.34	-11,726.54	5,491.77	180	1.05	5.52	26.80154	HDPE	145	0.15
PP-528	29.5	21.833	22.039	-36.95503	PJ-403	PJ-372	233.31	-11,750.51	5,479.14	200	1.18	5.99	36.95503	HDPE	145	0.18
PP-529	104	21.489	21.833	-5.82843	PJ-368	PJ-403	233.28	-11,811.38	5,563.33	110	0.61	3.6	5.82843	HDPE	145	0.37
PP-530	108	21.377	21.655	-5.40083	PJ-375	PJ-402	233.28	-11,790.01	5,578.87	110	0.57	3.13	5.40083	HDPE	145	0.34
PP-531	69	22.264	22.314	-0.15112	PJ-404	PJ-405	233.36	-11,990.71	5,266.40	110	0.02	0	0.15112	HDPE	145	0
PP-532	33.5	22.314	22.285	-0.37538	PJ-405	PJ-406	233.31	-12,021.54	5,328.06	110	0.04	0.02	0.37538	HDPE	145	0
PP-533	32.5	22.285	22.313	0.66145	PJ-406	PJ-407	233.34	-11,992.01	5,343.34	110	0.07	0.06	0.66145	HDPE	145	0
PP-534	33	22.313	22.263	2.22205	PJ-407	PJ-408	233.31	-11,962.21	5,356.29	110	0.23	0.6	2.22205	HDPE	145	0.02
PP-535	41	22.263	22.157	5.58615	PJ-408	PJ-409	233.34	-11,932.94	5,371.58	110	0.59	3.33	5.58615	HDPE	145	0.14

PP-536	34	22.157	21.922	21.60659	PJ-409	PJ-249	233.31	-11,913.77	5,398.26	180	0.85	3.7	21.60659	HDPE	145	0.13
PP-537	6	22.157	22.13	-16.19776	PJ-409	PJ-410	233.31	-11,913.77	5,398.26	160	0.81	3.85	16.19776	HDPE	145	0.02
PP-538	79.5	22.13	22.499	-6.18605	PJ-410	PJ-411	233.36	-11,908.59	5,400.85	110	0.65	4.02	6.18605	HDPE	145	0.32
PP-539	56	22.499	22.421	2.68762	PJ-411	PJ-412	233.31	-11,872.84	5,329.61	110	0.28	0.86	2.68762	HDPE	145	0.05
PP-540	32.5	22.421	22.397	2.49393	PJ-412	PJ-413	233.34	-11,849.00	5,279.09	110	0.26	0.75	2.49393	HDPE	145	0.02
PP-541	55	22.397	22.391	2.30242	PJ-413	PJ-414	233.34	-11,878.54	5,265.36	110	0.24	0.64	2.30242	HDPE	145	0.04
PP-542	64.5	22.391	22.263	3.66696	PJ-414	PJ-408	233.31	-11,903.15	5,314.33	110	0.39	1.53	3.66696	HDPE	145	0.1
PP-543	65.5	22.285	22.28	-1.3244	PJ-406	PJ-415	233.34	-11,992.01	5,343.34	110	0.14	0.23	1.3244	HDPE	145	0.02
PP-544	33	22.28	22.34	-1.53993	PJ-415	PJ-416	233.36	-11,962.99	5,284.79	110	0.16	0.31	1.53993	HDPE	145	0.01
PP-545	33.5	22.34	22.391	-3.66911	PJ-416	PJ-414	233.31	-11,933.20	5,299.30	110	0.39	1.53	3.66911	HDPE	145	0.05
PP-546	34	22.391	22.499	-5.4424	PJ-414	PJ-411	233.31	-11,903.15	5,314.33	110	0.57	3.17	5.4424	HDPE	145	0.11
PP-547	32.5	22.499	22.574	-14.75756	PJ-411	PJ-417	233.31	-11,872.84	5,329.61	160	0.73	3.24	14.75756	HDPE	145	0.11
PP-548	83	22.574	22.283	6.06614	PJ-417	PJ-418	233.34	-11,843.31	5,342.82	110	0.64	3.88	6.06614	HDPE	145	0.32
PP-549	32.5	22.283	22.13	10.2698	PJ-418	PJ-410	233.31	-11,880.35	5,416.91	140	0.67	3.18	10.2698	HDPE	145	0.1
PP-550	64	22.313	22.34	-1.8438	PJ-407	PJ-416	233.31	-11,962.21	5,356.29	110	0.19	0.43	1.8438	HDPE	145	0.03
PP-551	29	22.283	22.288	-4.51962	PJ-418	PJ-419	233.31	-11,880.35	5,416.91	125	0.37	1.21	4.51962	HDPE	145	0.03
PP-552	29	22.288	22.241	6.91902	PJ-419	PJ-420	233.34	-11,856.26	5,432.97	125	0.56	2.65	6.91902	HDPE	145	0.08
PP-553	27.5	22.241	22.147	31.79447	PJ-420	PJ-371	233.31	-11,830.61	5,446.70	200	1.01	4.53	31.79447	HDPE	145	0.12
PP-554	84.5	22.147	22.485	-44.3126	PJ-371	PJ-421	233.28	-11,805.23	5,457.12	225	1.11	4.72	44.3126	HDPE	145	0.4
PP-555	28	22.485	22.606	-9.78033	PJ-421	PJ-422	233.34	-11,767.40	5,381.42	125	0.8	5.04	9.78033	HDPE	145	0.14
PP-556	84.5	22.606	22.241	25.18376	PJ-422	PJ-420	233.36	-11,793.05	5,370.80	180	0.99	4.92	25.18376	HDPE	145	0.42
PP-557	134.5	22.288	22.844	-11.85939	PJ-419	PJ-423	233.34	-11,856.26	5,432.97	140	0.77	4.15	11.85939	HDPE	145	0.56
PP-558	28.5	22.844	22.835	-34.48992	PJ-423	PJ-300	233.34	-11,795.90	5,312.77	250	0.7	1.78	34.48992	HDPE	145	0.05
PP-559	49	22.835	22.606	35.31716	PJ-300	PJ-422	233.4	-11,771.06	5,326.84	200	1.12	5.5	35.31716	HDPE	145	0.27
PP-560	47	22.574	22.771	-21.17895	PJ-417	PJ-424	233.34	-11,843.31	5,342.82	180	0.83	3.57	21.17895	HDPE	145	0.17
PP-561	27.5	22.771	22.844	-21.75082	PJ-424	PJ-423	233.31	-11,820.77	5,301.37	180	0.85	3.75	21.75082	HDPE	145	0.1
PP-562	106	22.844	22.843	0.2319	PJ-423	PJ-425	233.34	-11,795.90	5,312.77	110	0.02	0.01	0.2319	HDPE	145	0
PP-563	93.5	22.771	22.771	0.20461	PJ-424	PJ-426	233.31	-11,820.77	5,301.37	110	0.02	0.01	0.20461	HDPE	145	0
PP-564	48.5	22.485	22.646	-34.88425	PJ-421	PJ-301	233.34	-11,767.40	5,381.42	200	1.11	5.38	34.88425	HDPE	145	0.26
PP-565	115.5	22.039	21.67	6.71204	PJ-372	PJ-427	233.28	-11,778.35	5,468.77	125	0.55	2.51	6.71204	HDPE	145	0.29
PP-566	113.5	21.67	21.719	0.24827	PJ-427	PJ-428	233.36	-11,729.02	5,365.02	110	0.03	0.01	0.24827	HDPE	145	0
PP-567	31	21.67	21.629	5.89564	PJ-427	PJ-429	233.36	-11,729.02	5,365.02	125	0.48	1.97	5.89564	HDPE	145	0.06
PP-568	142	21.629	21.607	0.3105	PJ-429	PJ-430	233.34	-11,701.81	5,380.05	110	0.03	0.02	0.3105	HDPE	145	0
PP-569	110.5	21.833	21.629	3.73292	PJ-403	PJ-429	233.31	-11,750.51	5,479.14	110	0.39	1.58	3.73292	HDPE	145	0.17
PP-570	27.5	21.629	21.596	8.63861	PJ-429	PJ-431	233.34	-11,701.81	5,380.05	140	0.56	2.3	8.63861	HDPE	145	0.06
PP-571	28.5	21.596	21.475	10.30846	PJ-431	PJ-400	233.31	-11,676.82	5,391.90	140	0.67	3.2	10.30846	HDPE	145	0.09

PP-572	95.5	21.475	21.353	3.03502	PJ-400	PJ-432	233.34	-11,651.74	5,405.30	110	0.32	1.08	3.03502	HDPE	145	0.1
PP-573	46	21.353	21.366	2.58759	PJ-432	PJ-433	233.36	-11,608.81	5,320.01	110	0.27	0.8	2.58759	HDPE	145	0.04
PP-574	13	21.366	21.316	0.02886	PJ-433	PJ-434	233.31	-11,568.01	5,341.71	110	0	0	0.02886	HDPE	145	0
PP-575	36.5	21.366	21.341	2.34976	PJ-433	PJ-399	233.31	-11,568.01	5,341.71	110	0.25	0.67	2.34976	HDPE	145	0.02
PP-576	31.5	21.402	21.353	-0.06925	PJ-435	PJ-432	233.31	-11,595.86	5,291.19	110	0.01	0	0.06925	HDPE	145	0
PP-577	124.5	21.545	21.596	-0.27229	PJ-436	PJ-431	233.36	-11,621.12	5,280.83	110	0.03	0.01	0.27229	HDPE	145	0
PP-578	111.5	21.596	21.655	-2.58012	PJ-431	PJ-402	233.31	-11,676.82	5,391.90	110	0.27	0.8	2.58012	HDPE	145	0.09
	34261															

BOQ for Z6								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	J-1	J-2	67.5	110	PVC	160	HDPE	Replacement
P-10	J-5	J-10	99	110	PVC	110	uPVC	Retained
P-100	J-81	J-82	59.5	110	PVC	110	uPVC	Retained
P-101	J-81	J-83	27	110	PVC	110	uPVC	Retained
P-102	J-83	J-84	12.5	110	PVC	110	uPVC	Retained
P-103	J-84	J-85	24	110	PVC	110	uPVC	Retained
P-104	J-85	J-86	18.5	110	PVC	110	uPVC	Retained
P-105	J-86	J-87	29.5	110	PVC	110	uPVC	Retained
P-106	J-87	J-88	12	110	PVC	110	uPVC	Retained
P-107	J-88	J-89	31	110	PVC	110	uPVC	Retained
P-108	J-89	J-83	17	110	PVC	110	uPVC	Retained
P-109	J-75	J-90	30	110	PVC	110	uPVC	Retained
P-11	J-10	J-11	8.5	110	PVC	125	HDPE	Replacement
P-110	J-90	J-91	33.5	110	PVC	110	uPVC	Retained
P-111	J-91	J-77	29	110	PVC	110	uPVC	Retained
P-112	J-91	J-92	32	110	PVC	110	uPVC	Retained
P-113	J-92	J-89	30.5	110	PVC	110	uPVC	Retained
P-114	J-79	J-92	30.5	110	PVC	110	uPVC	Retained
P-115	J-88	J-93	39	110	PVC	110	uPVC	Retained
P-116	J-93	J-94	131	110	PVC	110	uPVC	Retained
P-117	J-90	J-95	73	110	PVC	110	uPVC	Retained
P-118	J-93	J-96	22	110	PVC	110	uPVC	Retained
P-119	J-96	J-97	16	110	PVC	110	uPVC	Retained
P-12	J-11	J-12	23	110	PVC	110	uPVC	Retained
P-120	J-97	J-98	99	110	PVC	110	uPVC	Retained
P-121	J-98	J-99	18	110	PVC	110	uPVC	Retained
P-122	J-99	J-96	103	110	PVC	110	uPVC	Retained
P-123	J-99	J-100	91	110	PVC	110	uPVC	Retained
P-124	J-100	J-86	140.5	110	PVC	110	uPVC	Retained
P-125	J-85	J-101	81.5	110	PVC	110	uPVC	Retained
P-126	J-101	J-102	41	110	PVC	110	uPVC	Retained
P-127	J-102	J-103	55	110	PVC	110	uPVC	Retained
P-128	J-102	J-104	44.5	110	PVC	110	uPVC	Retained
P-129	J-104	J-105	28.5	110	PVC	110	uPVC	Retained
P-13	J-12	J-13	33	110	PVC	110	uPVC	Retained
P-130	J-104	J-106	46	110	PVC	110	uPVC	Retained
P-131	J-101	J-107	44	110	PVC	110	uPVC	Retained
P-132	J-107	J-108	7.5	110	PVC	110	uPVC	Retained
P-133	J-108	J-109	45.5	110	PVC	110	uPVC	Retained
P-134	J-109	J-110	52	110	PVC	110	uPVC	Retained
P-135	J-110	J-111	8	110	PVC	110	uPVC	Retained
P-136	J-110	J-112	36	110	PVC	110	uPVC	Retained
P-137	J-110	J-113	51	110	PVC	110	uPVC	Retained
P-138	J-109	J-114	31	110	PVC	110	uPVC	Retained
P-139	J-107	J-115	57.5	110	PVC	110	uPVC	Retained
P-14	J-13	J-14	30.5	110	PVC	110	uPVC	Retained
P-140	J-115	J-116	36	150	PVC	160	HDPE	Replacement
P-141	J-115	J-117	50.5	150	PVC	160	HDPE	Replacement
P-142	J-117	J-118	87	110	PVC	110	uPVC	Retained
P-143	J-118	J-108	34.5	110	PVC	110	uPVC	Retained
P-144	J-118	J-119	42	110	PVC	110	uPVC	Retained
P-145	J-119	J-120	14	110	PVC	110	uPVC	Retained
P-146	J-120	J-121	52	110	PVC	110	uPVC	Retained
P-147	J-120	J-122	13	110	PVC	110	uPVC	Retained
P-148	J-119	J-123	120.5	110	PVC	110	uPVC	Retained
P-149	J-123	J-124	7.5	110	PVC	110	uPVC	Retained
P-15	J-14	J-15	45	110	PVC	110	uPVC	Retained
P-150	J-124	J-117	54	150	PVC	160	HDPE	Replacement
P-151	J-125	J-124	85.5	110	PVC	110	uPVC	Retained

BOQ for Z6								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-124	J-100	27.5	110	PVC	110	uPVC	Retained
P-153	J-98	J-126	106.5	110	PVC	110	uPVC	Retained
P-154	J-80	J-127	15	110	PVC	110	uPVC	Retained
P-155	J-127	J-81	17	110	PVC	110	uPVC	Retained
P-16	J-15	J-16	85	110	PVC	110	uPVC	Retained
P-17	J-16	J-17	29.5	110	PVC	110	uPVC	Retained
P-18	J-17	J-18	49.5	110	PVC	110	uPVC	Retained
P-19	J-18	J-19	33	110	PVC	110	uPVC	Retained
P-2	J-2	J-3	56.5	110	PVC	160	HDPE	Replacement
P-20	J-19	J-15	30.5	110	PVC	110	uPVC	Retained
P-21	J-15	J-20	24.5	110	PVC	110	uPVC	Retained
P-22	J-20	J-21	85.5	110	PVC	110	uPVC	Retained
P-23	J-21	J-22	20.5	110	PVC	110	uPVC	Retained
P-24	J-19	J-23	42.5	110	PVC	110	uPVC	Retained
P-25	J-23	J-14	32	110	PVC	110	uPVC	Retained
P-26	J-9	J-24	26	110	PVC	110	uPVC	Retained
P-27	J-24	J-25	105.5	110	PVC	110	uPVC	Retained
P-28	J-25	J-26	47.5	110	PVC	110	uPVC	Retained
P-29	J-4	J-27	186	110	PVC	110	uPVC	Retained
P-3	J-3	J-4	58	110	PVC	125	HDPE	Replacement
P-30	J-27	J-25	50.5	110	PVC	125	HDPE	Replacement
P-31	J-27	J-28	34	110	PVC	140	HDPE	Replacement
P-32	J-2	J-29	231	110	PVC	110	uPVC	Retained
P-33	J-29	J-30	18.5	110	PVC	110	uPVC	Retained
P-34	J-30	J-31	25	110	PVC	110	uPVC	Retained
P-35	J-29	J-32	26	110	PVC	110	uPVC	Retained
P-36	J-32	J-33	85	110	PVC	110	uPVC	Retained
P-37	J-33	J-34	7	110	PVC	140	HDPE	Replacement
P-38	J-34	J-35	37.5	110	PVC	125	HDPE	Replacement
P-39	J-35	J-36	32	110	PVC	125	HDPE	Replacement
P-4	J-4	J-5	81.5	110	PVC	110	uPVC	Retained
P-40	J-36	J-37	39.5	110	PVC	110	uPVC	Retained
P-41	J-37	J-38	91	110	PVC	110	uPVC	Retained
P-42	J-38	J-39	84.5	150	PVC	160	HDPE	Replacement
P-43	J-39	J-40	105	150	PVC	160	HDPE	Replacement
P-44	J-40	J-41	29	110	PVC	110	uPVC	Retained
P-45	J-41	J-42	23	110	PVC	110	uPVC	Retained
P-46	J-42	J-43	46	110	PVC	110	uPVC	Retained
P-47	J-43	J-44	26	110	PVC	110	uPVC	Retained
P-48	J-44	J-45	29	110	PVC	110	uPVC	Retained
P-49	J-45	J-46	13	110	PVC	110	uPVC	Retained
P-5	J-5	J-6	39.5	110	PVC	110	uPVC	Retained
P-50	J-46	J-47	38	110	PVC	110	uPVC	Retained
P-51	J-47	J-42	47	110	PVC	110	uPVC	Retained
P-52	J-40	J-48	36	110	PVC	110	uPVC	Retained
P-53	J-48	J-49	27.5	110	PVC	110	uPVC	Retained
P-54	J-49	J-50	9.5	110	PVC	110	uPVC	Retained
P-55	J-50	J-43	49.5	110	PVC	110	uPVC	Retained
P-56	J-39	J-51	34	110	PVC	110	uPVC	Retained
P-57	J-51	J-48	104	110	PVC	110	uPVC	Retained
P-58	J-51	J-52	27.5	110	PVC	110	uPVC	Retained
P-59	J-52	J-49	103	110	PVC	110	uPVC	Retained
P-6	J-6	J-7	24.5	110	PVC	110	uPVC	Retained
P-60	J-52	J-21	34	110	PVC	110	uPVC	Retained
P-61	J-21	J-53	43.5	110	PVC	110	uPVC	Retained
P-62	J-53	J-54	30.5	110	PVC	110	uPVC	Retained
P-63	J-54	J-55	17.5	110	PVC	110	uPVC	Retained
P-64	J-55	J-50	31	110	PVC	110	uPVC	Retained
P-65	J-37	J-56	34.5	110	PVC	110	uPVC	Retained
P-66	J-56	J-57	91	110	PVC	110	uPVC	Retained

BOQ for Z6								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-67	J-57	J-58	28	110	PVC	110	uPVC	Retained
P-68	J-58	J-20	34.5	110	PVC	110	uPVC	Retained
P-69	J-20	J-59	90.5	110	PVC	110	uPVC	Retained
P-7	J-7	J-8	61	110	PVC	110	uPVC	Retained
P-70	J-59	J-60	34	110	PVC	110	uPVC	Retained
P-71	J-60	J-58	90.5	110	PVC	110	uPVC	Retained
P-72	J-60	J-56	26.5	110	PVC	110	uPVC	Retained
P-73	J-36	J-61	59.5	110	PVC	110	uPVC	Retained
P-74	J-61	J-60	41	110	PVC	125	HDPE	Replacement
P-75	J-11	J-61	66	110	PVC	110	uPVC	Retained
P-76	J-61	J-62	32.5	110	PVC	110	uPVC	Retained
P-77	J-62	J-63	68.5	110	PVC	110	uPVC	Retained
P-78	J-63	J-10	25	110	PVC	110	uPVC	Retained
P-79	J-35	J-62	59	110	PVC	110	uPVC	Retained
P-8	J-8	J-9	67.5	110	PVC	110	uPVC	Retained
P-80	J-62	J-64	36.5	110	PVC	125	HDPE	Replacement
P-81	J-64	J-65	16.5	110	PVC	110	uPVC	Retained
P-82	J-65	J-34	43.5	110	PVC	110	uPVC	Retained
P-83	J-64	J-66	16.5	110	PVC	110	uPVC	Retained
P-84	J-66	J-67	16	110	PVC	110	uPVC	Retained
P-85	J-63	J-68	46.5	110	PVC	110	uPVC	Retained
P-86	J-66	J-69	17.5	110	PVC	110	uPVC	Retained
P-87	J-69	J-70	48.5	110	PVC	110	uPVC	Retained
P-88	J-70	J-71	27	110	PVC	110	uPVC	Retained
P-89	J-65	J-72	64.5	110	PVC	110	uPVC	Retained
P-9	J-9	J-5	66.5	110	PVC	110	uPVC	Retained
P-90	J-72	J-73	23	110	PVC	110	uPVC	Retained
P-91	J-69	J-4	151.5	110	PVC	110	uPVC	Retained
P-92	J-3	J-70	150.5	110	PVC	110	uPVC	Retained
P-93	J-74	J-75	77	110	PVC	110	uPVC	Retained
P-94	J-75	J-76	13	110	PVC	110	uPVC	Retained
P-95	J-76	J-77	17.5	110	PVC	110	uPVC	Retained
P-96	J-77	J-78	13	110	PVC	110	uPVC	Retained
P-97	J-78	J-79	20	110	PVC	110	uPVC	Retained
P-98	J-79	J-80	13	110	PVC	110	uPVC	Retained
PP-156	J-121	PJ-128	370	#N/A	#N/A	110	HDPE	New
PP-157	PJ-128	J-125	387.5	#N/A	#N/A	110	HDPE	New
PP-158	J-125	PJ-129	333.5	#N/A	#N/A	110	HDPE	New
PP-159	PJ-129	PJ-130	316.5	#N/A	#N/A	110	HDPE	New
PP-160	PJ-130	PJ-131	430	#N/A	#N/A	110	HDPE	New
PP-161	PJ-131	PJ-132	36.5	#N/A	#N/A	110	HDPE	New
PP-162	PJ-132	PJ-133	17	#N/A	#N/A	110	HDPE	New
PP-163	PJ-133	PJ-134	103	#N/A	#N/A	110	HDPE	New
PP-164	PJ-134	PJ-135	143.5	#N/A	#N/A	110	HDPE	New
PP-165	PJ-135	PJ-136	236.5	#N/A	#N/A	110	HDPE	New
PP-166	PJ-136	PJ-130	64.5	#N/A	#N/A	110	HDPE	New
PP-167	PJ-136	PJ-137	61	#N/A	#N/A	110	HDPE	New
PP-168	PJ-137	PJ-138	71.5	#N/A	#N/A	125	HDPE	New
PP-169	PJ-138	PJ-139	52	#N/A	#N/A	110	HDPE	New
PP-170	PJ-137	PJ-140	82	#N/A	#N/A	110	HDPE	New
PP-171	PJ-140	PJ-141	32.5	#N/A	#N/A	140	HDPE	New
PP-172	PJ-141	PJ-142	137.5	#N/A	#N/A	110	HDPE	New
PP-173	PJ-142	PJ-143	16.5	#N/A	#N/A	110	HDPE	New
PP-174	PJ-143	J-1	9	#N/A	#N/A	140	HDPE	New
PP-175	J-1	PJ-144	14	#N/A	#N/A	110	HDPE	New
PP-176	PJ-144	PJ-145	97.5	#N/A	#N/A	110	HDPE	New
PP-177	PJ-145	PJ-146	14.5	#N/A	#N/A	125	HDPE	New
PP-178	PJ-146	PJ-147	28	#N/A	#N/A	110	HDPE	New
PP-179	PJ-147	PJ-148	20.5	#N/A	#N/A	140	HDPE	New
PP-180	PJ-148	PJ-149	25.5	#N/A	#N/A	125	HDPE	New

BOQ for Z6								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-181	PJ-149	PJ-150	7	#N/A	#N/A	125	HDPE	New
PP-182	PJ-150	PJ-151	36.5	#N/A	#N/A	110	HDPE	New
PP-183	PJ-151	PJ-152	34.5	#N/A	#N/A	125	HDPE	New
PP-184	PJ-152	PJ-153	28	#N/A	#N/A	110	HDPE	New
PP-185	PJ-153	PJ-154	33	#N/A	#N/A	110	HDPE	New
PP-186	PJ-154	PJ-155	29	#N/A	#N/A	110	HDPE	New
PP-187	PJ-155	J-31	6.5	#N/A	#N/A	110	HDPE	New
PP-188	J-31	PJ-156	32.5	#N/A	#N/A	140	HDPE	New
PP-189	PJ-156	PJ-157	35	#N/A	#N/A	125	HDPE	New
PP-190	PJ-157	PJ-158	40	#N/A	#N/A	110	HDPE	New
PP-191	PJ-158	PJ-159	64	#N/A	#N/A	110	HDPE	New
PP-192	PJ-150	PJ-156	115.5	#N/A	#N/A	110	HDPE	New
PP-193	PJ-148	PJ-157	103.5	#N/A	#N/A	110	HDPE	New
PP-194	PJ-146	PJ-158	87	#N/A	#N/A	110	HDPE	New
PP-195	J-72	J-70	32	#N/A	#N/A	110	HDPE	New
PP-196	J-12	PJ-160	50	#N/A	#N/A	110	HDPE	New
PP-197	J-13	PJ-161	48.5	#N/A	#N/A	110	HDPE	New
PP-198	J-38	J-57	34	#N/A	#N/A	110	HDPE	New
PP-199	J-57	J-51	83.5	#N/A	#N/A	110	HDPE	New
PP-200	J-43	J-47	23.5	#N/A	#N/A	110	HDPE	New
PP-201	J-44	PJ-162	17.5	#N/A	#N/A	110	HDPE	New
PP-202	J-46	PJ-163	15.5	#N/A	#N/A	110	HDPE	New
PP-203	J-45	PJ-164	76	#N/A	#N/A	110	HDPE	New
PP-204	J-75	PJ-165	32.5	#N/A	#N/A	110	HDPE	New
PP-205	J-76	J-53	98	#N/A	#N/A	110	HDPE	New
PP-206	J-54	J-78	91	#N/A	#N/A	110	HDPE	New
PP-207	J-55	J-80	87	#N/A	#N/A	110	HDPE	New
PP-208	J-123	PJ-166	51	#N/A	#N/A	110	HDPE	New
PP-209	PJ-166	PJ-167	31	#N/A	#N/A	110	HDPE	New
PP-210	PJ-167	PJ-168	32	#N/A	#N/A	110	HDPE	New
PP-211	PJ-168	PJ-169	29	#N/A	#N/A	110	HDPE	New
PP-212	PJ-169	PJ-170	25	#N/A	#N/A	110	HDPE	New
PP-213	PJ-170	PJ-171	60	#N/A	#N/A	110	HDPE	New
PP-214	PJ-171	PJ-172	24	#N/A	#N/A	110	HDPE	New
PP-215	PJ-172	PJ-169	61	#N/A	#N/A	110	HDPE	New
PP-216	PJ-172	PJ-173	29	#N/A	#N/A	110	HDPE	New
PP-217	PJ-173	PJ-168	60	#N/A	#N/A	110	HDPE	New
PP-218	PJ-173	PJ-174	30.5	#N/A	#N/A	110	HDPE	New
PP-219	PJ-174	PJ-175	31.5	#N/A	#N/A	110	HDPE	New
PP-220	PJ-175	PJ-167	27.5	#N/A	#N/A	110	HDPE	New
PP-221	PJ-166	PJ-176	28	#N/A	#N/A	110	HDPE	New
PP-222	PJ-176	PJ-175	29	#N/A	#N/A	110	HDPE	New
PP-223	J-18	J-74	63	#N/A	#N/A	110	HDPE	New
PP-224	J-74	J-95	34	#N/A	#N/A	110	HDPE	New
PP-225	J-95	J-94	28.5	#N/A	#N/A	110	HDPE	New
PP-226	J-94	J-126	109.5	#N/A	#N/A	110	HDPE	New
PP-227	J-126	PJ-177	63	#N/A	#N/A	110	HDPE	New
PP-228	PJ-177	PJ-178	197	#N/A	#N/A	110	HDPE	New
PP-229	J-127	J-89	29.5	#N/A	#N/A	110	HDPE	New
PP-230	PJ-135	PJ-179	57	#N/A	#N/A	110	HDPE	New
PP-231	PJ-140	J-28	102	#N/A	#N/A	140	HDPE	New
PP-232	J-28	PJ-180	61.5	#N/A	#N/A	110	HDPE	New
PP-233	PJ-180	PJ-181	19	#N/A	#N/A	110	HDPE	New
PP-234	PJ-180	PJ-182	52	#N/A	#N/A	110	HDPE	New
PP-235	J-26	PJ-177	136	#N/A	#N/A	110	HDPE	New
PP-236	PJ-152	PJ-183	112.5	#N/A	#N/A	110	HDPE	New
PP-237	PJ-183	PJ-184	34.5	#N/A	#N/A	110	HDPE	New
PP-238	PJ-184	PJ-185	84	#N/A	#N/A	110	HDPE	New
PP-239	PJ-185	PJ-186	32.5	#N/A	#N/A	110	HDPE	New
PP-240	PJ-186	PJ-187	94.5	#N/A	#N/A	110	HDPE	New

BOQ for Z6								
				Existing		Proposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-241	PJ-187	PJ-188	30.5	#N/A	#N/A	110	HDPE	New
PP-242	PJ-188	PJ-189	11.5	#N/A	#N/A	110	HDPE	New
PP-243	PJ-189	PJ-190	120.5	#N/A	#N/A	110	HDPE	New
PP-244	PJ-188	PJ-191	18.5	#N/A	#N/A	110	HDPE	New
PP-245	PJ-189	PJ-192	46.5	#N/A	#N/A	110	HDPE	New
PP-246	PJ-192	PJ-193	62.5	#N/A	#N/A	110	HDPE	New
PP-247	PJ-194	PJ-192	52	#N/A	#N/A	110	HDPE	New
PP-248	PJ-187	PJ-195	45.5	#N/A	#N/A	110	HDPE	New
PP-249	PJ-195	PJ-196	44.5	#N/A	#N/A	110	HDPE	New
PP-250	PJ-195	PJ-197	36.5	#N/A	#N/A	110	HDPE	New
PP-251	PJ-197	PJ-198	32.5	#N/A	#N/A	110	HDPE	New
PP-252	PJ-198	PJ-199	16.5	#N/A	#N/A	110	HDPE	New
PP-253	PJ-199	PJ-200	67	#N/A	#N/A	110	HDPE	New
PP-254	PJ-200	PJ-187	31.5	#N/A	#N/A	110	HDPE	New
PP-255	PJ-198	PJ-201	24	#N/A	#N/A	110	HDPE	New
PP-256	PJ-199	PJ-202	36.5	#N/A	#N/A	110	HDPE	New
PP-257	PJ-202	PJ-203	65.5	#N/A	#N/A	110	HDPE	New
PP-258	PJ-203	PJ-200	37.5	#N/A	#N/A	110	HDPE	New
PP-259	PJ-200	PJ-204	31.5	#N/A	#N/A	110	HDPE	New
PP-260	PJ-204	PJ-185	61.5	#N/A	#N/A	110	HDPE	New
PP-261	PJ-204	PJ-205	72	#N/A	#N/A	110	HDPE	New
PP-262	PJ-205	PJ-206	41	#N/A	#N/A	110	HDPE	New
PP-263	PJ-206	PJ-207	22	#N/A	#N/A	110	HDPE	New
PP-264	PJ-207	PJ-203	27	#N/A	#N/A	110	HDPE	New
PP-265	PJ-207	PJ-208	73	#N/A	#N/A	110	HDPE	New
PP-266	PJ-208	PJ-209	46	#N/A	#N/A	110	HDPE	New
PP-267	PJ-209	PJ-202	12	#N/A	#N/A	110	HDPE	New
PP-268	PJ-209	PJ-210	32.5	#N/A	#N/A	110	HDPE	New
PP-269	PJ-210	PJ-211	22	#N/A	#N/A	110	HDPE	New
PP-270	PJ-211	PJ-212	75	#N/A	#N/A	110	HDPE	New
PP-271	PJ-212	PJ-213	27	#N/A	#N/A	110	HDPE	New
PP-272	PJ-213	PJ-210	77.5	#N/A	#N/A	110	HDPE	New
PP-273	PJ-208	PJ-214	21.5	#N/A	#N/A	110	HDPE	New
PP-274	PJ-214	PJ-215	7	#N/A	#N/A	110	HDPE	New
PP-275	PJ-215	PJ-213	29.5	#N/A	#N/A	110	HDPE	New
PP-276	PJ-206	PJ-214	76	#N/A	#N/A	110	HDPE	New
PP-277	PJ-215	PJ-216	25.5	#N/A	#N/A	110	HDPE	New
PP-278	PJ-216	PJ-217	6.5	#N/A	#N/A	110	HDPE	New
PP-279	PJ-217	PJ-218	22	#N/A	#N/A	110	HDPE	New
PP-280	PJ-206	PJ-219	32	#N/A	#N/A	110	HDPE	New
PP-281	PJ-219	PJ-220	38	#N/A	#N/A	110	HDPE	New
PP-282	PJ-220	PJ-216	41	#N/A	#N/A	110	HDPE	New
PP-283	PJ-217	PJ-221	26	#N/A	#N/A	110	HDPE	New
PP-284	PJ-221	PJ-222	7.5	#N/A	#N/A	110	HDPE	New
PP-285	PJ-222	PJ-223	43	#N/A	#N/A	110	HDPE	New
PP-286	PJ-223	PJ-220	34.5	#N/A	#N/A	110	HDPE	New
PP-287	PJ-223	PJ-224	38	#N/A	#N/A	110	HDPE	New
PP-288	PJ-224	PJ-219	34.5	#N/A	#N/A	110	HDPE	New
PP-289	PJ-219	PJ-225	43.5	#N/A	#N/A	110	HDPE	New
PP-290	PJ-225	PJ-205	32.5	#N/A	#N/A	110	HDPE	New
PP-291	PJ-225	PJ-184	53	#N/A	#N/A	110	HDPE	New
PP-292	PJ-184	PJ-226	80.5	#N/A	#N/A	110	HDPE	New
PP-293	PJ-183	PJ-227	28	#N/A	#N/A	110	HDPE	New
PP-294	PJ-227	PJ-228	26	#N/A	#N/A	110	HDPE	New
PP-295	PJ-228	PJ-225	34	#N/A	#N/A	110	HDPE	New
PP-296	PJ-224	PJ-228	42.5	#N/A	#N/A	110	HDPE	New
PP-297	PJ-228	PJ-229	30	#N/A	#N/A	110	HDPE	New
PP-298	PJ-229	PJ-154	84.5	#N/A	#N/A	110	HDPE	New
PP-299	PJ-227	PJ-230	33	#N/A	#N/A	110	HDPE	New
PP-300	PJ-230	PJ-153	76	#N/A	#N/A	110	HDPE	New

BOQ for Z6								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-301	PJ-230	PJ-229	21.5	#N/A	#N/A	110	HDPE	New
PP-302	PJ-224	PJ-155	102	#N/A	#N/A	110	HDPE	New
PP-303	J-30	PJ-231	68	#N/A	#N/A	110	HDPE	New
PP-304	PJ-231	PJ-223	33	#N/A	#N/A	110	HDPE	New
PP-305	PJ-222	PJ-232	34.5	#N/A	#N/A	110	HDPE	New
PP-306	PJ-232	J-32	62.5	#N/A	#N/A	110	HDPE	New
PP-307	PJ-231	PJ-232	42.5	#N/A	#N/A	110	HDPE	New
PP-308	PJ-221	PJ-233	31.5	#N/A	#N/A	110	HDPE	New
PP-309	PJ-233	PJ-234	35.5	#N/A	#N/A	110	HDPE	New
PP-310	PJ-234	PJ-235	29	#N/A	#N/A	110	HDPE	New
PP-311	PJ-235	PJ-236	49.5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-236	PJ-237	29	#N/A	#N/A	110	HDPE	New
PP-313	PJ-237	PJ-234	49	#N/A	#N/A	110	HDPE	New
PP-314	PJ-236	J-33	28.5	#N/A	#N/A	110	HDPE	New
PP-315	PJ-238	PJ-226	176.5	#N/A	#N/A	110	HDPE	New
PP-316	PJ-226	PJ-151	163.5	#N/A	#N/A	110	HDPE	New
PP-317	PJ-151	PJ-239	78	#N/A	#N/A	125	HDPE	New
PP-318	PJ-239	PJ-240	78.5	#N/A	#N/A	140	HDPE	New
PP-319	PJ-240	PJ-241	160	#N/A	#N/A	140	HDPE	New
PP-320	PJ-241	PJ-242	39	#N/A	#N/A	125	HDPE	New
PP-321	PJ-242	PJ-243	51	#N/A	#N/A	110	HDPE	New
PP-322	PJ-242	PJ-244	43.5	#N/A	#N/A	125	HDPE	New
PP-323	PJ-244	PJ-245	43.5	#N/A	#N/A	110	HDPE	New
PP-324	PJ-245	PJ-246	24.5	#N/A	#N/A	110	HDPE	New
PP-325	PJ-246	PJ-247	28.5	#N/A	#N/A	125	HDPE	New
PP-326	PJ-247	PJ-248	27	#N/A	#N/A	125	HDPE	New
PP-327	PJ-248	PJ-249	29.5	#N/A	#N/A	140	HDPE	New
PP-328	PJ-249	PJ-250	45	#N/A	#N/A	125	HDPE	New
PP-329	PJ-250	PJ-251	27	#N/A	#N/A	125	HDPE	New
PP-330	PJ-251	PJ-252	26.5	#N/A	#N/A	125	HDPE	New
PP-331	PJ-252	PJ-253	27	#N/A	#N/A	125	HDPE	New
PP-332	PJ-253	PJ-244	25	#N/A	#N/A	125	HDPE	New
PP-333	PJ-244	PJ-254	22.5	#N/A	#N/A	110	HDPE	New
PP-334	PJ-254	PJ-255	23	#N/A	#N/A	110	HDPE	New
PP-335	PJ-255	PJ-256	24	#N/A	#N/A	125	HDPE	New
PP-336	PJ-256	PJ-257	27.5	#N/A	#N/A	125	HDPE	New
PP-337	PJ-257	PJ-258	27	#N/A	#N/A	110	HDPE	New
PP-338	PJ-258	PJ-251	42.5	#N/A	#N/A	110	HDPE	New
PP-339	PJ-251	PJ-248	44	#N/A	#N/A	110	HDPE	New
PP-340	PJ-247	PJ-252	44.5	#N/A	#N/A	110	HDPE	New
PP-341	PJ-252	PJ-257	42.5	#N/A	#N/A	110	HDPE	New
PP-342	PJ-256	PJ-253	43.5	#N/A	#N/A	110	HDPE	New
PP-343	PJ-253	PJ-246	45.5	#N/A	#N/A	110	HDPE	New
PP-344	PJ-254	PJ-259	16	#N/A	#N/A	110	HDPE	New
PP-345	PJ-255	PJ-260	84	#N/A	#N/A	125	HDPE	New
PP-346	PJ-260	PJ-241	44	#N/A	#N/A	110	HDPE	New
PP-347	PJ-260	PJ-261	157	#N/A	#N/A	125	HDPE	New
PP-348	PJ-261	PJ-262	151.5	#N/A	#N/A	125	HDPE	New
PP-349	PJ-262	PJ-263	103	#N/A	#N/A	125	HDPE	New
PP-350	PJ-263	PJ-264	32	#N/A	#N/A	125	HDPE	New
PP-351	PJ-264	PJ-265	65.5	#N/A	#N/A	125	HDPE	New
PP-352	PJ-265	PJ-266	40	#N/A	#N/A	110	HDPE	New
PP-353	PJ-265	PJ-267	144	#N/A	#N/A	110	HDPE	New
PP-354	PJ-267	PJ-268	61	#N/A	#N/A	110	HDPE	New
PP-355	PJ-268	PJ-269	55	#N/A	#N/A	110	HDPE	New
PP-356	PJ-269	PJ-270	71	#N/A	#N/A	110	HDPE	New
PP-357	PJ-271	PJ-268	52.5	#N/A	#N/A	110	HDPE	New
PP-358	PJ-269	PJ-272	41.5	#N/A	#N/A	110	HDPE	New
PP-359	PJ-272	PJ-273	157.5	#N/A	#N/A	110	HDPE	New
PP-360	PJ-272	PJ-274	139	#N/A	#N/A	110	HDPE	New

BOQ for Z6								
				Existing		Proposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-361	PJ-274	PJ-275	112.5	#N/A	#N/A	110	HDPE	New
PP-362	PJ-275	PJ-267	181	#N/A	#N/A	110	HDPE	New
PP-363	PJ-275	PJ-276	191	#N/A	#N/A	110	HDPE	New
PP-364	PJ-276	PJ-277	26.5	#N/A	#N/A	110	HDPE	New
PP-365	PJ-277	PJ-278	89.5	#N/A	#N/A	110	HDPE	New
PP-366	PJ-278	PJ-274	188.5	#N/A	#N/A	110	HDPE	New
PP-367	PJ-278	PJ-279	122.5	#N/A	#N/A	110	HDPE	New
PP-368	PJ-279	PJ-280	147	#N/A	#N/A	110	HDPE	New
PP-369	PJ-280	PJ-281	109	#N/A	#N/A	110	HDPE	New
PP-370	PJ-281	PJ-282	57.5	#N/A	#N/A	110	HDPE	New
PP-371	PJ-282	PJ-283	172	#N/A	#N/A	110	HDPE	New
PP-372	PJ-283	PJ-284	101.5	#N/A	#N/A	110	HDPE	New
PP-373	PJ-282	PJ-285	7	#N/A	#N/A	110	HDPE	New
PP-374	PJ-285	PJ-286	68	#N/A	#N/A	110	HDPE	New
PP-375	PJ-286	PJ-287	6	#N/A	#N/A	140	HDPE	New
PP-376	PJ-287	PJ-288	160.5	#N/A	#N/A	110	HDPE	New
PP-377	PJ-287	PJ-289	45.5	#N/A	#N/A	160	HDPE	New
PP-378	PJ-289	PJ-290	77	#N/A	#N/A	180	HDPE	New
PP-379	PJ-290	PJ-291	162	#N/A	#N/A	180	HDPE	New
PP-380	PJ-291	PJ-292	41.5	#N/A	#N/A	160	HDPE	New
PP-381	PJ-292	PJ-293	16	#N/A	#N/A	160	HDPE	New
PP-382	PJ-293	PJ-294	164	#N/A	#N/A	160	HDPE	New
PP-383	PJ-294	PJ-290	59	#N/A	#N/A	110	HDPE	New
PP-384	PJ-292	PJ-295	104	#N/A	#N/A	110	HDPE	New
PP-385	PJ-293	PJ-296	24	#N/A	#N/A	110	HDPE	New
PP-386	PJ-296	PJ-297	30	#N/A	#N/A	110	HDPE	New
PP-387	PJ-296	PJ-298	115.5	#N/A	#N/A	110	HDPE	New
PP-388	PJ-291	PJ-299	134	#N/A	#N/A	225	HDPE	New
PP-389	**T-1**	**PJ-299**	**95**	#N/A	#N/A	**355**	HDPE	New
PP-390	PJ-299	PJ-300	121	#N/A	#N/A	315	HDPE	New
PP-391	PJ-300	PJ-301	27	#N/A	#N/A	200	HDPE	New
PP-392	PJ-301	PJ-302	97	#N/A	#N/A	110	HDPE	New
PP-393	PJ-277	PJ-303	113	#N/A	#N/A	110	HDPE	New
PP-394	PJ-279	PJ-304	129	#N/A	#N/A	110	HDPE	New
PP-395	PJ-280	PJ-305	245	#N/A	#N/A	110	HDPE	New
PP-396	PJ-305	PJ-306	71	#N/A	#N/A	110	HDPE	New
PP-397	PJ-305	PJ-307	61.5	#N/A	#N/A	110	HDPE	New
PP-398	PJ-307	PJ-308	82.5	#N/A	#N/A	110	HDPE	New
PP-399	PJ-308	PJ-309	29.5	#N/A	#N/A	110	HDPE	New
PP-400	PJ-309	PJ-310	82.5	#N/A	#N/A	110	HDPE	New
PP-401	PJ-310	PJ-281	37.5	#N/A	#N/A	110	HDPE	New
PP-402	PJ-310	PJ-311	68.5	#N/A	#N/A	110	HDPE	New
PP-403	PJ-311	PJ-312	29.5	#N/A	#N/A	110	HDPE	New
PP-404	PJ-312	PJ-313	33.5	#N/A	#N/A	110	HDPE	New
PP-405	PJ-313	PJ-314	42	#N/A	#N/A	110	HDPE	New
PP-406	PJ-286	PJ-313	41.5	#N/A	#N/A	110	HDPE	New
PP-407	PJ-285	PJ-311	38.5	#N/A	#N/A	110	HDPE	New
PP-408	PJ-311	PJ-315	35.5	#N/A	#N/A	110	HDPE	New
PP-409	PJ-315	PJ-316	28	#N/A	#N/A	110	HDPE	New
PP-410	PJ-316	PJ-312	33.5	#N/A	#N/A	110	HDPE	New
PP-411	PJ-316	PJ-317	85	#N/A	#N/A	110	HDPE	New
PP-412	PJ-315	PJ-318	47	#N/A	#N/A	110	HDPE	New
PP-413	PJ-318	PJ-309	65.5	#N/A	#N/A	110	HDPE	New
PP-414	PJ-308	PJ-319	65	#N/A	#N/A	110	HDPE	New
PP-415	PJ-319	PJ-318	29	#N/A	#N/A	110	HDPE	New
PP-416	PJ-307	PJ-320	67.5	#N/A	#N/A	110	HDPE	New
PP-417	PJ-320	PJ-319	73.5	#N/A	#N/A	110	HDPE	New
PP-418	PJ-320	PJ-321	30	#N/A	#N/A	110	HDPE	New
PP-419	PJ-321	PJ-322	77	#N/A	#N/A	110	HDPE	New
PP-420	PJ-322	PJ-323	45.5	#N/A	#N/A	110	HDPE	New

BOQ for Z6								
				Existing		Proposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-421	PJ-323	PJ-289	142	#N/A	#N/A	110	HDPE	New
PP-422	PJ-323	PJ-324	188.5	#N/A	#N/A	110	HDPE	New
PP-423	PJ-324	PJ-325	146.5	#N/A	#N/A	125	HDPE	New
PP-424	PJ-325	PJ-294	49.5	#N/A	#N/A	160	HDPE	New
PP-425	PJ-322	PJ-326	83	#N/A	#N/A	110	HDPE	New
PP-426	PJ-321	PJ-327	53.5	#N/A	#N/A	110	HDPE	New
PP-427	PJ-327	PJ-328	157	#N/A	#N/A	110	HDPE	New
PP-428	PJ-328	PJ-329	77.5	#N/A	#N/A	110	HDPE	New
PP-429	PJ-329	PJ-324	111	#N/A	#N/A	110	HDPE	New
PP-430	PJ-329	PJ-330	57.5	#N/A	#N/A	110	HDPE	New
PP-431	PJ-330	PJ-331	108	#N/A	#N/A	110	HDPE	New
PP-432	PJ-331	PJ-332	131	#N/A	#N/A	110	HDPE	New
PP-433	PJ-330	PJ-333	78.5	#N/A	#N/A	110	HDPE	New
PP-434	PJ-333	PJ-334	39.5	#N/A	#N/A	110	HDPE	New
PP-435	PJ-334	PJ-328	46.5	#N/A	#N/A	110	HDPE	New
PP-436	PJ-327	PJ-335	47.5	#N/A	#N/A	110	HDPE	New
PP-437	PJ-335	PJ-334	148	#N/A	#N/A	110	HDPE	New
PP-438	PJ-335	PJ-336	30	#N/A	#N/A	110	HDPE	New
PP-439	PJ-336	PJ-337	138	#N/A	#N/A	110	HDPE	New
PP-440	PJ-337	PJ-333	14	#N/A	#N/A	110	HDPE	New
PP-441	PJ-336	PJ-338	96.5	#N/A	#N/A	110	HDPE	New
PP-442	PJ-338	PJ-339	71	#N/A	#N/A	110	HDPE	New
PP-443	PJ-339	PJ-340	73.5	#N/A	#N/A	110	HDPE	New
PP-444	PJ-340	PJ-341	34.5	#N/A	#N/A	110	HDPE	New
PP-445	PJ-336	PJ-342	29	#N/A	#N/A	110	HDPE	New
PP-446	PJ-342	PJ-340	37.5	#N/A	#N/A	110	HDPE	New
PP-447	PJ-340	PJ-343	47.5	#N/A	#N/A	110	HDPE	New
PP-448	PJ-343	PJ-344	55	#N/A	#N/A	110	HDPE	New
PP-449	PJ-344	PJ-339	61.5	#N/A	#N/A	110	HDPE	New
PP-450	PJ-344	PJ-345	29	#N/A	#N/A	110	HDPE	New
PP-451	PJ-345	PJ-346	49.5	#N/A	#N/A	110	HDPE	New
PP-452	PJ-346	PJ-347	17	#N/A	#N/A	110	HDPE	New
PP-453	PJ-347	PJ-343	13.5	#N/A	#N/A	110	HDPE	New
PP-454	PJ-347	PJ-348	22.5	#N/A	#N/A	110	HDPE	New
PP-455	PJ-348	PJ-349	97	#N/A	#N/A	110	HDPE	New
PP-456	PJ-349	PJ-342	77	#N/A	#N/A	110	HDPE	New
PP-457	PJ-349	PJ-350	37.5	#N/A	#N/A	110	HDPE	New
PP-458	PJ-350	PJ-351	48.5	#N/A	#N/A	110	HDPE	New
PP-459	PJ-351	PJ-348	92	#N/A	#N/A	110	HDPE	New
PP-460	PJ-346	PJ-352	108	#N/A	#N/A	110	HDPE	New
PP-461	PJ-352	PJ-351	30	#N/A	#N/A	110	HDPE	New
PP-462	PJ-350	PJ-337	32.5	#N/A	#N/A	110	HDPE	New
PP-463	PJ-331	PJ-353	62	#N/A	#N/A	110	HDPE	New
PP-464	PJ-353	PJ-354	40	#N/A	#N/A	110	HDPE	New
PP-465	PJ-354	PJ-355	107.5	#N/A	#N/A	110	HDPE	New
PP-466	PJ-355	PJ-132	140	#N/A	#N/A	110	HDPE	New
PP-467	PJ-354	PJ-356	109	#N/A	#N/A	110	HDPE	New
PP-468	PJ-353	PJ-357	104.5	#N/A	#N/A	110	HDPE	New
PP-469	PJ-325	PJ-133	223.5	#N/A	#N/A	125	HDPE	New
PP-470	PJ-149	PJ-358	92.5	#N/A	#N/A	110	HDPE	New
PP-471	PJ-358	PJ-359	82.5	#N/A	#N/A	110	HDPE	New
PP-472	PJ-239	PJ-358	43.5	#N/A	#N/A	110	HDPE	New
PP-473	PJ-147	PJ-360	104	#N/A	#N/A	125	HDPE	New
PP-474	PJ-360	PJ-361	100	#N/A	#N/A	110	HDPE	New
PP-475	PJ-361	PJ-362	22.5	#N/A	#N/A	110	HDPE	New
PP-476	PJ-361	PJ-363	43	#N/A	#N/A	110	HDPE	New
PP-477	PJ-363	PJ-364	23	#N/A	#N/A	110	HDPE	New
PP-478	PJ-363	PJ-365	28.5	#N/A	#N/A	110	HDPE	New
PP-479	PJ-365	PJ-366	26	#N/A	#N/A	110	HDPE	New
PP-480	PJ-366	PJ-367	47	#N/A	#N/A	110	HDPE	New

BOQ for Z6								
				Existing		Proposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-481	PJ-367	PJ-360	42.5	#N/A	#N/A	110	HDPE	New
PP-482	PJ-145	PJ-367	116.5	#N/A	#N/A	125	HDPE	New
PP-483	PJ-367	PJ-368	78	#N/A	#N/A	160	HDPE	New
PP-484	PJ-368	PJ-369	28	#N/A	#N/A	200	HDPE	New
PP-485	PJ-369	PJ-370	27.5	#N/A	#N/A	180	HDPE	New
PP-486	PJ-370	PJ-371	86	#N/A	#N/A	180	HDPE	New
PP-487	PJ-371	PJ-372	29.5	#N/A	#N/A	250	HDPE	New
PP-488	PJ-372	PJ-369	96	#N/A	#N/A	110	HDPE	New
PP-489	PJ-365	PJ-373	38	#N/A	#N/A	110	HDPE	New
PP-490	PJ-366	PJ-374	37.5	#N/A	#N/A	110	HDPE	New
PP-491	PJ-368	PJ-375	26.5	#N/A	#N/A	160	HDPE	New
PP-492	PJ-375	PJ-376	32	#N/A	#N/A	180	HDPE	New
PP-493	PJ-376	PJ-377	5.5	#N/A	#N/A	180	HDPE	New
PP-494	PJ-377	PJ-378	18.5	#N/A	#N/A	125	HDPE	New
PP-495	PJ-378	PJ-379	34.5	#N/A	#N/A	110	HDPE	New
PP-496	PJ-378	PJ-144	97.5	#N/A	#N/A	125	HDPE	New
PP-497	PJ-143	PJ-380	48.5	#N/A	#N/A	125	HDPE	New
PP-498	PJ-380	PJ-377	63	#N/A	#N/A	125	HDPE	New
PP-499	PJ-377	PJ-381	16.5	#N/A	#N/A	110	HDPE	New
PP-500	PJ-381	PJ-382	62.5	#N/A	#N/A	125	HDPE	New
PP-501	PJ-382	PJ-142	56	#N/A	#N/A	110	HDPE	New
PP-502	PJ-380	PJ-382	17	#N/A	#N/A	110	HDPE	New
PP-503	PJ-381	PJ-383	101.5	#N/A	#N/A	110	HDPE	New
PP-504	PJ-383	PJ-384	29.5	#N/A	#N/A	125	HDPE	New
PP-505	PJ-384	PJ-385	68	#N/A	#N/A	125	HDPE	New
PP-506	PJ-385	PJ-141	98.5	#N/A	#N/A	125	HDPE	New
PP-507	PJ-385	PJ-386	51.5	#N/A	#N/A	110	HDPE	New
PP-508	PJ-384	PJ-387	34.5	#N/A	#N/A	110	HDPE	New
PP-509	PJ-387	PJ-388	63	#N/A	#N/A	110	HDPE	New
PP-510	PJ-387	PJ-389	103	#N/A	#N/A	110	HDPE	New
PP-511	PJ-389	PJ-390	63.5	#N/A	#N/A	110	HDPE	New
PP-512	PJ-390	PJ-391	23	#N/A	#N/A	110	HDPE	New
PP-513	PJ-391	PJ-392	47	#N/A	#N/A	125	HDPE	New
PP-514	PJ-392	PJ-393	13.5	#N/A	#N/A	125	HDPE	New
PP-515	PJ-393	PJ-138	35.5	#N/A	#N/A	125	HDPE	New
PP-516	PJ-394	PJ-392	53	#N/A	#N/A	110	HDPE	New
PP-517	PJ-393	PJ-395	77	#N/A	#N/A	110	HDPE	New
PP-518	PJ-390	PJ-396	34.5	#N/A	#N/A	110	HDPE	New
PP-519	PJ-391	PJ-397	52	#N/A	#N/A	110	HDPE	New
PP-520	PJ-397	PJ-398	36	#N/A	#N/A	110	HDPE	New
PP-521	PJ-397	PJ-399	95	#N/A	#N/A	110	HDPE	New
PP-522	PJ-399	PJ-389	56	#N/A	#N/A	110	HDPE	New
PP-523	PJ-389	PJ-400	35	#N/A	#N/A	125	HDPE	New
PP-524	PJ-400	PJ-401	113.5	#N/A	#N/A	110	HDPE	New
PP-525	PJ-401	PJ-383	6	#N/A	#N/A	160	HDPE	New
PP-526	PJ-401	PJ-402	28	#N/A	#N/A	160	HDPE	New
PP-527	PJ-402	PJ-403	27	#N/A	#N/A	180	HDPE	New
PP-528	PJ-403	PJ-372	29.5	#N/A	#N/A	200	HDPE	New

BOQ for Z6								
				Existing		Proposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-529	PJ-368	PJ-403	104	#N/A	#N/A	110	HDPE	New
PP-530	PJ-375	PJ-402	108	#N/A	#N/A	110	HDPE	New
PP-531	PJ-404	PJ-405	69	#N/A	#N/A	110	HDPE	New
PP-532	PJ-405	PJ-406	33.5	#N/A	#N/A	110	HDPE	New
PP-533	PJ-406	PJ-407	32.5	#N/A	#N/A	110	HDPE	New
PP-534	PJ-407	PJ-408	33	#N/A	#N/A	110	HDPE	New
PP-535	PJ-408	PJ-409	41	#N/A	#N/A	110	HDPE	New
PP-536	PJ-409	PJ-249	34	#N/A	#N/A	180	HDPE	New
PP-537	PJ-409	PJ-410	6	#N/A	#N/A	160	HDPE	New
PP-538	PJ-410	PJ-411	79.5	#N/A	#N/A	110	HDPE	New
PP-539	PJ-411	PJ-412	56	#N/A	#N/A	110	HDPE	New
PP-540	PJ-412	PJ-413	32.5	#N/A	#N/A	110	HDPE	New
PP-541	PJ-413	PJ-414	55	#N/A	#N/A	110	HDPE	New
PP-542	PJ-414	PJ-408	64.5	#N/A	#N/A	110	HDPE	New
PP-543	PJ-406	PJ-415	65.5	#N/A	#N/A	110	HDPE	New
PP-544	PJ-415	PJ-416	33	#N/A	#N/A	110	HDPE	New
PP-545	PJ-416	PJ-414	33.5	#N/A	#N/A	110	HDPE	New
PP-546	PJ-414	PJ-411	34	#N/A	#N/A	110	HDPE	New
PP-547	PJ-411	PJ-417	32.5	#N/A	#N/A	160	HDPE	New
PP-548	PJ-417	PJ-418	83	#N/A	#N/A	110	HDPE	New
PP-549	PJ-418	PJ-410	32.5	#N/A	#N/A	140	HDPE	New
PP-550	PJ-407	PJ-416	64	#N/A	#N/A	110	HDPE	New
PP-551	PJ-418	PJ-419	29	#N/A	#N/A	125	HDPE	New
PP-552	PJ-419	PJ-420	29	#N/A	#N/A	125	HDPE	New
PP-553	PJ-420	PJ-371	27.5	#N/A	#N/A	200	HDPE	New
PP-554	PJ-371	PJ-421	84.5	#N/A	#N/A	225	HDPE	New
PP-555	PJ-421	PJ-422	28	#N/A	#N/A	125	HDPE	New
PP-556	PJ-422	PJ-420	84.5	#N/A	#N/A	180	HDPE	New
PP-557	PJ-419	PJ-423	134.5	#N/A	#N/A	140	HDPE	New
PP-558	PJ-423	PJ-300	28.5	#N/A	#N/A	250	HDPE	New
PP-559	PJ-300	PJ-422	49	#N/A	#N/A	200	HDPE	New
PP-560	PJ-417	PJ-424	47	#N/A	#N/A	180	HDPE	New
PP-561	PJ-424	PJ-423	27.5	#N/A	#N/A	180	HDPE	New
PP-562	PJ-423	PJ-425	106	#N/A	#N/A	110	HDPE	New
PP-563	PJ-424	PJ-426	93.5	#N/A	#N/A	110	HDPE	New
PP-564	PJ-421	PJ-301	48.5	#N/A	#N/A	200	HDPE	New
PP-565	PJ-372	PJ-427	115.5	#N/A	#N/A	125	HDPE	New
PP-566	PJ-427	PJ-428	113.5	#N/A	#N/A	110	HDPE	New
PP-567	PJ-427	PJ-429	31	#N/A	#N/A	125	HDPE	New
PP-568	PJ-429	PJ-430	142	#N/A	#N/A	110	HDPE	New
PP-569	PJ-403	PJ-429	110.5	#N/A	#N/A	110	HDPE	New
PP-570	PJ-429	PJ-431	27.5	#N/A	#N/A	140	HDPE	New
PP-571	PJ-431	PJ-400	28.5	#N/A	#N/A	140	HDPE	New
PP-572	PJ-400	PJ-432	95.5	#N/A	#N/A	110	HDPE	New
PP-573	PJ-432	PJ-433	46	#N/A	#N/A	110	HDPE	New
PP-574	PJ-433	PJ-434	13	#N/A	#N/A	110	HDPE	New
PP-575	PJ-433	PJ-399	36.5	#N/A	#N/A	110	HDPE	New
PP-576	PJ-435	PJ-432	31.5	#N/A	#N/A	110	HDPE	New
PP-577	PJ-436	PJ-431	124.5	#N/A	#N/A	110	HDPE	New
PP-578	PJ-431	PJ-402	111.5	#N/A	#N/A	110	HDPE	New
			34261.00					

Zone -7

Distribution Network Design Output: Zone 7

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	13	1.796	21.708	241.15499	T-1	J-1	233.8	-11,548.10	7,324.76	450	1.52	3.72	241.15499	HDPE	145	0.05
P-10	31.5	21.056	21.238	-18.3544	J-9	J-10	233.82	-11,497.10	7,407.04	160	0.91	4.86	18.3544	HDPE	145	0.15
P-100	33.5	20.855	20.806	2.71616	J-73	J-74	233.39	-11,320.35	7,108.68	110	0.29	0.88	2.71616	uPVC	145	0.03
P-101	20.5	20.806	20.715	-5.17223	J-74	J-69	233.41	-11,319.33	7,075.18	110	0.54	2.89	5.17223	uPVC	145	0.06
P-102	27	20.737	20.684	5.33269	J-68	J-75	233.54	-11,407.29	7,071.60	110	0.56	3.05	5.33269	uPVC	145	0.08
P-103	30.5	20.684	20.716	3.31765	J-75	J-76	233.51	-11,406.78	7,044.50	110	0.35	1.27	3.31765	uPVC	145	0.04
P-104	19	20.716	20.75	1.45037	J-76	J-77	233.44	-11,376.09	7,045.01	110	0.15	0.27	1.45037	uPVC	145	0.01
P-105	38.5	20.75	20.796	-1.07327	J-77	J-78	233.4	-11,357.17	7,046.03	110	0.11	0.16	1.07327	uPVC	145	0.01
P-106	27	20.796	20.806	-4.46568	J-78	J-74	233.36	-11,318.56	7,048.08	110	0.47	2.2	4.46568	uPVC	145	0.06
P-107	82	20.806	20.864	2.91656	J-74	J-79	233.41	-11,319.33	7,075.18	110	0.31	1	2.91656	uPVC	145	0.08
P-108	31	20.796	20.822	3.09274	J-78	J-80	233.36	-11,318.56	7,048.08	110	0.33	1.11	3.09274	uPVC	145	0.03
P-109	26.5	20.822	20.892	1.66399	J-80	J-81	233.3	-11,287.62	7,048.33	110	0.18	0.35	1.66399	uPVC	145	0.01
P-11	57	21.238	21.33	-6.68384	J-10	J-6	233.79	-11,499.14	7,375.59	125	0.54	2.49	6.68384	HDPE	145	0.14
P-110	25.5	20.892	20.832	-0.03264	J-81	J-82	233.22	-11,261.03	7,049.87	110	0	0	0.03264	uPVC	145	0
P-112	29	20.848	20.828	0.34514	J-83	J-84	233.23	-11,233.41	6,992.33	110	0.04	0.02	0.34514	uPVC	145	0
P-113	51.5	20.828	20.729	-4.85773	J-84	J-85	233.25	-11,232.90	6,963.44	160	0.24	0.41	4.85773	uPVC	145	0.02
P-114	26.5	20.729	20.796	-1.37896	J-85	J-86	233.37	-11,284.30	6,963.18	110	0.15	0.25	1.37896	uPVC	145	0.01
P-115	21.5	20.796	20.845	-1.87634	J-86	J-87	233.31	-11,284.81	6,989.78	110	0.2	0.44	1.87634	uPVC	145	0.01
P-116	37	20.845	20.822	-1.13528	J-87	J-80	233.27	-11,285.83	7,011.26	110	0.12	0.17	1.13528	uPVC	145	0.01
P-117	37.5	20.75	20.708	2.22863	J-77	J-88	233.4	-11,357.17	7,046.03	110	0.23	0.61	2.22863	uPVC	145	0.02
P-118	69.5	20.708	20.845	1.13853	J-88	J-87	233.42	-11,355.38	7,008.70	110	0.12	0.18	1.13853	uPVC	145	0.01
P-119	22.5	20.708	20.696	0.68797	J-88	J-89	233.42	-11,355.38	7,008.70	110	0.07	0.07	0.68797	uPVC	145	0
P-12	55.5	21.708	21.567	71.83475	J-1	J-11	233.8	-11,558.74	7,317.22	280	1.17	3.98	71.83475	HDPE	145	0.22
P-120	25.5	20.696	20.681	1.23177	J-89	J-90	233.43	-11,356.66	6,986.20	110	0.13	0.2	1.23177	uPVC	145	0.01
P-121	46.5	20.681	20.736	4.22072	J-90	J-91	233.44	-11,355.89	6,960.88	160	0.21	0.32	4.22072	uPVC	145	0.01
P-122	25.5	20.736	20.729	3.80018	J-91	J-85	233.37	-11,309.61	6,962.67	160	0.19	0.26	3.80018	uPVC	145	0.01
P-123	5	20.681	20.672	-3.22808	J-90	J-92	233.44	-11,355.89	6,960.88	160	0.16	0.19	3.22808	uPVC	145	0
P-124	42	20.672	20.619	-4.78497	J-92	J-93	233.45	-11,360.75	6,960.63	160	0.24	0.4	4.78497	uPVC	145	0.02
P-125	23	20.619	20.614	-1.29162	J-93	J-94	233.52	-11,402.94	6,961.14	110	0.14	0.22	1.29162	uPVC	145	0.01
P-126	47.5	20.614	20.679	-2.83077	J-94	J-95	233.53	-11,403.45	6,983.90	110	0.3	0.95	2.83077	uPVC	145	0.04

P-127	13.5	20.679	20.684	-1.79454	J-95	J-75	233.51	-11,405.50	7,031.20	110	0.19	0.41	1.79454	uPVC	145	0.01
P-128	35.5	20.672	20.654	1.30068	J-92	J-96	233.45	-11,360.75	6,960.63	110	0.14	0.22	1.30068	uPVC	145	0.01
P-129	57	20.624	20.619	-0.74411	J-97	J-93	233.51	-11,401.46	6,904.25	110	0.08	0.08	0.74411	uPVC	145	0
P-13	60	21.567	21.238	12.13168	J-11	J-10	233.72	-11,503.49	7,315.75	140	0.79	4.32	12.13168	HDPE	145	0.26
P-130	40.5	20.619	20.555	-4.74203	J-93	J-98	233.52	-11,402.94	6,961.14	160	0.24	0.4	4.74203	uPVC	145	0.02
P-131	76.5	20.555	20.449	0.77681	J-98	J-99	233.6	-11,443.19	6,960.09	110	0.08	0.09	0.77681	uPVC	145	0.01
P-132	39.5	20.555	20.426	-3.90356	J-98	J-100	233.6	-11,443.19	6,960.09	160	0.19	0.28	3.90356	uPVC	145	0.01
P-133	75.5	20.426	20.389	0.81496	J-100	J-101	233.74	-11,482.47	6,957.64	110	0.09	0.09	0.81496	uPVC	145	0.01
P-134	37	20.426	20.343	-3.01076	J-100	J-102	233.74	-11,482.47	6,957.64	160	0.15	0.17	3.01076	uPVC	145	0.01
P-135	75	20.343	20.365	0.85969	J-102	J-103	233.83	-11,519.49	6,955.59	110	0.09	0.1	0.85969	uPVC	145	0.01
P-136	35	20.343	20.256	-1.98605	J-102	J-104	233.83	-11,519.49	6,955.59	160	0.1	0.08	1.98605	uPVC	145	0
P-137	73.5	20.256	20.328	0.88094	J-104	J-105	233.92	-11,554.68	6,953.75	110	0.09	0.11	0.88094	uPVC	145	0.01
P-138	38.5	20.256	20.237	-1.11831	J-104	J-106	233.92	-11,554.68	6,953.75	160	0.06	0.03	1.11831	uPVC	145	0
P-139	72.5	20.237	20.298	0.92552	J-106	J-107	233.94	-11,593.13	6,951.30	110	0.1	0.12	0.92552	uPVC	145	0.01
P-14	27	21.056	21.021	14.48098	J-9	J-12	233.82	-11,497.10	7,407.04	160	0.72	3.13	14.48098	HDPE	145	0.08
P-140	6	20.237	20.208	-2.40715	J-106	J-108	233.94	-11,593.13	6,951.30	160	0.12	0.11	2.40715	uPVC	145	0
P-141	34	20.208	19.988	-0.42805	J-108	J-109	233.97	-11,595.38	6,956.82	160	0.02	0	0.42805	uPVC	145	0
P-142	79.5	19.988	20.258	0.94098	J-109	J-110	234.19	-11,629.34	6,957.03	110	0.1	0.12	0.94098	uPVC	145	0.01
P-143	38.5	19.988	20.158	-0.19599	J-109	J-111	234.19	-11,629.34	6,957.03	160	0.01	0	0.19599	uPVC	145	0
P-144	78.5	20.158	20.226	1.06997	J-111	J-112	234.02	-11,667.59	6,955.59	110	0.11	0.16	1.06997	uPVC	145	0.01
P-145	66.5	20.158	20.176	-1.83574	J-111	J-113	234.02	-11,667.59	6,955.59	110	0.19	0.42	1.83574	uPVC	145	0.03
P-146	39	20.176	20.075	0.37724	J-113	J-114	234.03	-11,671.48	7,021.87	110	0.04	0.02	0.37724	uPVC	145	0
P-147	64	20.075	19.988	1.84373	J-114	J-109	234.13	-11,632.41	7,021.05	110	0.19	0.43	1.84373	uPVC	145	0.03
P-148	32.5	20.075	20.09	-1.88725	J-114	J-115	234.13	-11,632.41	7,021.05	110	0.2	0.45	1.88725	uPVC	145	0.01
P-149	65	20.09	20.208	2.30515	J-115	J-108	234.13	-11,600.09	7,021.67	110	0.24	0.65	2.30515	uPVC	145	0.04
P-15	24.5	21.021	20.971	22.78443	J-12	J-13	233.77	-11,470.25	7,405.76	180	0.9	4.08	22.78443	HDPE	145	0.1
P-150	41.5	20.09	20.304	-0.84861	J-115	J-116	234.13	-11,600.09	7,021.67	110	0.09	0.1	0.84861	uPVC	145	0
P-151	68	20.304	20.256	2.41626	J-116	J-104	233.92	-11,558.56	7,021.46	110	0.25	0.7	2.41626	uPVC	145	0.05
P-152	33.5	20.304	20.436	-0.69341	J-116	J-117	233.92	-11,558.56	7,021.46	110	0.07	0.07	0.69341	uPVC	145	0
P-153	68	20.436	20.343	2.55198	J-117	J-102	233.79	-11,525.01	7,023.30	110	0.27	0.78	2.55198	uPVC	145	0.05
P-154	35	20.436	20.541	0.94032	J-117	J-118	233.79	-11,525.01	7,023.30	110	0.1	0.12	0.94032	uPVC	145	0
P-155	4	20.541	20.543	4.37246	J-118	J-119	233.68	-11,490.24	7,025.35	110	0.46	2.11	4.37246	uPVC	145	0.01
P-156	67.5	20.543	20.426	2.38933	J-119	J-100	233.67	-11,486.35	7,025.14	110	0.25	0.69	2.38933	uPVC	145	0.05
P-157	40	20.543	20.619	1.63689	J-119	J-120	233.67	-11,486.35	7,025.14	110	0.17	0.34	1.63689	uPVC	145	0.01
P-158	41	20.619	20.679	1.35298	J-120	J-95	233.58	-11,446.26	7,027.60	110	0.14	0.24	1.35298	uPVC	145	0.01
P-159	67.5	20.555	20.619	-2.31081	J-98	J-120	233.6	-11,443.19	6,960.09	110	0.24	0.65	2.31081	uPVC	145	0.04

P-16	15	20.971	20.992	-2.40511	J-13	J-14	233.72	-11,445.70	7,405.50	110	0.25	0.7	2.40511	HDPE	145	0.01
P-160	83.5	20.619	20.594	-2.74726	J-120	J-121	233.58	-11,446.26	7,027.60	110	0.29	0.89	2.74726	uPVC	145	0.07
P-161	73	20.541	20.389	-3.77994	J-118	J-122	233.68	-11,490.24	7,025.35	110	0.4	1.61	3.77994	uPVC	145	0.12
P-162	11.5	20.389	20.444	3.42739	J-122	J-123	233.95	-11,492.49	7,098.17	110	0.36	1.35	3.42739	uPVC	145	0.02
P-163	60	20.436	20.426	-4.79585	J-117	J-124	233.79	-11,525.01	7,023.30	110	0.5	2.51	4.79585	uPVC	145	0.15
P-164	16.5	20.426	20.514	-10.06213	J-124	J-125	233.95	-11,527.67	7,083.45	125	0.82	5.31	10.06213	HDPE	145	0.09
P-165	21.5	20.514	20.389	7.53649	J-125	J-122	233.95	-11,512.54	7,089.79	110	0.79	5.79	7.53649	uPVC	145	0.12
P-167	49	20.304	20.331	-3.16763	J-116	J-126	233.92	-11,558.56	7,021.46	110	0.33	1.16	3.16763	uPVC	145	0.06
P-168	36.5	20.331	20.426	-4.91538	J-126	J-124	233.95	-11,561.43	7,070.15	110	0.52	2.63	4.91538	uPVC	145	0.1
P-169	30	20.09	20.15	-3.86857	J-115	J-127	234.13	-11,600.09	7,021.67	110	0.41	1.69	3.86857	uPVC	145	0.05
P-17	49	20.992	21.25	-9.38382	J-14	J-15	233.71	-11,445.44	7,390.67	125	0.76	4.67	9.38382	HDPE	145	0.23
P-170	45	20.15	20.331	-1.34252	J-127	J-126	234.12	-11,602.54	7,051.74	110	0.14	0.24	1.34252	uPVC	145	0.01
P-171	4	20.15	20.144	-2.77139	J-127	J-128	234.12	-11,602.54	7,051.74	110	0.29	0.91	2.77139	uPVC	145	0
P-172	66.5	20.144	20.211	2.56803	J-128	J-129	234.13	-11,606.23	7,050.51	110	0.27	0.79	2.56803	uPVC	145	0.05
P-173	25	20.211	20.278	-3.61529	J-129	J-130	234.01	-11,671.89	7,040.90	110	0.38	1.49	3.61529	HDPE	145	0.04
P-174	16.5	20.278	20.32	-4.13235	J-130	J-131	233.98	-11,676.39	7,065.24	110	0.43	1.9	4.13235	HDPE	145	0.03
P-175	70	20.32	20.221	-2.46511	J-131	J-132	233.97	-11,679.05	7,081.60	110	0.26	0.73	2.46511	uPVC	145	0.05
P-176	20	20.221	20.144	5.62046	J-132	J-128	234.12	-11,609.91	7,070.15	110	0.59	3.37	5.62046	uPVC	145	0.07
P-177	21	20.221	20.331	-8.43026	J-132	J-133	234.12	-11,609.91	7,070.15	125	0.69	3.83	8.43026	HDPE	145	0.08
P-178	30.5	20.331	20.578	-10.24851	J-133	J-134	234.09	-11,608.07	7,091.22	125	0.84	5.49	10.24851	HDPE	145	0.17
P-179	13.5	20.578	20.647	-12.22054	J-134	J-135	234.01	-11,593.75	7,110.24	140	0.79	4.38	12.22054	HDPE	145	0.06
P-18	29	21.25	21.375	-17.21356	J-15	J-16	233.68	-11,450.56	7,342.09	160	0.86	4.31	17.21356	HDPE	145	0.13
P-180	44.5	20.647	20.904	-16.473	J-135	J-136	234	-11,593.95	7,123.95	160	0.82	3.98	16.473	HDPE	145	0.18
P-181	85	20.904	21.115	2.15822	J-136	J-137	233.92	-11,592.11	7,168.54	110	0.23	0.57	2.15822	uPVC	145	0.05
P-182	52.5	21.115	20.632	16.68395	J-137	J-138	233.66	-11,507.42	7,163.22	160	0.83	4.07	16.68395	HDPE	145	0.21
P-183	21.5	20.632	20.514	17.78342	J-138	J-125	233.93	-11,512.13	7,111.06	160	0.88	4.58	17.78342	HDPE	145	0.1
P-184	81.5	20.578	20.632	1.58232	J-134	J-138	234.01	-11,593.75	7,110.24	110	0.17	0.32	1.58232	uPVC	145	0.03
P-185	42.5	21.4	21.115	18.32353	J-46	J-137	233.58	-11,505.99	7,205.85	160	0.91	4.84	18.32353	HDPE	145	0.21
P-186	45.5	21.115	21.134	3.09763	J-137	J-139	233.66	-11,507.42	7,163.22	110	0.33	1.12	3.09763	uPVC	145	0.05
P-187	31.5	21.134	21.325	-11.42677	J-139	J-47	233.59	-11,462.01	7,160.57	140	0.74	3.87	11.42677	HDPE	145	0.12
P-188	31	21.134	20.994	7.26476	J-139	J-140	233.59	-11,462.01	7,160.57	125	0.59	2.9	7.26476	HDPE	145	0.09
P-189	30	20.994	21.021	7.0753	J-140	J-141	233.64	-11,463.24	7,129.68	125	0.58	2.77	7.0753	HDPE	145	0.08
P-19	25.5	21.375	21.455	-23.55512	J-16	J-17	233.68	-11,452.35	7,313.20	180	0.93	4.34	23.55512	HDPE	145	0.11
P-190	23	20.904	21.064	-23.65214	J-136	J-142	233.92	-11,592.11	7,168.54	180	0.93	4.38	23.65214	HDPE	145	0.1
P-191	14.5	21.064	21.2	-24.14437	J-142	J-143	233.86	-11,591.32	7,191.68	180	0.95	4.55	24.14437	HDPE	145	0.07
P-192	25	21.2	21.413	-34.8212	J-143	J-22	233.79	-11,591.32	7,206.00	200	1.11	5.36	34.8212	HDPE	145	0.13

P-193	60.5	21.064	21.273	0.1879	J-142	J-144	233.86	-11,591.32	7,191.68	110	0.02	0.01	0.1879	uPVC	145	0
P-194	61	21.2	20.983	10.36475	J-143	J-145	233.79	-11,591.32	7,206.00	140	0.67	3.23	10.36475	HDPE	145	0.2
P-195	45	20.983	20.748	7.98595	J-145	J-146	233.81	-11,652.48	7,209.07	125	0.65	3.46	7.98595	HDPE	145	0.16
P-196	29.5	20.748	20.742	1.21279	J-146	J-147	233.89	-11,697.28	7,211.93	110	0.13	0.2	1.21279	uPVC	145	0.01
P-197	21.5	20.742	20.762	-2.84022	J-147	J-148	233.89	-11,696.87	7,241.65	110	0.3	0.95	2.84022	uPVC	145	0.02
P-198	4.5	20.748	20.728	6.52783	J-146	J-149	233.89	-11,697.28	7,211.93	110	0.69	4.44	6.52783	uPVC	145	0.02
P-199	31	20.728	20.701	2.71156	J-149	J-150	233.89	-11,697.13	7,207.38	110	0.29	0.87	2.71156	uPVC	145	0.03
P-2	27.5	21.708	21.552	52.33188	J-1	J-2	233.8	-11,558.74	7,317.22	250	1.07	3.85	52.33188	HDPE	145	0.11
P-20	25.5	21.455	21.567	-32.74509	J-17	J-11	233.71	-11,477.92	7,314.47	200	1.04	4.79	32.74509	HDPE	145	0.12
P-200	23	20.685	20.734	-8.99801	J-151	J-152	233.91	-11,676.93	7,172.61	125	0.73	4.32	8.99801	HDPE	145	0.1
P-201	62	20.734	20.904	-4.35488	J-152	J-136	233.96	-11,653.91	7,172.61	110	0.46	2.1	4.35488	uPVC	145	0.13
P-202	87	20.647	20.556	3.80221	J-135	J-153	234	-11,593.95	7,123.95	110	0.4	1.63	3.80221	uPVC	145	0.14
P-203	108	20.556	20.334	0.33538	J-153	J-154	233.95	-11,678.20	7,144.74	110	0.04	0.02	0.33538	uPVC	145	0
P-204	23	20.556	20.472	10.35265	J-153	J-155	233.95	-11,678.20	7,144.74	140	0.67	3.22	10.35265	HDPE	145	0.07
P-205	9	20.472	20.441	5.62028	J-155	J-156	233.96	-11,678.20	7,121.98	110	0.59	3.37	5.62028	uPVC	145	0.03
P-206	74	20.441	20.331	-1.42854	J-156	J-133	233.96	-11,678.97	7,113.03	110	0.15	0.27	1.42854	uPVC	145	0.02
P-207	23	20.441	20.324	6.71965	J-156	J-157	233.96	-11,678.97	7,113.03	110	0.71	4.69	6.71965	uPVC	145	0.11
P-208	8.5	20.324	20.32	1.96226	J-157	J-131	233.97	-11,678.97	7,090.02	110	0.21	0.48	1.96226	HDPE	145	0
P-209	165	20.472	20.01	4.12067	J-155	J-158	233.96	-11,678.20	7,121.98	110	0.43	1.89	4.12067	uPVC	145	0.31
P-21	27	21.567	21.49	26.43632	J-11	J-18	233.72	-11,503.49	7,315.75	200	0.84	3.22	26.43632	uPVC	145	0.09
P-210	34	20.01	19.973	1.99098	J-158	J-159	234.11	-11,840.32	7,139.62	110	0.21	0.49	1.99098	uPVC	145	0.02
P-211	16	19.973	20.063	-0.00592	J-159	J-160	234.13	-11,833.67	7,106.12	110	0	0	0.00592	uPVC	145	0
P-212	72.5	20.063	19.971	-1.73197	J-160	J-161	234.04	-11,829.32	7,093.34	110	0.18	0.38	1.73197	uPVC	145	0.03
P-213	11.5	19.971	20.007	-2.03326	J-161	J-162	234.16	-11,756.96	7,095.90	110	0.21	0.51	2.03326	uPVC	145	0.01
P-214	25.5	20.007	20.102	-3.99952	J-162	J-163	234.13	-11,756.19	7,084.65	110	0.42	1.79	3.99952	HDPE	145	0.05
P-215	33.5	20.102	20.261	-4.31323	J-163	J-164	234.08	-11,730.88	7,087.97	110	0.45	2.06	4.31323	HDPE	145	0.07
P-216	18.5	20.261	20.324	-4.60209	J-164	J-157	233.99	-11,697.64	7,091.55	110	0.48	2.32	4.60209	HDPE	145	0.04
P-217	62.5	20.228	20.278	-0.19411	J-165	J-130	234.03	-11,739.06	7,064.44	110	0.02	0.01	0.19411	HDPE	145	0
P-218	22	20.399	20.248	0.52395	J-166	J-167	233.73	-11,760.80	7,027.88	110	0.06	0.04	0.52395	HDPE	145	0
P-219	14	20.248	20.138	0.29408	J-167	J-168	233.88	-11,759.26	7,049.61	110	0.03	0.01	0.29408	HDPE	145	0
P-22	53.5	21.49	21.615	-14.82077	J-18	J-19	233.71	-11,505.53	7,288.90	160	0.74	3.27	14.82077	HDPE	145	0.17
P-220	21	20.138	20.007	-1.78612	J-168	J-162	233.99	-11,757.47	7,063.68	110	0.19	0.4	1.78612	HDPE	145	0.01
P-221	41.5	20.108	20.19	-0.59021	J-169	J-170	233.99	-11,831.37	7,017.14	110	0.06	0.05	0.59021	uPVC	145	0
P-222	72.5	20.19	20.138	-1.74638	J-170	J-168	233.91	-11,829.58	7,058.82	110	0.18	0.39	1.74638	uPVC	145	0.03
P-223	19	20.19	20.219	0.59408	J-170	J-171	233.91	-11,829.58	7,058.82	110	0.06	0.05	0.59408	uPVC	145	0
P-224	15.5	20.219	20.063	-1.4031	J-171	J-160	233.88	-11,830.09	7,078.00	110	0.15	0.26	1.4031	uPVC	145	0

P-225	49.5	20.219	20.37	1.73631	J-171	J-172	233.88	-11,830.09	7,078.00	110	0.18	0.38	1.73631	uPVC	145	0.02
P-226	50.5	20.37	20.339	2.2162	J-172	J-173	233.71	-11,879.44	7,074.93	110	0.23	0.6	2.2162	uPVC	145	0.03
P-227	31.5	20.37	20.243	-0.88822	J-172	J-174	233.71	-11,879.44	7,074.93	110	0.09	0.11	0.88822	uPVC	145	0
P-228	41	20.243	20.198	2.69117	J-174	J-175	233.84	-11,888.39	7,105.36	110	0.28	0.86	2.69117	uPVC	145	0.04
P-229	54.5	19.973	20.243	1.67239	J-159	J-174	234.13	-11,833.67	7,106.12	110	0.18	0.36	1.67239	uPVC	145	0.02
P-23	26.5	21.615	21.708	-81.40752	J-19	J-1	233.76	-11,559.23	7,290.69	280	1.32	5.02	81.40752	HDPE	145	0.13
P-230	34	20.243	20.008	-2.40694	J-174	J-176	233.84	-11,888.39	7,105.36	110	0.25	0.7	2.40694	uPVC	145	0.02
P-231	51.5	20.008	20.01	-1.35189	J-176	J-158	234.1	-11,891.97	7,139.11	110	0.14	0.24	1.35189	uPVC	145	0.01
P-232	38	20.008	19.718	-1.43854	J-176	J-177	234.1	-11,891.97	7,139.11	110	0.15	0.27	1.43854	uPVC	145	0.01
P-233	5.5	19.718	19.72	3.66398	J-177	J-178	234.4	-11,894.78	7,177.21	110	0.39	1.52	3.66398	uPVC	145	0.01
P-234	35.5	19.72	19.627	3.98319	J-178	J-179	234.39	-11,900.41	7,177.72	110	0.42	1.78	3.98319	HDPE	145	0.06
P-235	35	19.627	19.566	3.17913	J-179	J-180	234.42	-11,935.95	7,180.53	110	0.33	1.17	3.17913	HDPE	145	0.04
P-236	30.5	19.566	19.541	2.61315	J-180	J-181	234.44	-11,970.64	7,183.05	110	0.27	0.82	2.61315	uPVC	145	0.02
P-237	138.5	19.72	19.915	-0.87657	J-178	J-182	234.39	-11,900.41	7,177.72	110	0.09	0.11	0.87657	HDPE	145	0.01
P-238	145	19.834	19.627	-0.32735	J-183	J-179	234.21	-11,923.70	7,325.03	110	0.03	0.02	0.32735	HDPE	145	0
P-239	151.5	19.566	19.772	1.08229	J-180	J-184	234.44	-11,970.64	7,183.05	110	0.11	0.16	1.08229	HDPE	145	0.02
P-24	91.5	21.455	21.021	8.74749	J-17	J-12	233.71	-11,477.92	7,314.47	125	0.71	4.1	8.74749	HDPE	145	0.37
P-240	63	19.584	19.553	-1.50247	J-185	J-186	234.27	-12,071.77	7,313.85	110	0.16	0.29	1.50247	HDPE	145	0.02
P-241	49	19.553	19.689	-0.94461	J-186	J-187	234.32	-12,010.64	7,298.27	110	0.1	0.12	0.94461	HDPE	145	0.01
P-242	34.5	19.545	19.477	-0.59018	J-188	J-189	234.33	-12,048.20	7,275.49	110	0.06	0.05	0.59018	HDPE	145	0
P-243	29.5	19.477	19.553	0.99724	J-189	J-186	234.4	-12,014.24	7,269.10	110	0.1	0.14	0.99724	HDPE	145	0
P-244	44.5	19.458	19.477	1.92435	J-190	J-189	234.44	-12,020.23	7,225.15	110	0.2	0.46	1.92435	HDPE	145	0.02
P-245	25	20.17	20.25	-0.07768	J-191	J-192	234.3	-11,837.48	7,211.40	110	0.01	0	0.07768	HDPE	145	0
P-246	21.5	20.25	20.238	2.97089	J-192	J-193	234.22	-11,812.68	7,207.06	110	0.31	1.03	2.97089	HDPE	145	0.02
P-247	115.5	20.728	20.25	3.34738	J-149	J-192	233.89	-11,697.13	7,207.38	110	0.35	1.29	3.34738	HDPE	145	0.15
P-248	36.5	20.25	20.261	-0.31754	J-192	J-194	234.22	-11,812.68	7,207.06	110	0.03	0.02	0.31754	HDPE	145	0
P-249	51	20.261	20.229	2.60055	J-194	J-195	234.21	-11,810.12	7,243.37	110	0.27	0.81	2.60055	HDPE	145	0.04
P-25	84.5	21.516	21.302	8.72647	J-3	J-20	233.87	-11,601.68	7,319.84	125	0.71	4.08	8.72647	HDPE	145	0.34
P-250	113.5	20.261	20.742	-3.54221	J-194	J-147	234.21	-11,810.12	7,243.37	110	0.37	1.43	3.54221	uPVC	145	0.16
P-251	33.5	20.753	20.723	1.502	J-196	J-197	233.92	-11,704.51	7,281.72	110	0.16	0.29	1.502	HDPE	145	0.01
P-252	14.5	20.723	20.72	1.1914	J-197	J-198	233.94	-11,701.78	7,315.22	110	0.13	0.19	1.1914	HDPE	145	0
P-253	50.5	20.72	20.706	0.82152	J-198	J-199	233.94	-11,699.78	7,329.60	110	0.09	0.1	0.82152	HDPE	145	0
P-254	51.5	20.706	20.655	0.31836	J-199	J-200	233.95	-11,697.39	7,379.94	110	0.03	0.02	0.31836	HDPE	145	0
P-255	43	20.72	20.75	0.03451	J-198	J-201	233.94	-11,699.78	7,329.60	110	0	0	0.03451	HDPE	145	0
P-256	73	20.75	20.978	-4.27029	J-201	J-202	233.91	-11,656.63	7,328.40	110	0.45	2.02	4.27029	HDPE	145	0.15
P-257	105.5	20.75	20.504	3.61703	J-201	J-203	233.91	-11,656.63	7,328.40	110	0.38	1.49	3.61703	HDPE	145	0.16

P-258	18	20.504	20.442	3.23353	J-203	J-204	234	-11,655.44	7,427.89	110	0.34	1.21	3.23353	uPVC	145	0.02
P-259	39	20.442	20.268	4.71841	J-204	J-205	234.04	-11,653.44	7,445.87	110	0.5	2.43	4.71841	uPVC	145	0.09
P-26	49.5	21.552	21.509	31.38606	J-2	J-21	233.85	-11,586.34	7,318.00	225	0.79	2.49	31.38606	HDPE	145	0.12
P-260	26	20.268	20.197	4.1651	J-205	J-206	234.12	-11,649.44	7,484.62	110	0.44	1.93	4.1651	uPVC	145	0.05
P-261	38	20.197	20.105	3.81414	J-206	J-207	234.14	-11,675.01	7,487.82	110	0.4	1.64	3.81414	uPVC	145	0.06
P-262	7.5	20.105	20.076	3.35917	J-207	J-208	234.17	-11,712.57	7,492.61	110	0.35	1.3	3.35917	uPVC	145	0.01
P-263	39	20.268	20.217	0.23035	J-205	J-209	234.12	-11,649.44	7,484.62	110	0.02	0.01	0.23035	uPVC	145	0
P-264	86.5	20.217	20.72	-3.83666	J-209	J-210	234.17	-11,610.69	7,482.22	110	0.4	1.66	3.83666	uPVC	145	0.14
P-265	84.5	20.72	21	2.62171	J-210	J-211	233.81	-11,524.39	7,473.43	110	0.28	0.82	2.62171	uPVC	145	0.07
P-266	53	21	20.612	4.29849	J-211	J-212	233.46	-11,440.48	7,464.25	110	0.45	2.05	4.29849	uPVC	145	0.11
P-267	37.5	20.612	20.581	-10.25056	J-212	J-37	233.74	-11,387.75	7,457.85	140	0.67	3.16	10.25056	HDPE	145	0.12
P-268	33	20.944	21	15.97757	J-36	J-211	233.64	-11,444.17	7,431.33	160	0.79	3.76	15.97757	HDPE	145	0.12
P-269	37	21	20.652	13.65649	J-211	J-213	233.46	-11,440.48	7,464.25	140	0.89	5.38	13.65649	HDPE	145	0.2
P-27	37.5	21.509	21.413	41.37165	J-21	J-22	233.77	-11,588.89	7,268.45	225	1.04	4.16	41.37165	HDPE	145	0.16
P-270	49.5	20.652	20.502	2.91492	J-213	J-214	233.61	-11,437.29	7,501.00	110	0.31	1	2.91492	uPVC	145	0.05
P-271	36.5	20.502	20.612	-8.441	J-214	J-212	233.71	-11,388.15	7,494.21	125	0.69	3.84	8.441	HDPE	145	0.14
P-272	36.5	20.612	20.431	5.60035	J-212	J-215	233.74	-11,387.75	7,457.85	110	0.59	3.34	5.60035	uPVC	145	0.12
P-273	57.5	20.431	20.521	-8.24549	J-215	J-216	233.8	-11,351.39	7,455.06	125	0.67	3.67	8.24549	HDPE	145	0.21
P-274	26.5	20.521	20.573	-14.33863	J-216	J-35	233.92	-11,371.76	7,401.12	160	0.71	3.07	14.33863	HDPE	145	0.08
P-275	84	20.944	20.951	-4.3624	J-36	J-217	233.64	-11,444.17	7,431.33	110	0.46	2.11	4.3624	uPVC	145	0.18
P-276	87.5	20.951	20.448	7.42079	J-217	J-218	233.81	-11,527.89	7,436.77	125	0.6	3.02	7.42079	HDPE	145	0.26
P-277	38.5	20.448	20.442	1.78145	J-218	J-204	234.05	-11,614.99	7,443.56	110	0.19	0.4	1.78145	uPVC	145	0.02
P-278	86.5	20.652	20.447	-1.49323	J-213	J-219	233.61	-11,437.29	7,501.00	110	0.16	0.29	1.49323	uPVC	145	0.03
P-279	84.5	20.447	20.072	2.10187	J-219	J-220	233.84	-11,523.09	7,511.08	110	0.22	0.54	2.10187	uPVC	145	0.05
P-28	27.5	21.509	21.565	-10.34115	J-21	J-23	233.77	-11,588.89	7,268.45	200	0.33	0.57	10.34115	uPVC	145	0.02
P-280	108.5	20.072	20.064	-0.90256	J-220	J-221	234.17	-11,607.00	7,519.07	110	0.09	0.11	0.90256	uPVC	145	0.01
P-281	38.5	19.826	19.829	-1.9936	J-222	J-223	234.19	-11,724.06	7,579.00	160	0.1	0.08	1.9936	uPVC	145	0
P-282	38.5	19.829	19.862	-7.1688	J-223	J-224	234.19	-11,687.30	7,567.82	160	0.36	0.85	7.1688	uPVC	145	0.03
P-283	46	19.862	19.966	-10.11416	J-224	J-225	234.19	-11,649.35	7,560.23	160	0.5	1.61	10.11416	uPVC	145	0.07
P-284	82.5	19.966	20.247	-4.64981	J-225	J-226	234.16	-11,603.80	7,552.23	160	0.23	0.38	4.64981	uPVC	145	0.03
P-285	86	20.247	20.402	1.54626	J-226	J-227	233.91	-11,521.90	7,541.45	160	0.08	0.05	1.54626	uPVC	145	0
P-286	27.5	20.402	20.652	-11.61224	J-227	J-213	233.75	-11,436.79	7,528.26	140	0.75	3.99	11.61224	HDPE	145	0.11
P-287	24	20.502	20.358	10.89319	J-214	J-228	233.71	-11,388.15	7,494.21	140	0.71	3.54	10.89319	HDPE	145	0.08
P-288	52.5	20.358	20.402	-5.21013	J-228	J-227	233.77	-11,385.25	7,518.27	160	0.26	0.47	5.21013	uPVC	145	0.02
P-289	21	20.402	20.216	7.36772	J-227	J-229	233.75	-11,436.79	7,528.26	110	0.78	5.56	7.36772	uPVC	145	0.12
P-29	23.5	21.565	21.615	-66.26535	J-23	J-19	233.73	-11,561.28	7,267.42	280	1.08	3.43	66.26535	HDPE	145	0.08

P-291	20	20.226	20.358	-15.65766	J-230	J-228	233.83	-11,382.44	7,537.96	160	0.78	3.62	15.65766	uPVC	145	0.07
P-292	33	20.216	20.226	0.01934	J-229	J-231	233.82	-11,435.60	7,549.08	160	0	0	0.01934	uPVC	145	0
P-293	21.5	20.226	20.226	-7.43225	J-231	J-230	233.81	-11,403.38	7,542.12	160	0.37	0.91	7.43225	uPVC	145	0.02
P-294	72.5	20.431	20.223	7.58767	J-215	J-232	233.8	-11,351.39	7,455.06	125	0.62	3.15	7.58767	HDPE	145	0.23
P-295	51.5	20.223	20.226	-7.93661	J-232	J-230	233.78	-11,332.36	7,525.06	160	0.39	1.03	7.93661	uPVC	145	0.05
P-296	41.5	20.216	20.132	7.05181	J-229	J-233	233.82	-11,435.60	7,549.08	160	0.35	0.83	7.05181	uPVC	145	0.03
P-297	38.5	20.132	19.972	0.30546	J-233	J-234	233.87	-11,476.51	7,557.34	160	0.02	0	0.30546	uPVC	145	0
P-298	6.5	19.972	19.967	-6.59107	J-234	J-235	234.03	-11,513.59	7,568.53	160	0.33	0.73	6.59107	uPVC	145	0
P-299	39	19.967	19.869	3.41357	J-235	J-236	234.04	-11,520.30	7,568.85	160	0.17	0.22	3.41357	uPVC	145	0.01
P-3	15.5	21.552	21.516	14.60046	J-2	J-3	233.85	-11,586.34	7,318.00	200	0.46	1.07	14.60046	uPVC	145	0.02
P-30	7	21.565	21.544	55.74406	J-23	J-24	233.73	-11,561.28	7,267.42	250	1.14	4.32	55.74406	HDPE	145	0.03
P-300	45	19.869	19.821	-3.80749	J-236	J-237	234.13	-11,557.06	7,582.27	160	0.19	0.26	3.80749	uPVC	145	0.01
P-301	44.5	19.821	19.822	-0.34792	J-237	J-238	234.19	-11,597.33	7,602.41	110	0.04	0.02	0.34792	uPVC	145	0
P-302	13.5	19.822	19.816	1.82267	J-238	J-239	234.19	-11,640.48	7,612.95	110	0.19	0.42	1.82267	uPVC	145	0.01
P-303	22	19.816	19.809	1.56641	J-239	J-240	234.19	-11,653.91	7,613.59	110	0.16	0.32	1.56641	uPVC	145	0.01
P-304	28	19.809	19.811	-0.73102	J-240	J-241	234.19	-11,675.64	7,617.43	110	0.08	0.08	0.73102	uPVC	145	0
P-305	11.5	19.811	19.813	-1.00281	J-241	J-242	234.19	-11,700.25	7,631.17	110	0.11	0.14	1.00281	uPVC	145	0
P-306	15.5	19.813	19.813	0.04819	J-242	J-243	234.19	-11,710.16	7,636.93	110	0.01	0	0.04819	uPVC	145	0
P-307	51	19.829	19.809	4.77773	J-223	J-240	234.19	-11,687.30	7,567.82	160	0.24	0.4	4.77773	uPVC	145	0.02
P-308	47	19.809	19.745	6.61559	J-240	J-244	234.19	-11,675.64	7,617.43	110	0.7	4.55	6.61559	HDPE	145	0.21
P-309	31.5	19.745	19.703	5.80046	J-244	J-245	234.04	-11,660.01	7,661.95	110	0.61	3.57	5.80046	HDPE	145	0.11
P-31	36	21.544	21.482	35.46789	J-24	J-25	233.72	-11,561.28	7,260.52	225	0.89	3.13	35.46789	HDPE	145	0.11
P-310	33	19.703	19.638	5.98599	J-245	J-246	233.97	-11,645.44	7,690.08	110	0.63	3.78	5.98599	HDPE	145	0.12
P-311	33.5	19.638	19.617	5.57417	J-246	J-247	233.91	-11,632.91	7,720.51	110	0.59	3.31	5.57417	HDPE	145	0.11
P-312	27	19.617	19.614	5.33778	J-247	J-248	233.82	-11,620.38	7,751.71	110	0.56	3.06	5.33778	HDPE	145	0.08
P-313	30.5	19.614	19.615	-0.20085	J-248	J-249	233.74	-11,609.89	7,776.51	110	0.02	0.01	0.20085	HDPE	145	0
P-314	92	19.615	19.648	-2.39527	J-249	J-250	233.74	-11,581.51	7,765.26	110	0.25	0.69	2.39527	HDPE	145	0.06
P-315	23.5	19.648	19.634	-3.65654	J-250	J-251	233.77	-11,498.92	7,725.37	110	0.38	1.52	3.65654	HDPE	145	0.04
P-316	35	19.634	19.697	-5.2273	J-251	J-252	233.82	-11,508.12	7,703.63	110	0.55	2.94	5.2273	HDPE	145	0.1
P-317	32.5	19.697	19.692	-6.53259	J-252	J-253	233.86	-11,521.16	7,670.90	110	0.69	4.45	6.53259	HDPE	145	0.14
P-318	5	19.692	19.69	-8.36692	J-253	J-254	234.01	-11,533.95	7,641.24	125	0.68	3.77	8.36692	HDPE	145	0.02
P-319	58.5	19.69	19.869	-6.77858	J-254	J-236	234.03	-11,536.00	7,636.90	110	0.71	4.76	6.77858	HDPE	145	0.28
P-32	55	21.482	21.419	32.05766	J-25	J-26	233.67	-11,564.09	7,224.72	225	0.81	2.59	32.05766	HDPE	145	0.14
P-320	26.5	19.821	19.87	0.51713	J-237	J-255	234.19	-11,597.33	7,602.41	110	0.05	0.04	0.51713	uPVC	145	0
P-321	27	19.87	19.85	0.08389	J-255	J-256	234.14	-11,587.14	7,626.92	110	0.01	0	0.08389	HDPE	145	0
P-322	43	20.029	19.87	-0.13357	J-257	J-255	233.98	-11,626.00	7,645.08	110	0.01	0	0.13357	HDPE	145	0

P-323	121.5	19.703	19.692	-1.34061	J-245	J-253	233.97	-11,645.44	7,690.08	110	0.14	0.24	1.34061	HDPE	145	0.03
P-324	122.5	19.638	19.697	-0.71533	J-246	J-252	233.91	-11,632.91	7,720.51	110	0.08	0.07	0.71533	HDPE	145	0.01
P-325	122	19.617	19.634	-1.01029	J-247	J-251	233.82	-11,620.38	7,751.71	110	0.11	0.14	1.01029	HDPE	145	0.02
P-326	57.5	19.614	19.459	2.56856	J-248	J-258	233.74	-11,609.89	7,776.51	110	0.27	0.79	2.56856	HDPE	145	0.05
P-327	27	19.614	19.654	2.52913	J-248	J-259	233.74	-11,609.89	7,776.51	110	0.27	0.77	2.52913	HDPE	145	0.02
P-328	38	19.654	19.722	0.50883	J-259	J-260	233.68	-11,588.16	7,792.11	110	0.05	0.04	0.50883	HDPE	145	0
P-329	45.5	19.615	19.718	1.67277	J-249	J-261	233.74	-11,581.51	7,765.26	110	0.18	0.36	1.67277	HDPE	145	0.02
P-33	25.5	21.419	21.398	-11.66081	J-26	J-27	233.59	-11,511.93	7,207.85	200	0.37	0.71	11.66081	uPVC	145	0.02
P-330	36	19.648	19.678	3.09012	J-250	J-262	233.77	-11,498.92	7,725.37	110	0.33	1.11	3.09012	HDPE	145	0.04
P-331	19.5	19.678	19.683	4.01573	J-262	J-263	233.7	-11,484.85	7,758.35	110	0.42	1.81	4.01573	HDPE	145	0.04
P-332	15.5	19.683	19.713	0.04819	J-263	J-264	233.66	-11,502.50	7,766.28	110	0.01	0	0.04819	HDPE	145	0
P-333	10	19.683	19.677	3.82777	J-263	J-265	233.66	-11,502.50	7,766.28	110	0.4	1.65	3.82777	uPVC	145	0.02
P-334	16	19.677	19.684	2.59488	J-265	J-266	233.65	-11,499.43	7,776.00	110	0.27	0.8	2.59488	HDPE	145	0.01
P-335	35.5	19.684	19.648	1.90738	J-266	J-267	233.63	-11,492.53	7,790.57	110	0.2	0.46	1.90738	HDPE	145	0.02
P-336	44.5	19.648	19.717	1.37081	J-267	J-268	233.65	-11,471.56	7,819.21	110	0.14	0.25	1.37081	HDPE	145	0.01
P-337	10.5	19.717	19.756	0.48325	J-268	J-269	233.57	-11,444.96	7,854.75	110	0.05	0.04	0.48325	uPVC	145	0
P-338	57.5	19.717	19.475	0.53821	J-268	J-270	233.57	-11,444.96	7,854.75	110	0.06	0.04	0.53821	HDPE	145	0
P-339	22.5	19.475	19.576	1.69393	J-270	J-271	233.81	-11,398.17	7,821.26	110	0.18	0.36	1.69393	HDPE	145	0.01
P-34	25	21.398	21.454	-35.15627	J-27	J-28	233.63	-11,509.37	7,233.42	200	1.12	5.46	35.15627	HDPE	145	0.14
P-340	72.5	19.576	19.816	-0.15937	J-271	J-272	233.7	-11,383.34	7,838.13	110	0.02	0	0.15937	HDPE	145	0
P-341	26	19.576	19.659	1.47757	J-271	J-273	233.7	-11,383.34	7,838.13	110	0.16	0.28	1.47757	HDPE	145	0.01
P-342	39.5	19.659	19.806	0.64583	J-273	J-274	233.61	-11,358.54	7,846.06	110	0.07	0.06	0.64583	HDPE	145	0
P-343	21	19.806	19.835	0.30573	J-274	J-275	233.46	-11,370.04	7,883.90	110	0.03	0.02	0.30573	HDPE	145	0
P-344	24.5	19.756	19.806	-0.07613	J-276	J-274	233.51	-11,392.55	7,874.44	110	0.01	0	0.07613	HDPE	145	0
P-345	35.5	19.659	19.777	0.5181	J-273	J-277	233.61	-11,358.54	7,846.06	110	0.05	0.04	0.5181	HDPE	145	0
P-346	46	19.777	19.851	0.93009	J-277	J-278	233.49	-11,324.27	7,855.27	110	0.1	0.12	0.93009	HDPE	145	0.01
P-347	36.5	19.475	19.435	-1.51749	J-270	J-279	233.81	-11,398.17	7,821.26	110	0.16	0.3	1.51749	HDPE	145	0.01
P-348	60.5	19.435	19.65	1.82576	J-279	J-280	233.86	-11,368.25	7,800.55	110	0.19	0.42	1.82576	HDPE	145	0.03
P-349	30.5	19.65	19.777	0.75979	J-280	J-277	233.62	-11,314.30	7,826.63	110	0.08	0.08	0.75979	HDPE	145	0
P-35	52.5	21.454	21.544	-19.97961	J-28	J-24	233.71	-11,508.86	7,258.47	200	0.64	1.92	19.97961	HDPE	145	0.1
P-350	33.5	19.65	19.805	1.88141	J-280	J-281	233.62	-11,314.30	7,826.63	110	0.2	0.44	1.88141	HDPE	145	0.01
P-351	66.5	19.805	19.84	0.64046	J-281	J-282	233.45	-11,282.34	7,837.11	110	0.07	0.06	0.64046	HDPE	145	0
P-352	33	19.805	19.839	1.91736	J-281	J-283	233.45	-11,282.34	7,837.11	110	0.2	0.46	1.91736	HDPE	145	0.02
P-353	57	19.839	19.858	0.43155	J-283	J-284	233.4	-11,251.40	7,848.36	110	0.05	0.03	0.43155	HDPE	145	0
P-354	29	19.864	19.833	0.32999	J-285	J-286	233.36	-11,230.94	7,896.43	110	0.03	0.02	0.32999	HDPE	145	0
P-355	9.5	19.833	19.864	-0.65233	J-286	J-287	233.39	-11,221.22	7,869.07	110	0.07	0.06	0.65233	HDPE	145	0

P-356	35	19.864	19.839	-1.86502	J-287	J-283	233.36	-11,218.41	7,859.87	110	0.2	0.44	1.86502	HDPE	145	0.02
P-357	53	19.839	19.776	-0.93191	J-283	J-288	233.4	-11,251.40	7,848.36	110	0.1	0.12	0.93191	HDPE	145	0.01
P-358	45.5	19.776	19.705	-1.23779	J-288	J-289	233.47	-11,233.50	7,798.50	110	0.13	0.2	1.23779	HDPE	145	0.01
P-359	21.5	19.705	19.652	-2.53182	J-289	J-290	233.55	-11,217.64	7,755.80	110	0.27	0.77	2.53182	HDPE	145	0.02
P-36	30.5	21.454	21.49	-15.51204	J-28	J-18	233.71	-11,508.86	7,258.47	200	0.49	1.2	15.51204	HDPE	145	0.04
P-360	12.5	19.652	19.619	-2.07865	J-290	J-291	233.62	-11,238.36	7,750.43	110	0.22	0.53	2.07865	HDPE	145	0.01
P-361	7.5	19.619	19.601	-3.81398	J-291	J-292	233.66	-11,250.89	7,748.38	110	0.4	1.64	3.81398	HDPE	145	0.01
P-362	31	19.601	19.433	-0.62248	J-292	J-293	233.69	-11,258.56	7,748.13	110	0.07	0.06	0.62248	HDPE	145	0
P-363	31	19.433	19.522	1.61814	J-293	J-294	233.86	-11,289.50	7,747.87	110	0.17	0.34	1.61814	HDPE	145	0.01
P-364	51.5	19.522	19.65	1.36194	J-294	J-280	233.76	-11,298.96	7,777.28	110	0.14	0.24	1.36194	HDPE	145	0.01
P-365	52	19.805	19.676	-1.25086	J-281	J-295	233.45	-11,282.34	7,837.11	110	0.13	0.21	1.25086	HDPE	145	0.01
P-366	42	19.676	19.619	-1.54277	J-295	J-291	233.59	-11,264.95	7,788.02	110	0.16	0.31	1.54277	HDPE	145	0.01
P-367	22.5	19.435	19.381	-3.71433	J-279	J-296	233.86	-11,368.25	7,800.55	110	0.39	1.56	3.71433	HDPE	145	0.04
P-368	65	19.381	19.527	-1.3973	J-296	J-297	233.95	-11,385.13	7,785.71	110	0.15	0.26	1.3973	HDPE	145	0.02
P-369	26.5	19.527	19.427	-1.68145	J-297	J-298	233.82	-11,446.50	7,807.45	110	0.18	0.36	1.68145	HDPE	145	0.01
P-37	50.5	21.49	21.271	25.24357	J-18	J-29	233.71	-11,505.53	7,288.90	180	0.99	4.94	25.24357	HDPE	145	0.25
P-370	25	19.427	19.418	-1.84141	J-298	J-299	233.93	-11,455.45	7,782.39	110	0.19	0.43	1.84141	HDPE	145	0.01
P-371	34.5	19.418	19.377	0.18064	J-299	J-300	233.95	-11,432.44	7,772.93	110	0.02	0.01	0.18064	HDPE	145	0
P-372	28.5	19.377	19.381	3.34126	J-300	J-296	233.99	-11,399.96	7,761.42	110	0.35	1.28	3.34126	HDPE	145	0.04
P-373	29	19.381	19.319	0.57398	J-296	J-301	233.95	-11,385.13	7,785.71	110	0.06	0.05	0.57398	HDPE	145	0
P-374	28	19.319	19.289	0.15648	J-301	J-302	234.01	-11,358.03	7,775.23	110	0.02	0	0.15648	HDPE	145	0
P-375	45.5	19.289	19.433	2.57444	J-302	J-293	234.04	-11,331.94	7,764.75	110	0.27	0.79	2.57444	HDPE	145	0.04
P-376	28.5	19.289	19.169	-2.96306	J-302	J-303	234.04	-11,331.94	7,764.75	110	0.31	1.03	2.96306	HDPE	145	0.03
P-377	27.5	19.169	19.238	-1.61733	J-303	J-304	234.19	-11,340.13	7,737.64	110	0.17	0.33	1.61733	HDPE	145	0.01
P-378	37	19.238	19.377	0.24943	J-304	J-300	234.13	-11,365.95	7,746.34	110	0.03	0.01	0.24943	HDPE	145	0
P-379	34.5	19.377	19.351	-3.32884	J-300	J-305	233.99	-11,399.96	7,761.42	110	0.35	1.28	3.32884	HDPE	145	0.04
P-38	26.5	21.271	21.375	-6.09001	J-29	J-16	233.68	-11,455.16	7,286.86	110	0.64	3.91	6.09001	HDPE	145	0.1
P-380	34.5	19.351	19.311	-3.54313	J-305	J-306	234.06	-11,411.98	7,729.20	110	0.37	1.43	3.54313	HDPE	145	0.05
P-381	86	19.311	19.749	-5.50442	J-306	J-307	234.15	-11,424.51	7,697.24	110	0.58	3.24	5.50442	HDPE	145	0.28
P-382	63.5	19.749	20.132	-6.30076	J-307	J-233	233.99	-11,453.08	7,616.31	110	0.66	4.16	6.30076	HDPE	145	0.26
P-383	69	19.749	19.771	-1.58584	J-307	J-308	233.99	-11,453.08	7,616.31	110	0.17	0.32	1.58584	HDPE	145	0.02
P-384	37	19.771	20.041	-6.45937	J-308	J-309	233.99	-11,386.60	7,598.09	110	0.68	4.36	6.45937	HDPE	145	0.16
P-385	21.5	20.041	20.226	-7.21557	J-309	J-231	233.88	-11,397.47	7,562.93	110	0.76	5.35	7.21557	HDPE	145	0.11
P-386	43	19.503	19.453	-0.13357	J-310	J-311	234.07	-11,416.97	7,642.52	110	0.01	0	0.13357	HDPE	145	0
P-387	29.5	19.453	19.254	6.47288	J-311	J-312	234.12	-11,375.41	7,631.01	110	0.68	4.37	6.47288	HDPE	145	0.13
P-388	109	19.254	19.238	2.4055	J-312	J-304	234.19	-11,367.10	7,659.46	110	0.25	0.7	2.4055	HDPE	145	0.08

P-389	13.5	19.169	19.173	-1.56157	J-303	J-313	234.19	-11,340.13	7,737.64	110	0.16	0.31	1.56157	HDPE	145	0
P-39	51.5	21.398	21.298	23.17871	J-27	J-30	233.63	-11,509.37	7,233.42	200	0.74	2.52	23.17871	HDPE	145	0.13
P-390	42	19.173	19.215	-2.92963	J-313	J-314	234.19	-11,343.45	7,724.35	110	0.31	1.01	2.92963	HDPE	145	0.04
P-391	27	19.215	19.254	-3.55348	J-314	J-312	234.19	-11,358.15	7,685.03	110	0.37	1.44	3.55348	HDPE	145	0.04
P-392	35	19.215	19.325	0.30089	J-314	J-315	234.19	-11,358.15	7,685.03	110	0.03	0.01	0.30089	HDPE	145	0
P-393	34	19.325	19.559	1.09639	J-315	J-316	234.08	-11,324.59	7,675.12	110	0.12	0.16	1.09639	HDPE	145	0.01
P-394	32.5	19.559	19.508	-2.21913	J-316	J-317	233.84	-11,291.99	7,665.21	110	0.23	0.6	2.21913	HDPE	145	0.02
P-395	70.5	19.173	19.623	0.9768	J-313	J-318	234.19	-11,343.45	7,724.35	110	0.1	0.13	0.9768	HDPE	145	0.01
P-396	44	19.623	19.559	-2.97238	J-318	J-316	233.73	-11,275.37	7,705.81	110	0.31	1.03	2.97238	HDPE	145	0.05
P-397	45.5	19.623	19.601	3.45236	J-318	J-292	233.73	-11,275.37	7,705.81	110	0.36	1.37	3.45236	HDPE	145	0.06
P-398	44	19.678	19.468	-1.2346	J-262	J-319	233.7	-11,484.85	7,758.35	110	0.13	0.2	1.2346	HDPE	145	0.01
P-399	31.5	19.468	19.418	2.30464	J-319	J-299	233.92	-11,443.49	7,743.52	110	0.24	0.65	2.30464	HDPE	145	0.02
P-4	93.5	21.516	21.187	5.27316	J-3	J-4	233.87	-11,601.68	7,319.84	110	0.55	2.99	5.27316	HDPE	145	0.28
P-40	25	21.298	21.198	6.55674	J-30	J-31	233.6	-11,457.72	7,232.14	125	0.53	2.4	6.55674	HDPE	145	0.06
P-400	44.5	19.648	19.431	-2.43745	J-250	J-320	233.77	-11,498.92	7,725.37	110	0.26	0.72	2.43745	HDPE	145	0.03
P-401	37	19.431	19.468	3.88858	J-320	J-319	234.02	-11,457.56	7,709.32	110	0.41	1.7	3.88858	HDPE	145	0.06
P-402	35	19.311	19.431	1.47844	J-306	J-320	234.15	-11,424.51	7,697.24	110	0.16	0.28	1.47844	HDPE	145	0.01
P-403	86	19.431	19.766	-5.47637	J-320	J-321	234.02	-11,457.56	7,709.32	110	0.58	3.21	5.47637	HDPE	145	0.28
P-404	7.5	19.766	19.791	-4.30516	J-321	J-322	233.96	-11,489.84	7,629.42	110	0.45	2.05	4.30516	HDPE	145	0.02
P-405	45.5	19.791	19.69	1.92683	J-322	J-254	233.95	-11,492.72	7,622.38	110	0.2	0.46	1.92683	HDPE	145	0.02
P-406	58	19.972	19.791	6.57668	J-234	J-322	234.03	-11,513.59	7,568.53	110	0.69	4.5	6.57668	HDPE	145	0.26
P-407	19	20.223	20.199	15.08024	J-232	J-323	233.78	-11,332.36	7,525.06	160	0.75	3.38	15.08024	HDPE	145	0.06
P-408	19.5	20.199	20.201	11.06173	J-323	J-324	233.74	-11,313.36	7,522.38	160	0.55	1.9	11.06173	HDPE	145	0.04
P-409	73.5	20.201	20.386	-5.07354	J-324	J-325	233.7	-11,293.88	7,519.76	110	0.53	2.78	5.07354	HDPE	145	0.2
P-41	30	21.198	21.271	-8.38707	J-31	J-29	233.64	-11,454.14	7,256.94	125	0.68	3.79	8.38707	HDPE	145	0.11
P-410	37	20.386	20.431	-5.6263	J-325	J-215	233.72	-11,314.82	7,449.05	110	0.59	3.37	5.6263	uPVC	145	0.12
P-411	19	20.521	20.594	5.77328	J-216	J-326	233.92	-11,371.76	7,401.12	110	0.61	3.54	5.77328	HDPE	145	0.07
P-412	20	20.594	20.563	9.81798	J-326	J-327	233.78	-11,353.42	7,396.97	125	0.8	5.07	9.81798	uPVC	145	0.1
P-413	59	20.563	20.386	5.12267	J-327	J-325	233.71	-11,333.58	7,393.28	110	0.54	2.83	5.12267	uPVC	145	0.17
P-414	44.5	20.386	20.335	5.01094	J-325	J-328	233.72	-11,314.82	7,449.05	110	0.53	2.72	5.01094	HDPE	145	0.12
P-415	67.5	20.335	20.168	4.60409	J-328	J-329	233.65	-11,270.16	7,451.17	110	0.48	2.33	4.60409	HDPE	145	0.16
P-416	20	20.168	20.201	-15.78437	J-329	J-324	233.66	-11,273.85	7,518.68	160	0.79	3.67	15.78437	uPVC	145	0.07
P-417	29	20.563	20.502	4.35994	J-327	J-330	233.71	-11,333.58	7,393.28	110	0.46	2.1	4.35994	uPVC	145	0.06
P-418	41	20.502	20.513	-1.41325	J-330	J-331	233.71	-11,319.36	7,376.74	110	0.15	0.26	1.41325	uPVC	145	0.01
P-419	59	20.513	20.737	-6.01713	J-331	J-40	233.71	-11,327.13	7,336.65	110	0.63	3.82	6.01713	HDPE	145	0.23
P-42	40.5	21.271	21.19	22.48849	J-29	J-32	233.68	-11,455.16	7,286.86	180	0.88	3.99	22.48849	HDPE	145	0.16

P-420	44.5	20.513	20.427	4.15518	J-331	J-332	233.71	-11,327.13	7,336.65	110	0.44	1.92	4.15518	HDPE	145	0.09
P-421	43	20.427	20.503	-3.96089	J-332	J-333	233.71	-11,282.74	7,333.17	110	0.42	1.76	3.96089	HDPE	145	0.08
P-422	37	20.503	20.577	-7.5822	J-333	J-334	233.71	-11,281.31	7,290.42	160	0.38	0.94	7.5822	uPVC	145	0.03
P-423	46.5	20.577	20.644	-12.24518	J-334	J-41	233.67	-11,290.11	7,254.42	160	0.61	2.3	12.24518	uPVC	145	0.11
P-424	36	20.67	20.577	4.39662	J-57	J-334	233.59	-11,298.11	7,219.40	160	0.22	0.34	4.39662	uPVC	145	0.01
P-425	54	20.577	20.514	8.52086	J-334	J-335	233.67	-11,290.11	7,254.42	160	0.42	1.17	8.52086	uPVC	145	0.06
P-426	39	20.514	20.451	2.23516	J-335	J-336	233.67	-11,236.10	7,253.80	110	0.24	0.61	2.23516	HDPE	145	0.02
P-427	43	20.451	20.503	-3.23936	J-336	J-333	233.71	-11,238.35	7,292.67	110	0.34	1.21	3.23936	HDPE	145	0.05
P-428	23	20.451	20.385	5.14846	J-336	J-337	233.71	-11,238.35	7,292.67	110	0.54	2.86	5.14846	HDPE	145	0.07
P-429	14	20.385	20.387	-1.08875	J-337	J-338	233.71	-11,240.40	7,315.58	110	0.11	0.16	1.08875	HDPE	145	0
P-43	54	21.19	21.083	-0.61232	J-32	J-33	233.6	-11,414.76	7,285.58	110	0.06	0.06	0.61232	HDPE	145	0
P-430	41	20.387	20.427	-7.71705	J-338	J-332	233.71	-11,242.04	7,329.49	160	0.38	0.98	7.71705	uPVC	145	0.04
P-431	31	20.387	20.256	6.36123	J-338	J-339	233.71	-11,242.04	7,329.49	110	0.67	4.23	6.36123	HDPE	145	0.13
P-432	11.5	20.256	20.282	-4.56364	J-339	J-340	233.71	-11,246.54	7,359.97	110	0.48	2.29	4.56364	HDPE	145	0.03
P-433	33.5	20.282	20.282	0.4053	J-340	J-341	233.71	-11,247.76	7,371.63	110	0.04	0.03	0.4053	HDPE	145	0
P-434	32.5	20.734	20.682	10.11485	J-58	J-342	233.53	-11,296.06	7,198.18	160	0.5	1.61	10.11485	uPVC	145	0.05
P-435	25.5	20.682	20.617	7.81394	J-342	J-343	233.53	-11,263.76	7,197.60	160	0.39	1	7.81394	uPVC	145	0.03
P-436	8	20.617	20.616	0.80373	J-343	J-344	233.57	-11,238.19	7,198.37	160	0.04	0.02	0.80373	uPVC	145	0
P-437	13.5	20.616	20.602	-4.63408	J-344	J-345	233.57	-11,238.70	7,206.30	160	0.23	0.38	4.63408	uPVC	145	0.01
P-438	34	20.602	20.514	3.45267	J-345	J-335	233.59	-11,238.44	7,219.85	160	0.17	0.22	3.45267	uPVC	145	0.01
P-439	59.5	20.67	20.602	8.41903	J-57	J-345	233.59	-11,298.11	7,219.40	160	0.42	1.15	8.41903	uPVC	145	0.07
P-44	49	21.083	20.696	6.37592	J-33	J-34	233.71	-11,405.81	7,338.77	110	0.67	4.25	6.37592	HDPE	145	0.21
P-440	91.5	20.682	20.865	1.83669	J-342	J-346	233.53	-11,263.76	7,197.60	160	0.09	0.07	1.83669	uPVC	145	0.01
P-441	20	20.865	20.899	-10.32878	J-346	J-347	233.34	-11,269.38	7,106.32	160	0.51	1.68	10.32878	uPVC	145	0.03
P-442	25.5	20.899	20.925	-9.49712	J-347	J-348	233.34	-11,286.26	7,116.80	160	0.47	1.43	9.49712	uPVC	145	0.04
P-443	14.5	20.925	20.939	-10.14893	J-348	J-72	233.35	-11,307.99	7,130.35	160	0.5	1.62	10.14893	uPVC	145	0.02
P-444	29	20.865	20.814	11.72919	J-346	J-349	233.34	-11,269.38	7,106.32	160	0.58	2.12	11.72919	uPVC	145	0.06
P-445	43	20.814	20.649	2.59574	J-349	J-350	233.33	-11,244.32	7,092.00	160	0.13	0.13	2.59574	uPVC	145	0.01
P-446	63.5	20.649	20.617	-6.70899	J-350	J-343	233.49	-11,240.23	7,134.70	160	0.33	0.75	6.70899	uPVC	145	0.05
P-447	61.5	20.616	20.299	5.18005	J-344	J-351	233.57	-11,238.70	7,206.30	110	0.55	2.89	5.18005	uPVC	145	0.18
P-448	74	20.299	20.494	-2.234	J-351	J-352	233.71	-11,177.59	7,211.67	110	0.24	0.61	2.234	uPVC	145	0.05
P-449	69	20.494	20.649	-8.75979	J-352	J-350	233.56	-11,171.45	7,137.77	160	0.44	1.23	8.75979	uPVC	145	0.09
P-45	13.5	20.696	20.573	12.6668	J-34	J-35	233.89	-11,397.88	7,387.35	140	0.82	4.68	12.6668	HDPE	145	0.06
P-450	50.5	20.494	20.257	5.92495	J-352	J-353	233.56	-11,171.45	7,137.77	110	0.62	3.71	5.92495	uPVC	145	0.19
P-451	25.5	20.257	20.077	5.77495	J-353	J-354	233.61	-11,120.82	7,140.07	110	0.61	3.54	5.77495	uPVC	145	0.09
P-452	41	20.077	20.033	2.64053	J-354	J-355	233.7	-11,121.08	7,165.64	110	0.28	0.83	2.64053	uPVC	145	0.03

P-453	6.5	20.033	20.061	-3.36629	J-355	J-356	233.71	-11,121.08	7,206.81	110	0.35	1.3	3.36629	uPVC	145	0.01
P-454	53.5	20.061	20.299	-6.82719	J-356	J-351	233.69	-11,123.89	7,212.43	110	0.72	4.83	6.82719	uPVC	145	0.26
P-455	15.5	20.257	20.327	-0.13414	J-353	J-357	233.61	-11,120.82	7,140.07	110	0.01	0	0.13414	uPVC	145	0
P-456	99.5	20.327	20.086	2.94454	J-357	J-358	233.54	-11,120.82	7,124.47	110	0.31	1.02	2.94454	uPVC	145	0.1
P-457	49.5	20.086	20.02	2.48187	J-358	J-359	233.68	-11,021.35	7,118.85	110	0.26	0.74	2.48187	uPVC	145	0.04
P-458	51.5	20.02	20.025	-0.89323	J-359	J-360	233.71	-11,024.16	7,168.45	110	0.09	0.11	0.89323	uPVC	145	0.01
P-459	45.5	20.025	20.077	-2.78662	J-360	J-354	233.71	-11,075.56	7,166.92	110	0.29	0.92	2.78662	uPVC	145	0.04
P-46	48.5	20.573	20.971	-8.02258	J-35	J-13	233.95	-11,397.37	7,400.90	125	0.65	3.49	8.02258	HDPE	145	0.17
P-460	34	20.033	20.014	5.75372	J-355	J-361	233.71	-11,121.08	7,206.81	160	0.29	0.57	5.75372	uPVC	145	0.02
P-461	11	20.014	20.014	-0.14971	J-361	J-362	233.71	-11,087.07	7,209.11	160	0.01	0	0.14971	uPVC	145	0
P-462	49.5	20.014	20.033	0.99687	J-362	J-363	233.71	-11,076.33	7,208.34	160	0.05	0.02	0.99687	uPVC	145	0
P-463	42.5	20.033	20.02	-2.92951	J-363	J-359	233.69	-11,026.98	7,210.64	160	0.15	0.16	2.92951	uPVC	145	0.01
P-464	30.5	20.061	20.086	3.17986	J-356	J-364	233.69	-11,123.89	7,212.43	110	0.33	1.17	3.17986	uPVC	145	0.04
P-465	35.5	20.086	20.09	2.97488	J-364	J-365	233.63	-11,123.63	7,242.86	160	0.15	0.17	2.97488	uPVC	145	0.01
P-466	9.5	20.09	20.01	-1.33225	J-365	J-366	233.62	-11,088.09	7,243.12	160	0.07	0.04	1.33225	uPVC	145	0
P-467	24.5	20.01	20.014	-5.68759	J-366	J-361	233.7	-11,087.83	7,233.40	160	0.28	0.55	5.68759	uPVC	145	0.01
P-468	52.5	20.01	20.094	4.08672	J-366	J-367	233.7	-11,087.83	7,233.40	160	0.2	0.3	4.08672	uPVC	145	0.02
P-469	41.5	20.094	20.274	0.30792	J-367	J-368	233.6	-11,035.16	7,233.15	160	0.02	0	0.30792	uPVC	145	0
P-47	26	20.971	20.944	16.81295	J-13	J-36	233.72	-11,445.70	7,405.50	160	0.84	4.13	16.81295	HDPE	145	0.11
P-470	25.5	20.274	20.274	-6.96431	J-368	J-369	233.42	-10,993.73	7,232.63	160	0.35	0.81	6.96431	uPVC	145	0.02
P-471	34	20.274	20.033	-3.53511	J-369	J-363	233.44	-10,992.97	7,207.32	160	0.18	0.23	3.53511	uPVC	145	0.01
P-472	24	20.274	20.279	6.04383	J-368	J-370	233.42	-10,993.73	7,232.63	160	0.3	0.62	6.04383	uPVC	145	0.01
P-473	23.5	20.279	20.341	4.40503	J-370	J-371	233.4	-10,993.99	7,256.67	160	0.22	0.35	4.40503	uPVC	145	0.01
P-474	78.5	20.341	20.628	2.32674	J-371	J-372	233.33	-10,994.50	7,279.94	110	0.24	0.66	2.32674	uPVC	145	0.05
P-475	27.5	20.628	20.662	-3.73	J-372	J-373	232.99	-10,916.00	7,285.82	110	0.39	1.58	3.73	uPVC	145	0.04
P-476	26	20.662	20.697	-2.89857	J-373	J-374	233	-10,914.72	7,258.20	110	0.31	0.99	2.89857	uPVC	145	0.03
P-477	19	20.697	20.742	-2.58309	J-374	J-375	232.99	-10,914.72	7,232.38	110	0.27	0.8	2.58309	uPVC	145	0.02
P-478	79.5	20.279	20.662	1.24443	J-370	J-373	233.4	-10,993.99	7,256.67	110	0.13	0.21	1.24443	uPVC	145	0.02
P-479	79	20.274	20.697	0.70053	J-368	J-374	233.42	-10,993.73	7,232.63	110	0.07	0.07	0.70053	uPVC	145	0.01
P-48	49	20.944	20.581	4.6016	J-36	J-37	233.64	-11,444.17	7,431.33	110	0.48	2.32	4.6016	uPVC	145	0.11
P-480	82.5	20.274	20.801	-2.23876	J-369	J-376	233.44	-10,992.97	7,207.32	160	0.11	0.1	2.23876	uPVC	145	0.01
P-481	41.5	20.801	20.862	-5.40256	J-376	J-377	232.92	-10,912.93	7,191.47	160	0.27	0.5	5.40256	uPVC	145	0.02
P-482	57	20.862	20.838	-6.10545	J-377	J-378	232.88	-10,916.77	7,157.20	160	0.3	0.63	6.10545	uPVC	145	0.04
P-483	60	20.838	20.973	-8.82407	J-378	J-379	232.94	-10,958.45	7,118.08	160	0.44	1.25	8.82407	uPVC	145	0.08
P-484	121.5	20.973	20.687	-7.17069	J-379	J-380	232.88	-11,001.15	7,075.63	160	0.36	0.85	7.17069	uPVC	145	0.1
P-485	61	20.687	20.327	3.62518	J-380	J-357	233.27	-11,121.08	7,063.61	110	0.38	1.49	3.62518	uPVC	145	0.09

Distribution Network Design Output: Zone 7

P-486	8	20.814	20.824	8.885	J-349	J-381	233.33	-11,244.32	7,092.00	160	0.44	1.27	8.885	uPVC	145	0.01
P-487	57	20.824	20.685	8.66571	J-381	J-382	233.31	-11,237.93	7,087.14	160	0.43	1.21	8.66571	uPVC	145	0.07
P-488	18.5	20.685	20.675	8.10433	J-382	J-383	233.38	-11,185.26	7,065.15	160	0.4	1.07	8.10433	uPVC	145	0.02
P-489	5.5	20.675	20.69	7.83099	J-383	J-384	233.37	-11,166.85	7,064.13	160	0.39	1	7.83099	uPVC	145	0.01
P-49	25.5	20.581	20.573	-5.99675	J-37	J-35	233.89	-11,395.33	7,426.22	125	0.49	2.04	5.99675	HDPE	145	0.05
P-490	40.5	20.69	20.687	11.48829	J-384	J-380	233.35	-11,161.73	7,062.59	160	0.57	2.04	11.48829	uPVC	145	0.08
P-491	67	20.69	20.879	-4.0082	J-384	J-385	233.35	-11,161.73	7,062.59	160	0.2	0.29	4.0082	uPVC	145	0.02
P-492	25	20.879	20.805	-3.47264	J-385	J-386	233.18	-11,156.36	6,995.85	160	0.17	0.22	3.47264	uPVC	145	0.01
P-493	24.5	20.805	20.755	0.03492	J-386	J-387	233.26	-11,181.17	6,994.32	110	0	0	0.03492	uPVC	145	0
P-494	26	20.755	20.705	-0.12193	J-387	J-388	233.31	-11,182.44	7,018.87	110	0.01	0	0.12193	uPVC	145	0
P-495	20	20.705	20.685	-0.26481	J-388	J-382	233.36	-11,185.00	7,044.95	110	0.03	0.01	0.26481	uPVC	145	0
P-496	10.5	20.832	20.836	2.31442	J-82	J-389	233.28	-11,235.71	7,051.40	110	0.24	0.65	2.31442	uPVC	145	0.01
P-497	24	20.836	20.841	2.20725	J-389	J-390	233.27	-11,235.37	7,040.86	110	0.23	0.6	2.20725	uPVC	145	0.01
P-498	24.5	20.841	20.848	2.0566	J-390	J-83	233.25	-11,234.35	7,016.82	110	0.22	0.52	2.0566	uPVC	145	0.01
P-499	52.5	20.848	20.805	3.82431	J-83	J-386	233.23	-11,233.41	6,992.33	160	0.19	0.27	3.82431	uPVC	145	0.01
P-5	94.5	21.552	21.15	5.76471	J-2	J-5	233.85	-11,586.34	7,318.00	110	0.61	3.53	5.76471	HDPE	145	0.33
P-50	47.5	20.992	20.696	6.63247	J-14	J-34	233.71	-11,445.44	7,390.67	125	0.54	2.45	6.63247	HDPE	145	0.12
P-500	69.5	20.828	21.06	3.75316	J-84	J-391	233.25	-11,232.90	6,963.44	160	0.19	0.26	3.75316	uPVC	145	0.02
P-501	52	21.06	20.879	0.9827	J-391	J-385	233	-11,167.61	6,947.52	160	0.05	0.02	0.9827	uPVC	145	0
P-502	75.5	20.828	20.617	0.74953	J-84	J-392	233.25	-11,232.90	6,963.44	160	0.04	0.01	0.74953	uPVC	145	0
P-503	21.5	21.06	21.075	2.32641	J-391	J-393	233	-11,167.61	6,947.52	110	0.24	0.66	2.32641	uPVC	145	0.01
P-504	48	20.514	20.259	9.19499	J-335	J-394	233.67	-11,236.10	7,253.80	125	0.75	4.49	9.19499	HDPE	145	0.22
P-505	32.5	20.259	20.13	6.15445	J-394	J-395	233.71	-11,190.45	7,264.00	110	0.65	3.98	6.15445	HDPE	145	0.13
P-506	35	20.13	20.151	4.21618	J-395	J-396	233.71	-11,158.21	7,267.60	110	0.44	1.98	4.21618	HDPE	145	0.07
P-507	38.5	20.151	20.222	3.98792	J-396	J-397	233.62	-11,123.68	7,271.86	110	0.42	1.78	3.98792	uPVC	145	0.07
P-508	12.5	20.222	20.222	0.44086	J-397	J-398	233.48	-11,088.50	7,280.20	160	0.02	0	0.44086	uPVC	145	0
P-509	25	20.222	20.09	-4.08974	J-398	J-365	233.48	-11,088.00	7,267.93	160	0.2	0.3	4.08974	uPVC	145	0.01
P-51	45	21.25	21.083	7.4478	J-15	J-33	233.68	-11,450.56	7,342.09	125	0.61	3.04	7.4478	HDPE	145	0.14
P-510	50.5	20.222	20.295	4.25732	J-398	J-399	233.48	-11,088.00	7,267.93	160	0.21	0.32	4.25732	uPVC	145	0.02
P-511	40.5	20.295	20.094	-3.36115	J-399	J-367	233.39	-11,037.60	7,273.49	160	0.17	0.21	3.36115	uPVC	145	0.01
P-512	43.5	20.341	20.295	-4.34292	J-371	J-399	233.33	-10,994.50	7,279.94	160	0.22	0.34	4.34292	uPVC	145	0.01
P-513	40.5	20.295	20.279	2.73215	J-399	J-400	233.39	-11,037.60	7,273.49	110	0.29	0.89	2.73215	uPVC	145	0.04
P-514	50.5	20.279	20.19	-1.80316	J-400	J-401	233.37	-11,038.09	7,313.91	110	0.19	0.41	1.80316	uPVC	145	0.02
P-515	25	20.19	20.222	-3.31104	J-401	J-397	233.48	-11,088.00	7,305.40	110	0.35	1.26	3.31104	uPVC	145	0.03
P-516	24.5	20.19	20.186	1.19734	J-401	J-402	233.48	-11,088.00	7,305.40	110	0.13	0.19	1.19734	uPVC	145	0
P-517	41.5	20.186	20.207	3.52926	J-402	J-403	233.48	-11,089.64	7,329.95	110	0.37	1.42	3.52926	HDPE	145	0.06

P-518	9	20.207	20.227	-0.29893	J-403	J-404	233.4	-11,048.73	7,335.68	110	0.03	0.01	0.29893	uPVC	145	0
P-519	22	20.227	20.279	-4.18441	J-404	J-400	233.38	-11,039.56	7,335.84	110	0.44	1.95	4.18441	uPVC	145	0.04
P-52	22.5	21.19	21.039	22.73749	J-32	J-38	233.6	-11,414.76	7,285.58	180	0.89	4.07	22.73749	HDPE	145	0.09
P-520	23.5	20.186	20.145	-2.60986	J-402	J-405	233.48	-11,089.64	7,329.95	110	0.27	0.81	2.60986	HDPE	145	0.02
P-521	13	20.145	20.14	-5.00407	J-405	J-406	233.54	-11,112.88	7,327.66	110	0.53	2.71	5.00407	HDPE	145	0.04
P-522	23.5	20.14	20.11	0.07302	J-406	J-407	233.58	-11,125.60	7,326.07	110	0.01	0	0.07302	HDPE	145	0
P-523	34	20.14	20.153	-5.29604	J-406	J-408	233.58	-11,125.60	7,326.07	110	0.56	3.02	5.29604	HDPE	145	0.1
P-524	17	20.153	20.144	-4.06733	J-408	J-409	233.67	-11,159.56	7,322.79	110	0.43	1.85	4.06733	HDPE	145	0.03
P-525	19	20.144	20.213	-8.22349	J-409	J-410	233.71	-11,176.33	7,323.00	125	0.67	3.65	8.22349	HDPE	145	0.07
P-526	45.5	20.213	20.385	-5.981	J-410	J-337	233.71	-11,195.15	7,319.93	110	0.63	3.78	5.981	HDPE	145	0.17
P-527	56	20.213	20.259	-2.61667	J-410	J-394	233.71	-11,195.15	7,319.93	110	0.28	0.82	2.61667	HDPE	145	0.05
P-528	55	20.153	20.13	-1.55788	J-408	J-395	233.67	-11,159.56	7,322.79	110	0.16	0.31	1.55788	HDPE	145	0.02
P-529	44.5	20.144	20.108	3.90617	J-409	J-411	233.71	-11,176.33	7,323.00	110	0.41	1.72	3.90617	HDPE	145	0.08
P-53	13.5	21.039	20.937	17.75604	J-38	J-39	233.66	-11,392.26	7,283.02	160	0.88	4.57	17.75604	HDPE	145	0.06
P-530	27	20.108	20.102	-3.31399	J-411	J-412	233.67	-11,179.76	7,367.39	110	0.35	1.27	3.31399	HDPE	145	0.03
P-531	21.5	20.102	20.193	-6.34945	J-412	J-413	233.71	-11,206.61	7,364.06	110	0.67	4.22	6.34945	HDPE	145	0.09
P-532	18.5	20.193	20.256	-10.73542	J-413	J-339	233.71	-11,228.09	7,362.27	140	0.7	3.45	10.73542	HDPE	145	0.06
P-533	9	20.108	20.063	6.97017	J-411	J-414	233.67	-11,179.76	7,367.39	110	0.73	5.01	6.97017	HDPE	145	0.05
P-534	24	20.063	20.054	4.29617	J-414	J-415	233.67	-11,170.81	7,368.92	110	0.45	2.05	4.29617	HDPE	145	0.05
P-535	31.5	20.054	20.089	2.57496	J-415	J-416	233.63	-11,147.03	7,370.97	110	0.27	0.79	2.57496	HDPE	145	0.02
P-536	47	20.089	20.145	-2.1349	J-416	J-405	233.57	-11,115.83	7,374.80	110	0.22	0.56	2.1349	HDPE	145	0.03
P-537	22	20.089	20.092	4.39777	J-416	J-417	233.57	-11,115.83	7,374.80	110	0.46	2.14	4.39777	HDPE	145	0.05
P-538	36.5	20.092	20.095	4.03499	J-417	J-418	233.52	-11,094.10	7,376.34	110	0.42	1.82	4.03499	HDPE	145	0.07
P-539	7	20.095	20.114	1.0167	J-418	J-419	233.45	-11,057.53	7,379.66	110	0.11	0.14	1.0167	uPVC	145	0
P-54	40.5	20.937	20.737	12.69596	J-39	J-40	233.7	-11,378.71	7,282.77	140	0.82	4.7	12.69596	HDPE	145	0.19
P-540	44	20.114	20.207	-3.53474	J-419	J-403	233.43	-11,050.37	7,379.66	110	0.37	1.43	3.53474	HDPE	145	0.06
P-541	36.5	20.114	20.13	4.27971	J-419	J-420	233.43	-11,050.37	7,379.66	110	0.45	2.03	4.27971	HDPE	145	0.07
P-542	16	20.13	20.169	1.92127	J-420	J-421	233.34	-11,013.81	7,383.24	160	0.1	0.07	1.92127	uPVC	145	0
P-543	43	20.169	20.259	-3.80131	J-421	J-422	233.3	-10,997.70	7,384.52	110	0.4	1.63	3.80131	uPVC	145	0.07
P-544	45	20.259	20.227	-3.64945	J-422	J-404	233.28	-10,995.14	7,341.82	110	0.38	1.51	3.64945	uPVC	145	0.07
P-545	28	20.341	20.288	5.88248	J-371	J-423	233.33	-10,994.50	7,279.94	110	0.62	3.66	5.88248	uPVC	145	0.1
P-546	34	20.288	20.259	2.70847	J-423	J-422	233.28	-10,994.12	7,308.06	110	0.29	0.87	2.70847	uPVC	145	0.03
P-547	31.5	20.259	20.322	2.07997	J-422	J-424	233.28	-10,995.14	7,341.82	110	0.22	0.53	2.07997	uPVC	145	0.02
P-548	36.5	20.322	20.335	-1.69506	J-424	J-425	233.2	-10,963.95	7,345.91	110	0.18	0.37	1.69506	uPVC	145	0.01
P-549	34	20.335	20.288	-2.87589	J-425	J-423	233.2	-10,960.11	7,309.85	110	0.3	0.97	2.87589	uPVC	145	0.03
P-55	22.5	20.737	20.644	6.29999	J-40	J-41	233.71	-11,338.25	7,278.47	110	0.66	4.16	6.29999	HDPE	145	0.09

P-550	26	20.628	20.54	5.64685	J-372	J-426	232.99	-10,916.00	7,285.82	110	0.59	3.4	5.64685	uPVC	145	0.09
P-551	44	20.54	20.335	-0.82528	J-426	J-425	232.99	-10,916.13	7,311.64	110	0.09	0.1	0.82528	uPVC	145	0
P-552	42	20.322	20.225	3.43344	J-424	J-427	233.2	-10,963.95	7,345.91	110	0.36	1.35	3.43344	uPVC	145	0.06
P-553	23.5	20.225	20.175	-0.04175	J-427	J-428	233.24	-10,968.29	7,387.84	110	0	0	0.04175	uPVC	145	0
P-554	6.5	20.175	20.169	-5.51916	J-428	J-421	233.29	-10,991.56	7,385.80	160	0.27	0.53	5.51916	uPVC	145	0
P-555	115	20.54	20.103	2.82783	J-426	J-429	232.99	-10,916.13	7,311.64	110	0.3	0.94	2.82783	uPVC	145	0.11
P-556	21.5	20.103	20.077	2.45796	J-429	J-430	233.32	-10,922.14	7,426.55	110	0.26	0.73	2.45796	uPVC	145	0.02
P-557	21	20.077	20.071	1.46723	J-430	J-431	233.33	-10,924.19	7,448.03	110	0.15	0.28	1.46723	uPVC	145	0.01
P-558	12.5	20.071	20.07	0.78451	J-431	J-432	233.33	-10,924.95	7,469.25	110	0.08	0.09	0.78451	uPVC	145	0
P-559	31	20.07	20.032	-0.67081	J-432	J-433	233.33	-10,925.98	7,481.78	110	0.07	0.07	0.67081	uPVC	145	0
P-56	7	20.644	20.689	-6.18122	J-41	J-42	233.71	-11,336.46	7,255.96	125	0.5	2.16	6.18122	HDPE	145	0.02
P-560	35	20.032	20.056	-0.87578	J-433	J-434	233.37	-10,956.92	7,480.25	110	0.09	0.11	0.87578	uPVC	145	0
P-561	36.5	20.225	20.123	3.15844	J-427	J-435	233.24	-10,968.29	7,387.84	110	0.33	1.16	3.15844	uPVC	145	0.04
P-562	19.5	20.123	20.067	2.62315	J-435	J-436	233.3	-10,971.49	7,423.99	110	0.28	0.82	2.62315	uPVC	145	0.02
P-563	82	20.067	20.033	1.61468	J-436	J-437	233.34	-10,974.56	7,443.42	160	0.08	0.05	1.61468	uPVC	145	0
P-564	28	20.033	19.946	-2.19105	J-437	J-438	233.37	-10,983.77	7,524.99	160	0.11	0.1	2.19105	uPVC	145	0
P-565	140	19.946	20.175	-4.94954	J-438	J-428	233.46	-11,011.89	7,524.23	160	0.25	0.43	4.94954	uPVC	145	0.06
P-566	140	20.13	19.955	1.76071	J-420	J-439	233.34	-11,013.81	7,383.24	110	0.19	0.39	1.76071	HDPE	145	0.05
P-567	22.5	19.955	19.946	1.85429	J-439	J-438	233.46	-11,034.20	7,521.86	110	0.2	0.43	1.85429	HDPE	145	0.01
P-568	44.5	19.946	19.87	3.8831	J-438	J-440	233.46	-11,011.89	7,524.23	110	0.41	1.7	3.8831	HDPE	145	0.08
P-569	24	19.87	19.855	2.276	J-440	J-441	233.46	-11,010.87	7,568.85	110	0.24	0.63	2.276	HDPE	145	0.02
P-57	48.5	20.689	20.96	-9.04889	J-42	J-43	233.68	-11,335.95	7,248.80	125	0.74	4.36	9.04889	HDPE	145	0.21
P-570	27	19.855	19.856	-0.47925	J-441	J-442	233.46	-11,011.51	7,592.82	110	0.05	0.04	0.47925	HDPE	145	0
P-571	38.5	19.856	20.075	0.1196	J-442	J-443	233.46	-11,004.80	7,612.96	110	0.01	0	0.1196	HDPE	145	0
P-572	46	19.855	20.021	2.45402	J-441	J-444	233.46	-11,011.51	7,592.82	110	0.26	0.73	2.45402	HDPE	145	0.03
P-573	37	20.021	20.171	2.10927	J-444	J-445	233.26	-10,965.80	7,590.26	110	0.22	0.55	2.10927	uPVC	145	0.02
P-574	15.5	20.171	20.131	0.04819	J-445	J-446	233.09	-10,939.27	7,615.83	110	0.01	0	0.04819	uPVC	145	0
P-575	14	20.021	20.091	0.04353	J-444	J-447	233.26	-10,965.80	7,590.26	110	0	0	0.04353	HDPE	145	0
P-576	13.5	19.955	19.956	-0.64008	J-439	J-448	233.46	-11,034.20	7,521.86	110	0.07	0.06	0.64008	HDPE	145	0
P-577	13	19.956	19.949	2.06566	J-448	J-449	233.46	-11,047.63	7,523.78	110	0.22	0.53	2.06566	HDPE	145	0.01
P-578	40.5	19.949	19.955	2.64785	J-449	J-450	233.46	-11,046.67	7,536.56	110	0.28	0.84	2.64785	HDPE	145	0.03
P-579	49	19.955	19.957	2.54194	J-450	J-451	233.42	-11,048.27	7,576.84	110	0.27	0.77	2.54194	HDPE	145	0.04
P-58	9.5	20.96	21.035	-12.82601	J-43	J-44	233.62	-11,384.28	7,251.87	140	0.83	4.79	12.82601	HDPE	145	0.05
P-580	29	19.957	19.859	2.2997	J-451	J-452	233.38	-11,049.55	7,624.78	110	0.24	0.64	2.2997	HDPE	145	0.02
P-581	27	19.859	19.856	0.8861	J-452	J-442	233.46	-11,021.74	7,633.73	110	0.09	0.11	0.8861	HDPE	145	0
P-582	27	19.956	20.002	-2.87191	J-448	J-453	233.46	-11,047.63	7,523.78	110	0.3	0.97	2.87191	HDPE	145	0.03

P-583	17.5	20.002	20.025	-1.02112	J-453	J-454	233.44	-11,074.80	7,522.82	110	0.11	0.14	1.02112	HDPE	145	0
P-584	16.5	20.025	20.004	4.06827	J-454	J-455	233.42	-11,092.06	7,523.46	110	0.43	1.85	4.06827	HDPE	145	0.03
P-585	45.5	20.004	19.949	0.88962	J-455	J-449	233.41	-11,092.06	7,540.08	110	0.09	0.11	0.88962	HDPE	145	0.01
P-586	39.5	20.004	20.006	2.86345	J-455	J-456	233.41	-11,092.06	7,540.08	110	0.3	0.97	2.86345	HDPE	145	0.04
P-587	45.5	20.006	19.955	0.31329	J-456	J-450	233.37	-11,093.65	7,579.40	110	0.03	0.02	0.31329	HDPE	145	0
P-588	60.5	20.006	20.033	2.09835	J-456	J-457	233.37	-11,093.65	7,579.40	110	0.22	0.54	2.09835	HDPE	145	0.03
P-589	60	20.033	19.865	1.95142	J-457	J-458	233.31	-11,095.57	7,639.81	110	0.21	0.47	1.95142	HDPE	145	0.03
P-59	29.5	21.035	21.039	-4.77803	J-44	J-38	233.59	-11,393.48	7,253.41	110	0.5	2.49	4.77803	HDPE	145	0.07
P-590	28	19.859	19.865	1.01918	J-452	J-458	233.46	-11,021.74	7,633.73	110	0.11	0.14	1.01918	HDPE	145	0
P-591	25.5	19.865	19.924	2.61815	J-458	J-459	233.45	-11,040.28	7,654.51	110	0.28	0.82	2.61815	HDPE	145	0.02
P-592	25	19.924	19.998	2.28116	J-459	J-460	233.37	-11,054.08	7,676.00	110	0.24	0.63	2.28116	HDPE	145	0.02
P-593	12.5	19.998	20.022	2.02799	J-460	J-461	233.28	-11,068.98	7,696.21	110	0.21	0.51	2.02799	HDPE	145	0.01
P-594	103.5	20.022	19.883	-0.86436	J-461	J-462	233.25	-11,075.81	7,706.94	110	0.09	0.11	0.86436	HDPE	145	0.01
P-595	50	19.883	19.808	-2.76311	J-462	J-463	233.4	-11,175.03	7,689.55	110	0.29	0.9	2.76311	HDPE	145	0.05
P-596	15	19.808	19.833	-1.53757	J-463	J-464	233.52	-11,170.68	7,639.95	110	0.16	0.31	1.53757	HDPE	145	0
P-597	27	19.833	19.935	-1.93821	J-464	J-465	233.5	-11,155.59	7,639.69	110	0.2	0.47	1.93821	HDPE	145	0.01
P-598	47	19.935	19.985	0.14599	J-465	J-466	233.41	-11,128.49	7,639.18	110	0.02	0	0.14599	HDPE	145	0
P-599	43	20.073	20.033	-0.13357	J-467	J-457	233.27	-11,097.04	7,682.90	110	0.01	0	0.13357	HDPE	145	0
P-6	62.5	21.708	21.33	35.0064	J-1	J-6	233.8	-11,558.74	7,317.22	200	1.11	5.42	35.0064	HDPE	145	0.34
P-60	26.5	21.198	21.183	14.69071	J-31	J-45	233.64	-11,454.14	7,256.94	160	0.73	3.22	14.69071	HDPE	145	0.09
P-600	33	20.033	19.935	-0.59678	J-457	J-465	233.31	-11,095.57	7,639.81	110	0.06	0.05	0.59678	HDPE	145	0
P-601	117	19.935	20.058	-3.37651	J-465	J-468	233.41	-11,128.49	7,639.18	110	0.36	1.31	3.37651	HDPE	145	0.15
P-602	14.5	20.058	20.066	0.89029	J-468	J-469	233.44	-11,123.72	7,522.38	110	0.09	0.11	0.89029	HDPE	145	0
P-603	17.5	20.066	20.025	5.24934	J-469	J-454	233.43	-11,109.40	7,522.64	110	0.55	2.97	5.24934	HDPE	145	0.05
P-604	42	20.066	20.104	-4.58887	J-469	J-470	233.43	-11,109.40	7,522.64	110	0.48	2.31	4.58887	HDPE	145	0.1
P-605	24.5	20.104	20.102	-2.47955	J-470	J-471	233.49	-11,106.35	7,480.55	110	0.26	0.74	2.47955	HDPE	145	0.02
P-606	80.5	20.102	20.092	0.06885	J-471	J-417	233.51	-11,103.24	7,456.16	110	0.01	0	0.06885	HDPE	145	0
P-607	144	20.095	20.002	2.43609	J-418	J-453	233.45	-11,057.53	7,379.66	110	0.26	0.72	2.43609	HDPE	145	0.1
P-608	50	20.102	20.085	-3.0297	J-471	J-472	233.51	-11,103.24	7,456.16	110	0.32	1.07	3.0297	HDPE	145	0.05
P-609	21.5	20.085	20.058	-2.2183	J-472	J-473	233.58	-11,152.94	7,453.66	110	0.23	0.6	2.2183	HDPE	145	0.01
P-61	34.5	21.183	21.035	8.27625	J-45	J-44	233.57	-11,427.75	7,254.43	125	0.67	3.7	8.27625	HDPE	145	0.13
P-611	14	20.166	20.142	5.41109	J-474	J-475	233.48	-11,178.77	7,519.38	110	0.57	3.14	5.41109	HDPE	145	0.04
P-612	41.5	20.142	20.058	4.80399	J-475	J-468	233.46	-11,164.96	7,520.40	110	0.51	2.52	4.80399	HDPE	145	0.1
P-613	70	20.142	20.092	0.2174	J-475	J-476	233.46	-11,164.96	7,520.40	110	0.02	0.01	0.2174	HDPE	145	0
P-614	43.5	19.833	19.852	0.13512	J-464	J-477	233.5	-11,155.59	7,639.69	110	0.01	0	0.13512	HDPE	145	0
P-615	19.5	19.808	19.784	-1.48795	J-463	J-478	233.52	-11,170.68	7,639.95	110	0.16	0.29	1.48795	HDPE	145	0.01

P-616	41.5	19.784	19.784	0.12891	J-478	J-479	233.55	-11,190.11	7,639.29	110	0.01	0	0.12891	HDPE	145	0
P-617	22	19.784	19.765	-2.02992	J-478	J-480	233.55	-11,190.11	7,639.29	110	0.21	0.51	2.02992	HDPE	145	0.01
P-618	122.5	19.765	20.138	-4.8527	J-480	J-481	233.58	-11,212.17	7,637.69	110	0.51	2.56	4.8527	HDPE	145	0.31
P-619	25	20.138	20.166	5.28281	J-481	J-474	233.52	-11,203.54	7,519.43	160	0.26	0.48	5.28281	uPVC	145	0.01
P-62	6.5	21.419	21.4	43.44829	J-26	J-46	233.59	-11,511.93	7,207.85	225	1.09	4.55	43.44829	HDPE	145	0.03
P-620	33.5	20.138	20.128	-10.69754	J-481	J-482	233.52	-11,203.54	7,519.43	160	0.53	1.79	10.69754	uPVC	145	0.06
P-621	122	20.128	19.817	4.40529	J-482	J-483	233.59	-11,236.78	7,517.83	110	0.46	2.14	4.40529	HDPE	145	0.26
P-622	30.5	19.817	19.693	-1.14894	J-483	J-484	233.64	-11,246.69	7,639.61	110	0.12	0.18	1.14894	HDPE	145	0.01
P-623	11.5	19.693	19.676	-1.2794	J-484	J-485	233.77	-11,277.05	7,639.29	110	0.13	0.22	1.2794	HDPE	145	0
P-624	109	19.676	20.168	-5.59207	J-485	J-329	233.79	-11,277.69	7,627.78	110	0.59	3.33	5.59207	HDPE	145	0.36
P-625	37	20.168	20.128	14.07137	J-329	J-482	233.66	-11,273.85	7,518.68	160	0.7	2.97	14.07137	uPVC	145	0.11
P-626	55.5	19.817	19.712	4.90838	J-483	J-486	233.64	-11,246.69	7,639.61	110	0.52	2.62	4.90838	HDPE	145	0.15
P-627	16.5	19.712	19.674	3.88862	J-486	J-487	233.6	-11,242.85	7,695.22	110	0.41	1.7	3.88862	HDPE	145	0.03
P-628	19.5	19.674	19.623	2.1751	J-487	J-488	233.61	-11,240.29	7,711.52	110	0.23	0.58	2.1751	HDPE	145	0.01
P-629	19.5	19.623	19.652	0.61934	J-488	J-290	233.65	-11,239.02	7,731.02	110	0.07	0.06	0.61934	HDPE	145	0
P-63	47	21.4	21.325	24.82664	J-46	J-47	233.58	-11,505.99	7,205.85	200	0.79	2.87	24.82664	uPVC	145	0.13
P-630	35	19.705	19.79	0.97728	J-289	J-489	233.55	-11,217.64	7,755.80	110	0.1	0.13	0.97728	HDPE	145	0
P-631	28.5	19.79	19.73	-1.62603	J-489	J-490	233.46	-11,183.72	7,764.58	110	0.17	0.34	1.62603	HDPE	145	0.01
P-632	15	19.73	19.767	-1.98277	J-490	J-491	233.53	-11,178.29	7,736.78	110	0.21	0.49	1.98277	HDPE	145	0.01
P-633	20	19.767	19.82	-2.2667	J-491	J-492	233.5	-11,176.37	7,721.75	110	0.24	0.63	2.2667	HDPE	145	0.01
P-634	12	19.82	19.883	-1.38485	J-492	J-462	233.46	-11,174.77	7,701.62	110	0.15	0.25	1.38485	HDPE	145	0
P-635	28	19.712	19.79	0.70922	J-486	J-493	233.6	-11,242.85	7,695.22	110	0.07	0.07	0.70922	HDPE	145	0
P-636	40	19.79	19.82	2.50266	J-493	J-492	233.52	-11,214.72	7,697.14	110	0.26	0.75	2.50266	HDPE	145	0.03
P-637	59.5	19.79	19.765	-2.18936	J-493	J-480	233.52	-11,214.72	7,697.14	110	0.23	0.59	2.18936	HDPE	145	0.03
P-638	25	19.784	19.874	0.07768	J-478	J-494	233.55	-11,190.11	7,639.29	110	0.01	0	0.07768	HDPE	145	0
P-639	61	19.623	19.73	1.24522	J-488	J-490	233.65	-11,239.02	7,731.02	110	0.13	0.21	1.24522	HDPE	145	0.01
P-64	40	21.325	21.298	-16.2602	J-47	J-30	233.52	-11,460.99	7,192.29	200	0.52	1.31	16.2602	uPVC	145	0.05
P-640	86	19.73	20.008	1.01045	J-490	J-495	233.53	-11,178.29	7,736.78	110	0.11	0.14	1.01045	HDPE	145	0.01
P-641	13.5	20.008	20.012	-1.67489	J-495	J-496	233.24	-11,092.95	7,749.24	110	0.18	0.36	1.67489	HDPE	145	0
P-642	13.5	20.012	20.024	-0.93194	J-496	J-497	233.24	-11,089.11	7,736.14	110	0.1	0.12	0.93194	HDPE	145	0
P-643	8	20.024	20.034	-3.24313	J-497	J-498	233.23	-11,082.72	7,724.31	110	0.34	1.22	3.24313	HDPE	145	0.01
P-644	10.5	20.034	20.022	-2.49954	J-498	J-461	233.23	-11,079.84	7,716.64	110	0.26	0.75	2.49954	HDPE	145	0.01
P-645	96	20.034	19.82	-1.09914	J-498	J-492	233.23	-11,079.84	7,716.64	110	0.12	0.16	1.09914	HDPE	145	0.02
P-646	64.5	19.674	19.767	1.40144	J-487	J-491	233.61	-11,240.29	7,711.52	110	0.15	0.26	1.40144	HDPE	145	0.02
P-647	88.5	19.767	20.012	1.10162	J-491	J-496	233.5	-11,176.37	7,721.75	110	0.12	0.16	1.10162	HDPE	145	0.01
P-648	32.5	19.79	19.829	2.30519	J-489	J-499	233.46	-11,183.72	7,764.58	110	0.24	0.65	2.30519	HDPE	145	0.02

P-649	43.5	19.829	19.955	0.8111	J-499	J-500	233.4	-11,152.40	7,773.21	110	0.09	0.09	0.8111	HDPE	145	0
P-65	29.5	21.325	21.241	29.20051	J-47	J-48	233.52	-11,460.99	7,192.29	200	0.93	3.87	29.20051	uPVC	145	0.11
P-650	23.5	19.955	19.987	-2.07041	J-500	J-501	233.27	-11,110.53	7,784.40	110	0.22	0.53	2.07041	HDPE	145	0.01
P-651	15.5	19.987	20.008	-2.32823	J-501	J-495	233.25	-11,100.62	7,762.99	110	0.24	0.66	2.32823	HDPE	145	0.01
P-652	30.5	20.04	19.955	-1.08531	J-502	J-500	233.18	-11,081.44	7,793.03	110	0.11	0.16	1.08531	HDPE	145	0
P-653	21	19.955	19.94	1.42824	J-500	J-503	233.27	-11,110.53	7,784.40	110	0.15	0.27	1.42824	HDPE	145	0.01
P-654	28	19.94	20.017	0.68615	J-503	J-504	233.28	-11,120.11	7,803.26	110	0.07	0.07	0.68615	HDPE	145	0
P-655	48	19.833	19.88	0.71369	J-286	J-505	233.39	-11,221.22	7,869.07	110	0.08	0.07	0.71369	HDPE	145	0
P-656	20.5	19.864	19.861	1.01082	J-287	J-506	233.36	-11,218.41	7,859.87	110	0.11	0.14	1.01082	HDPE	145	0
P-657	65	19.861	19.968	0.58459	J-506	J-507	233.36	-11,210.25	7,840.97	110	0.06	0.05	0.58459	HDPE	145	0
P-658	33	19.861	19.811	0.05825	J-506	J-508	233.36	-11,210.25	7,840.97	110	0.01	0	0.05825	HDPE	145	0
P-659	33	19.811	19.871	-0.14673	J-508	J-509	233.41	-11,201.30	7,809.01	110	0.02	0	0.14673	HDPE	145	0
P-66	43.5	21.241	21.112	5.67703	J-48	J-49	233.49	-11,432.35	7,185.39	125	0.46	1.84	5.67703	HDPE	145	0.08
P-660	40.5	19.871	19.949	0.57881	J-509	J-510	233.35	-11,169.66	7,818.92	110	0.06	0.05	0.57881	HDPE	145	0
P-661	29.5	19.949	19.94	-0.32126	J-510	J-503	233.27	-11,130.98	7,830.75	110	0.03	0.02	0.32126	HDPE	145	0
P-662	28.5	19.94	19.86	0.08855	J-503	J-511	233.28	-11,120.11	7,803.26	110	0.01	0	0.08855	HDPE	145	0
P-663	49	19.871	19.829	-1.10593	J-509	J-499	233.35	-11,169.66	7,818.92	110	0.12	0.17	1.10593	HDPE	145	0.01
P-664	86.5	20.193	20.048	3.99315	J-413	J-512	233.71	-11,228.09	7,362.27	110	0.42	1.79	3.99315	HDPE	145	0.15
P-665	19.5	20.048	20.052	1.60325	J-512	J-513	233.7	-11,233.47	7,448.58	110	0.17	0.33	1.60325	HDPE	145	0.01
P-666	39.5	20.052	20.058	3.77081	J-513	J-473	233.69	-11,213.78	7,449.60	110	0.4	1.61	3.77081	HDPE	145	0.06
P-667	86	20.102	20.052	2.6178	J-412	J-513	233.71	-11,206.61	7,364.06	110	0.28	0.82	2.6178	HDPE	145	0.07
P-668	84	20.058	20.063	-2.31068	J-473	J-414	233.62	-11,174.42	7,452.90	110	0.24	0.65	2.31068	HDPE	145	0.05
P-669	83	20.085	20.054	-1.29114	J-472	J-415	233.58	-11,152.94	7,453.66	110	0.14	0.22	1.29114	HDPE	145	0.02
P-67	25.5	21.112	21.183	-6.14584	J-49	J-45	233.54	-11,430.05	7,228.86	110	0.65	3.97	6.14584	HDPE	145	0.1
P-670	60	20.229	20.177	1.68805	J-514	J-515	233.2	-10,851.62	7,371.54	110	0.18	0.36	1.68805	uPVC	145	0.02
P-671	67	20.177	20.077	-0.04589	J-515	J-430	233.23	-10,859.29	7,431.12	110	0	0	0.04589	uPVC	145	0
P-672	43.5	20.177	20.17	1.11442	J-515	J-516	233.23	-10,859.29	7,431.12	110	0.12	0.17	1.11442	uPVC	145	0.01
P-673	63.5	20.17	20.071	-0.3815	J-516	J-431	233.23	-10,861.85	7,474.33	110	0.04	0.02	0.3815	uPVC	145	0
P-674	55.5	20.17	20.162	0.99133	J-516	J-517	233.23	-10,861.85	7,474.33	110	0.1	0.14	0.99133	uPVC	145	0.01
P-675	63	20.162	20.072	0.54878	J-517	J-518	233.23	-10,866.97	7,529.56	160	0.03	0.01	0.54878	uPVC	145	0
P-676	44.5	20.072	20.07	-1.18203	J-518	J-432	233.32	-10,929.87	7,525.98	110	0.12	0.19	1.18203	uPVC	145	0.01
P-677	54	20.033	20.072	3.29648	J-437	J-518	233.37	-10,983.77	7,524.99	160	0.16	0.2	3.29648	uPVC	145	0.01
P-678	35.5	20.072	20.125	4.4156	J-518	J-519	233.32	-10,929.87	7,525.98	110	0.46	2.15	4.4156	uPVC	145	0.08
P-679	83	20.125	19.87	-1.13668	J-519	J-440	233.19	-10,928.08	7,561.27	110	0.12	0.17	1.13668	HDPE	145	0.01
P-68	25	21.112	21.11	11.53096	J-49	J-50	233.54	-11,430.05	7,228.86	160	0.57	2.05	11.53096	HDPE	145	0.05
P-680	7.5	20.125	20.134	5.16102	J-519	J-520	233.19	-10,928.08	7,561.27	110	0.54	2.87	5.16102	uPVC	145	0.02

P-681	34	20.134	20.12	2.38254	J-520	J-521	233.16	-10,927.57	7,568.94	110	0.25	0.69	2.38254	uPVC	145	0.02
P-682	32.5	20.12	20.211	2.17601	J-521	J-522	233.15	-10,941.63	7,590.16	110	0.23	0.58	2.17601	HDPE	145	0.02
P-683	22.5	20.211	20.171	-1.82817	J-522	J-445	233.04	-10,917.34	7,611.90	110	0.19	0.42	1.82817	uPVC	145	0.01
P-684	98.5	20.134	20.008	2.34375	J-520	J-523	233.16	-10,927.57	7,568.94	110	0.25	0.67	2.34375	HDPE	145	0.07
P-685	21	20.211	20.238	3.76815	J-522	J-524	233.04	-10,917.34	7,611.90	110	0.4	1.61	3.76815	uPVC	145	0.03
P-686	7	20.238	20.233	2.40043	J-524	J-525	232.98	-10,901.23	7,625.19	110	0.25	0.7	2.40043	uPVC	145	0
P-687	35.5	20.233	20.224	1.38063	J-525	J-526	232.98	-10,896.12	7,630.31	110	0.15	0.25	1.38063	HDPE	145	0.01
P-688	25.5	20.224	20.221	0.89016	J-526	J-527	232.98	-10,867.99	7,652.30	110	0.09	0.11	0.89016	HDPE	145	0
P-689	14.5	20.221	20.221	0.34757	J-527	J-528	232.98	-10,848.04	7,667.90	110	0.04	0.02	0.34757	HDPE	145	0
P-69	19	21.11	20.992	5.35887	J-50	J-51	233.49	-11,405.24	7,225.02	110	0.56	3.08	5.35887	HDPE	145	0.06
P-690	76	20.238	20.077	1.04476	J-524	J-529	232.98	-10,901.23	7,625.19	110	0.11	0.15	1.04476	HDPE	145	0.01
P-691	77.5	20.224	20.224	-0.1382	J-530	J-526	232.98	-10,807.13	7,604.23	110	0.01	0	0.1382	HDPE	145	0
P-692	120	20.224	20.148	-0.45037	J-526	J-531	232.98	-10,867.99	7,652.30	110	0.05	0.03	0.45037	HDPE	145	0
P-693	102	20.233	20.038	0.57111	J-525	J-532	232.98	-10,896.12	7,630.31	110	0.06	0.05	0.57111	HDPE	145	0
P-7	31.5	21.33	21.064	27.85369	J-6	J-7	233.84	-11,555.91	7,379.68	180	1.09	5.92	27.85369	HDPE	145	0.19
P-70	27	20.992	20.96	-3.51315	J-51	J-43	233.55	-11,386.07	7,224.77	110	0.37	1.41	3.51315	HDPE	145	0.04
P-71	50	20.992	20.765	8.5739	J-51	J-52	233.55	-11,386.07	7,224.77	125	0.7	3.95	8.5739	HDPE	145	0.2
P-72	29.5	20.765	20.689	-2.6037	J-52	J-42	233.58	-11,336.46	7,219.40	110	0.27	0.81	2.6037	uPVC	145	0.02
P-73	35.5	21.241	21.122	23.18655	J-48	J-53	233.49	-11,432.35	7,185.39	180	0.91	4.22	23.18655	HDPE	145	0.15
P-74	24	21.122	21.093	8.65249	J-53	J-54	233.46	-11,397.57	7,177.98	160	0.43	1.21	8.65249	uPVC	145	0.03
P-75	23.5	21.093	21.11	-5.96247	J-54	J-50	233.46	-11,401.67	7,201.76	125	0.49	2.01	5.96247	HDPE	145	0.05
P-76	40.5	21.093	20.969	14.34167	J-54	J-55	233.46	-11,401.67	7,201.76	160	0.71	3.08	14.34167	uPVC	145	0.12
P-77	26.5	20.969	20.866	14.50437	J-55	J-56	233.46	-11,361.52	7,197.66	160	0.72	3.14	14.50437	uPVC	145	0.08
P-78	23	20.866	20.765	1.29142	J-56	J-52	233.48	-11,335.18	7,196.39	160	0.06	0.04	1.29142	uPVC	145	0
P-79	38.5	20.765	20.67	12.03119	J-52	J-57	233.58	-11,336.46	7,219.40	160	0.6	2.22	12.03119	uPVC	145	0.09
P-8	25	21.064	20.948	37.87767	J-7	J-8	233.92	-11,554.63	7,411.39	200	1.21	6.27	37.87767	HDPE	145	0.16
P-80	21.5	20.67	20.734	-1.2673	J-57	J-58	233.59	-11,298.11	7,219.40	110	0.13	0.21	1.2673	uPVC	145	0
P-807	24	20.058	20.067	3.33841	J-473	J-584	233.62	-11,174.42	7,452.90	110	0.35	1.28	3.33841	uPVC	145	0.03
P-808	42.5	20.067	20.166	0.38138	J-584	J-474	233.58	-11,176.04	7,477.00	110	0.04	0.02	0.38138	uPVC	145	0
P-81	5	20.734	20.754	-11.5654	J-58	J-59	233.53	-11,296.06	7,198.18	160	0.58	2.06	11.5654	uPVC	145	0.01
P-82	34.5	20.754	20.866	-11.58278	J-59	J-56	233.52	-11,300.92	7,197.92	160	0.58	2.07	11.58278	uPVC	145	0.07
P-83	51.5	20.866	20.974	1.20942	J-56	J-60	233.48	-11,335.18	7,196.39	160	0.06	0.03	1.20942	uPVC	145	0
P-84	9.5	20.974	20.99	-13.47024	J-60	J-61	233.37	-11,333.14	7,144.73	160	0.67	2.74	13.47024	uPVC	145	0.03
P-85	18.5	20.99	20.969	-14.63517	J-61	J-62	233.38	-11,341.57	7,149.08	160	0.73	3.19	14.63517	uPVC	145	0.06
P-86	37	20.969	21.099	-15.42671	J-62	J-63	233.46	-11,357.94	7,158.03	160	0.77	3.52	15.42671	uPVC	145	0.13
P-87	7.5	21.099	21.122	-14.32599	J-63	J-53	233.46	-11,390.41	7,175.67	160	0.71	3.07	14.32599	uPVC	145	0.02

P-88	40	20.969	20.969	-0.49497	J-55	J-62	233.46	-11,361.52	7,197.66	160	0.02	0.01	0.49497	uPVC	145	0
P-89	22.5	21.099	21.104	-1.30881	J-63	J-64	233.46	-11,390.41	7,175.67	110	0.14	0.23	1.30881	uPVC	145	0.01
P-9	33	20.948	21.056	-3.58927	J-8	J-9	233.88	-11,529.83	7,409.85	110	0.38	1.47	3.58927	HDPE	145	0.05
P-90	29.5	21.104	21.022	5.05964	J-64	J-65	233.46	-11,398.60	7,154.96	110	0.53	2.77	5.05964	uPVC	145	0.08
P-91	9.5	21.022	20.964	11.75914	J-65	J-66	233.46	-11,407.29	7,126.58	140	0.76	4.08	11.75914	HDPE	145	0.04
P-92	18.5	20.964	20.863	7.784	J-66	J-67	233.48	-11,407.03	7,117.12	125	0.63	3.3	7.784	HDPE	145	0.06
P-93	27	20.863	20.737	6.119	J-67	J-68	233.52	-11,407.29	7,098.71	110	0.64	3.94	6.119	uPVC	145	0.11
P-94	68	20.737	20.715	0.40746	J-68	J-69	233.54	-11,407.29	7,071.60	110	0.04	0.03	0.40746	uPVC	145	0
P-95	26	20.715	20.808	-5.12032	J-69	J-70	233.56	-11,339.53	7,073.65	110	0.54	2.83	5.12032	uPVC	145	0.07
P-96	24	20.808	20.856	-2.50965	J-70	J-71	233.54	-11,340.55	7,099.73	110	0.26	0.76	2.50965	uPVC	145	0.02
P-97	25.5	20.856	20.99	-0.99877	J-71	J-61	233.51	-11,341.06	7,123.77	110	0.11	0.14	0.99877	uPVC	145	0
P-98	14.5	20.974	20.939	14.44518	J-60	J-72	233.37	-11,333.14	7,144.73	160	0.72	3.12	14.44518	uPVC	145	0.05
P-99	28.5	20.939	20.855	4.11766	J-72	J-73	233.36	-11,321.12	7,137.06	110	0.43	1.89	4.11766	uPVC	145	0.05
PP-694	8.5	19.718	19.718	-0.02645	PJ-533	J-261	233.62	-11,537.92	7,781.99	110	0	0	0.02645	HDPE	145	0
PP-695	24	19.718	19.722	1.40408	J-261	J-260	233.62	-11,542.64	7,789.29	110	0.15	0.26	1.40408	HDPE	145	0.01
PP-696	20	19.722	19.745	1.65826	J-260	PJ-534	233.61	-11,554.92	7,810.01	110	0.17	0.35	1.65826	HDPE	145	0.01
PP-697	32	19.745	19.797	1.32944	PJ-534	PJ-535	233.58	-11,565.09	7,827.38	110	0.14	0.23	1.32944	HDPE	145	0.01
PP-698	77	19.797	19.677	-0.91303	PJ-535	J-265	233.52	-11,537.28	7,843.04	110	0.1	0.12	0.91303	HDPE	145	0.01
PP-699	11.5	19.797	19.822	1.86829	PJ-535	PJ-536	233.52	-11,537.28	7,843.04	110	0.2	0.44	1.86829	HDPE	145	0.01
PP-700	67	19.822	19.684	-0.31953	PJ-536	J-266	233.49	-11,527.17	7,848.10	110	0.03	0.02	0.31953	HDPE	145	0
PP-701	36	19.822	19.797	1.83227	PJ-536	PJ-537	233.49	-11,527.17	7,848.10	110	0.19	0.42	1.83227	HDPE	145	0.02
PP-702	49	19.797	19.648	-0.13599	PJ-537	J-267	233.5	-11,494.03	7,862.63	110	0.01	0	0.13599	HDPE	145	0
PP-703	35.5	19.797	19.816	1.59408	PJ-537	PJ-538	233.5	-11,494.03	7,862.63	110	0.17	0.33	1.59408	HDPE	145	0.01
PP-704	15.5	19.816	19.756	-0.40247	PJ-538	J-269	233.47	-11,460.89	7,875.31	110	0.04	0.03	0.40247	HDPE	145	0
PP-705	24.5	19.816	19.816	1.76207	PJ-538	J-272	233.47	-11,460.89	7,875.31	110	0.19	0.39	1.76207	HDPE	145	0.01
PP-706	63	19.816	19.835	1.10588	J-272	J-275	233.46	-11,438.06	7,884.42	110	0.12	0.17	1.10588	HDPE	145	0.01
PP-707	36	19.835	19.86	1.03898	J-275	PJ-539	233.43	-11,378.23	7,903.34	110	0.11	0.15	1.03898	HDPE	145	0.01
PP-708	13.5	19.86	19.851	-0.74529	PJ-539	J-278	233.4	-11,343.27	7,911.52	110	0.08	0.08	0.74529	HDPE	145	0
PP-709	33.5	19.86	19.89	1.52652	PJ-539	PJ-540	233.4	-11,343.27	7,911.52	110	0.16	0.3	1.52652	HDPE	145	0.01
PP-710	15	19.89	19.84	-0.38736	PJ-540	J-282	233.36	-11,309.92	7,913.97	110	0.04	0.02	0.38736	HDPE	145	0
PP-711	36	19.89	19.867	1.65147	PJ-540	PJ-541	233.36	-11,309.92	7,913.97	110	0.17	0.35	1.65147	HDPE	145	0.01
PP-712	11.5	19.867	19.858	-0.21881	PJ-541	J-284	233.37	-11,274.12	7,913.15	110	0.02	0.01	0.21881	HDPE	145	0
PP-713	39.5	19.867	19.884	1.6001	PJ-541	PJ-542	233.37	-11,274.12	7,913.15	110	0.17	0.33	1.6001	HDPE	145	0.01
PP-714	18	19.884	19.864	0.47597	PJ-542	J-285	233.34	-11,234.44	7,914.18	110	0.05	0.03	0.47597	HDPE	145	0
PP-715	106	19.884	19.928	0.61644	PJ-542	PJ-543	233.34	-11,234.44	7,914.18	110	0.06	0.06	0.61644	HDPE	145	0.01
PP-716	46	19.928	19.88	-0.42178	PJ-543	J-505	233.29	-11,131.75	7,898.43	110	0.04	0.03	0.42178	HDPE	145	0

PP-717	50.5	19.968	20.027	0.22593	J-507	PJ-544	233.25	-11,148.24	7,861.11	110	0.02	0.01	0.22593	HDPE	145	0
PP-718	40.5	20.027	19.928	-0.4405	PJ-544	PJ-543	233.19	-11,099.63	7,874.49	110	0.05	0.03	0.4405	HDPE	145	0
PP-719	62	19.949	20.086	0.49018	J-510	PJ-545	233.27	-11,130.98	7,830.75	110	0.05	0.04	0.49018	HDPE	145	0
PP-720	36	20.086	20.027	-0.27206	PJ-545	PJ-544	233.13	-11,072.22	7,850.97	110	0.03	0.01	0.27206	HDPE	145	0
PP-721	33.5	20.086	20.146	0.35391	PJ-545	PJ-546	233.13	-11,072.22	7,850.97	110	0.04	0.02	0.35391	HDPE	145	0
PP-722	50	20.146	20.017	-0.44392	PJ-546	J-504	233.07	-11,046.44	7,829.28	110	0.05	0.03	0.44392	HDPE	145	0
PP-723	49	20.04	20.185	0.83842	J-502	PJ-547	233.18	-11,081.44	7,793.03	110	0.09	0.1	0.83842	HDPE	145	0
PP-724	20.5	20.185	20.146	-0.47487	PJ-547	PJ-546	233.03	-11,036.01	7,811.69	110	0.05	0.04	0.47487	HDPE	145	0
PP-725	94	20.185	20.226	0.8056	PJ-547	PJ-548	233.03	-11,036.01	7,811.69	110	0.08	0.09	0.8056	HDPE	145	0.01
PP-726	62	20.226	20	-0.62316	PJ-548	PJ-549	232.98	-10,959.51	7,757.07	110	0.07	0.06	0.62316	HDPE	145	0
PP-727	92	20	20.024	-1.95874	PJ-549	J-497	233.21	-11,000.01	7,710.23	110	0.21	0.48	1.95874	HDPE	145	0.04
PP-728	22	19.987	20.017	0.06837	J-501	PJ-550	233.25	-11,100.62	7,762.99	110	0.01	0	0.06837	HDPE	145	0
PP-729	22	19.998	19.888	0.06837	J-460	PJ-551	233.28	-11,068.98	7,696.21	110	0.01	0	0.06837	HDPE	145	0
PP-730	29	19.924	19.834	0.0901	J-459	PJ-552	233.37	-11,054.08	7,676.00	110	0.01	0	0.0901	HDPE	145	0
PP-731	21.5	19.859	19.909	0.06681	J-452	PJ-553	233.46	-11,021.74	7,633.73	110	0.01	0	0.06681	HDPE	145	0
PP-732	22.5	20.038	20.148	0.18451	J-532	J-531	233.17	-10,985.87	7,678.89	110	0.02	0.01	0.18451	HDPE	145	0
PP-733	24	20.148	20	-0.78287	J-531	PJ-549	233.06	-10,978.20	7,700.12	110	0.08	0.09	0.78287	HDPE	145	0
PP-734	144.5	20.226	20.221	0.49572	PJ-548	J-528	232.98	-10,959.51	7,757.07	110	0.05	0.04	0.49572	HDPE	145	0.01
PP-735	75.5	20.221	20.221	0.11517	J-528	PJ-554	232.98	-10,838.07	7,678.38	110	0.01	0	0.11517	HDPE	145	0
PP-736	17.5	20.221	20.221	0.08625	PJ-554	PJ-555	232.98	-10,775.27	7,636.68	110	0.01	0	0.08625	HDPE	145	0
PP-737	72.5	20.221	20.221	-0.19324	PJ-555	J-527	232.98	-10,789.18	7,625.84	110	0.02	0.01	0.19324	HDPE	145	0
PP-738	11	20.224	20.173	0.42994	J-530	PJ-556	232.98	-10,807.13	7,604.23	110	0.05	0.03	0.42994	HDPE	145	0
PP-739	45.5	20.173	20.221	0.62418	PJ-556	PJ-557	233.03	-10,798.59	7,597.61	110	0.07	0.06	0.62418	HDPE	145	0
PP-740	5.5	20.221	20.221	0.27696	PJ-557	PJ-554	232.98	-10,770.77	7,633.62	110	0.03	0.01	0.27696	HDPE	145	0
PP-741	39	20.077	20.224	0.68766	J-529	J-530	233.13	-10,839.09	7,581.72	110	0.07	0.07	0.68766	HDPE	145	0
PP-742	67.5	20.221	20.43	-0.02076	PJ-557	PJ-558	232.98	-10,770.77	7,633.62	110	0	0	0.02076	HDPE	145	0
PP-743	56.5	20.43	20.072	-0.40581	PJ-558	PJ-559	232.77	-10,715.13	7,595.16	110	0.04	0.03	0.40581	HDPE	145	0
PP-744	8.5	20.072	20.142	0.02645	PJ-559	PJ-560	233.13	-10,738.86	7,545.24	110	0	0	0.02645	HDPE	145	0
PP-745	49	20.008	19.986	1.88573	J-523	PJ-561	233.22	-10,833.47	7,554.36	110	0.2	0.45	1.88573	HDPE	145	0.02
PP-746	60.5	19.986	20.173	0.55757	PJ-561	PJ-556	233.22	-10,784.89	7,549.34	110	0.06	0.05	0.55757	HDPE	145	0
PP-747	11	19.986	19.986	-0.03422	PJ-562	PJ-561	233.22	-10,786.53	7,538.70	110	0	0	0.03422	HDPE	145	0
PP-748	46	19.986	20.072	0.77695	PJ-561	PJ-559	233.22	-10,784.89	7,549.34	110	0.08	0.09	0.77695	HDPE	145	0
PP-749	12	20.162	20.172	0.03732	J-517	PJ-563	233.23	-10,866.97	7,529.56	110	0	0	0.03732	HDPE	145	0
PP-750	20.5	20.067	20.056	0.62964	J-436	J-434	233.34	-10,974.56	7,443.42	110	0.07	0.06	0.62964	HDPE	145	0
PP-751	30	20.056	20.077	-0.51167	J-434	J-430	233.35	-10,954.10	7,445.47	110	0.05	0.04	0.51167	HDPE	145	0
PP-752	49.5	20.123	20.103	0.20768	J-435	J-429	233.3	-10,971.49	7,423.99	110	0.02	0.01	0.20768	HDPE	145	0

PP-753	14.5	20.177	20.187	0.04508	J-515	PJ-564	233.23	-10,859.29	7,431.12	110	0	0	0.04508	HDPE	145	0
PP-754	28.5	20.229	20.352	-1.96288	J-514	PJ-565	233.2	-10,851.62	7,371.54	110	0.21	0.48	1.96288	HDPE	145	0.01
PP-755	66	20.352	20.711	0.20498	PJ-565	PJ-566	233.09	-10,828.80	7,354.63	110	0.02	0.01	0.20498	HDPE	145	0
PP-756	98	20.54	20.352	2.76559	J-426	PJ-565	232.99	-10,916.13	7,311.64	110	0.29	0.91	2.76559	HDPE	145	0.09
PP-757	22	20.742	20.801	-2.71044	J-375	J-376	232.96	-10,914.21	7,213.20	110	0.29	0.87	2.71044	HDPE	145	0.02
PP-758	36.5	20.274	20.248	-1.7447	J-369	PJ-567	233.44	-10,992.97	7,207.32	110	0.18	0.39	1.7447	HDPE	145	0.01
PP-759	30.5	20.248	20.492	-1.95278	PJ-567	PJ-568	233.48	-10,993.36	7,170.99	110	0.21	0.48	1.95278	HDPE	145	0.01
PP-760	49.5	20.492	20.862	-0.24332	PJ-568	J-377	233.25	-10,962.93	7,170.99	110	0.03	0.01	0.24332	HDPE	145	0
PP-761	64	20.838	20.492	2.1566	J-378	PJ-568	232.94	-10,958.45	7,118.08	110	0.23	0.57	2.1566	HDPE	145	0.04
PP-762	41.5	20.025	20.014	1.46332	J-360	J-362	233.71	-11,075.56	7,166.92	110	0.15	0.28	1.46332	HDPE	145	0.01
PP-763	32	20.675	20.615	0.09941	J-383	PJ-569	233.37	-11,166.85	7,064.13	110	0.01	0	0.09941	HDPE	145	0
PP-764	27.5	20.832	20.864	-2.54428	J-82	J-79	233.28	-11,235.71	7,051.40	110	0.27	0.78	2.54428	HDPE	145	0.02
PP-765	8	20.864	20.824	0.00742	J-79	J-381	233.27	-11,237.50	7,079.02	110	0	0	0.00742	HDPE	145	0
PP-766	202	20.973	21.075	-2.84412	J-379	J-393	232.88	-11,001.15	7,075.63	110	0.3	0.95	2.84412	HDPE	145	0.19
PP-767	102.5	21.075	20.617	-1.52992	J-393	J-392	232.97	-11,148.44	6,937.30	110	0.16	0.3	1.52992	HDPE	145	0.03
PP-768	79.5	20.617	20.533	-1.57992	J-392	PJ-570	233.46	-11,230.26	6,888.20	110	0.17	0.32	1.57992	HDPE	145	0.03
PP-769	49	20.533	20.465	-1.3395	PJ-570	PJ-571	233.57	-11,309.75	6,885.07	110	0.14	0.24	1.3395	HDPE	145	0.01
PP-770	42	20.465	20.484	-1.92056	PJ-571	PJ-572	233.65	-11,358.70	6,884.07	110	0.2	0.46	1.92056	HDPE	145	0.02
PP-771	39	20.484	20.449	-1.72612	PJ-572	J-99	233.65	-11,400.65	6,884.57	110	0.18	0.38	1.72612	HDPE	145	0.01
PP-772	39	20.449	20.389	-1.42906	J-99	J-101	233.7	-11,439.51	6,883.59	110	0.15	0.27	1.42906	HDPE	145	0.01
PP-773	35.5	20.389	20.365	-1.07987	J-101	J-103	233.77	-11,478.37	6,882.16	110	0.11	0.16	1.07987	HDPE	145	0.01
PP-774	38	20.365	20.328	-0.68129	J-103	J-105	233.8	-11,513.76	6,880.72	110	0.07	0.07	0.68129	HDPE	145	0
PP-775	36	20.328	20.298	-0.25837	J-105	J-107	233.84	-11,551.81	6,880.11	110	0.03	0.01	0.25837	HDPE	145	0
PP-776	38.5	20.298	20.258	0.21069	J-107	J-110	233.87	-11,588.02	6,879.09	110	0.02	0.01	0.21069	HDPE	145	0
PP-777	37	20.258	20.226	0.67037	J-110	J-112	233.91	-11,626.68	6,877.45	110	0.07	0.07	0.67037	HDPE	145	0
PP-778	222.5	20.226	19.721	0.69087	J-112	PJ-573	233.94	-11,663.71	6,877.04	110	0.07	0.07	0.69087	HDPE	145	0.02
PP-779	19.5	20.624	20.484	0.50653	J-97	PJ-572	233.51	-11,401.46	6,904.25	110	0.05	0.04	0.50653	HDPE	145	0
PP-780	41	20.465	20.654	0.17118	PJ-571	J-96	233.65	-11,358.70	6,884.07	110	0.02	0.01	0.17118	HDPE	145	0
PP-781	50	20.654	20.656	1.07904	J-96	PJ-574	233.46	-11,360.55	6,924.91	110	0.11	0.16	1.07904	HDPE	145	0.01
PP-782	41	20.656	20.533	0.76674	PJ-574	PJ-570	233.45	-11,310.50	6,926.02	110	0.08	0.08	0.76674	HDPE	145	0
PP-783	36.5	20.656	20.736	-0.08362	PJ-574	J-91	233.45	-11,310.50	6,926.02	110	0.01	0	0.08362	HDPE	145	0
PP-784	30	20.614	20.678	1.22706	J-94	PJ-575	233.53	-11,403.45	6,983.90	110	0.13	0.2	1.22706	HDPE	145	0.01
PP-785	16.5	20.678	20.696	2.4329	PJ-575	J-89	233.46	-11,373.39	6,986.39	110	0.26	0.71	2.4329	HDPE	145	0.01
PP-786	72	20.696	20.796	1.46525	J-89	J-86	233.43	-11,356.66	6,986.20	110	0.15	0.28	1.46525	HDPE	145	0.02
PP-787	25.5	20.796	20.818	1.51083	J-86	PJ-576	233.31	-11,284.81	6,989.78	110	0.16	0.3	1.51083	HDPE	145	0.01
PP-788	58.5	20.818	20.892	-1.35349	PJ-576	J-81	233.28	-11,259.60	6,991.24	110	0.14	0.24	1.35349	HDPE	145	0.01

PP-789	26	20.818	20.848	2.52274	PJ-576	J-83	233.28	-11,259.60	6,991.24	110	0.27	0.76	2.52274	HDPE	145	0.02
PP-790	58.5	20.678	20.716	-1.5319	PJ-575	J-76	233.46	-11,373.39	6,986.39	110	0.16	0.3	1.5319	HDPE	145	0.02
PP-791	42	20.863	20.712	1.39328	J-67	PJ-577	233.52	-11,407.29	7,098.71	110	0.15	0.25	1.39328	HDPE	145	0.01
PP-792	25	20.712	20.808	2.84359	PJ-577	J-70	233.66	-11,365.46	7,099.41	110	0.3	0.95	2.84359	HDPE	145	0.02
PP-793	18.5	20.712	20.879	-1.71583	PJ-577	PJ-578	233.66	-11,365.46	7,099.41	110	0.18	0.37	1.71583	HDPE	145	0.01
PP-794	32	20.879	20.856	1.76398	PJ-578	J-71	233.5	-11,366.48	7,117.82	110	0.19	0.39	1.76398	HDPE	145	0.01
PP-795	40.5	20.964	20.879	3.7624	J-66	PJ-578	233.48	-11,407.03	7,117.12	110	0.4	1.6	3.7624	HDPE	145	0.06
PP-796	38	20.855	20.899	1.09097	J-73	J-347	233.39	-11,320.35	7,108.68	110	0.11	0.16	1.09097	HDPE	145	0.01
PP-797	26	21.022	21.021	-6.90137	J-65	J-141	233.46	-11,407.29	7,126.58	125	0.56	2.64	6.90137	HDPE	145	0.07
PP-798	40.5	20.444	20.594	3.26588	J-123	J-121	233.88	-11,492.49	7,109.63	110	0.34	1.23	3.26588	HDPE	145	0.05
PP-799	21.5	20.594	20.693	0.06681	J-121	PJ-579	233.68	-11,452.19	7,111.06	110	0.01	0	0.06681	HDPE	145	0
PP-800	63.5	21.134	21.104	6.72711	J-139	J-64	233.59	-11,462.01	7,160.57	125	0.55	2.52	6.72711	HDPE	145	0.16
PP-801	68	20.925	20.754	0.31644	J-348	J-59	233.35	-11,307.99	7,130.35	110	0.03	0.02	0.31644	HDPE	145	0
PP-802	117	20.937	20.594	4.5291	J-39	J-326	233.7	-11,378.71	7,282.77	110	0.48	2.26	4.5291	HDPE	145	0.26
PP-803	72	20.502	20.282	5.33225	J-330	J-340	233.71	-11,319.36	7,376.74	110	0.56	3.05	5.33225	HDPE	145	0.22
PP-804	48.5	20.282	20.281	0.15064	J-341	PJ-580	233.71	-11,249.40	7,405.18	110	0.02	0	0.15064	HDPE	145	0
PP-805	9.5	20.335	20.335	0.02956	J-328	PJ-581	233.65	-11,270.16	7,451.17	110	0	0	0.02956	HDPE	145	0
PP-806	69.5	20.048	20.128	1.84496	J-512	J-482	233.7	-11,233.47	7,448.58	110	0.19	0.43	1.84496	HDPE	145	0.03
PP-808	70	20.067	20.104	2.53317	J-584	J-470	233.58	-11,176.04	7,477.00	110	0.27	0.77	2.53317	HDPE	145	0.05
PP-809	23	20.686	20.706	-0.07147	PJ-584	J-199	233.97	-11,719.97	7,382.87	110	0.01	0	0.07147	HDPE	145	0
PP-810	7	20.706	20.706	0.0218	J-199	PJ-585	233.95	-11,697.39	7,379.94	110	0	0	0.0218	HDPE	145	0
PP-811	25.5	20.655	20.615	0.07923	J-200	PJ-586	234	-11,692.99	7,431.48	110	0.01	0	0.07923	HDPE	145	0
PP-812	14	21.187	21.15	4.93934	J-4	J-5	233.92	-11,595.54	7,412.92	110	0.52	2.65	4.93934	HDPE	145	0.04
PP-813	27	21.15	21.064	10.28329	J-5	J-7	233.92	-11,581.48	7,412.15	140	0.67	3.18	10.28329	HDPE	145	0.09
PP-814	27	20.948	20.951	41.20298	J-8	J-217	233.88	-11,529.83	7,409.85	250	0.84	2.47	41.20298	HDPE	145	0.07
PP-815	37	20.951	20.72	28.68856	J-217	J-210	233.81	-11,527.89	7,436.77	180	1.13	6.26	28.68856	HDPE	145	0.23
PP-816	37.5	20.72	20.447	21.46791	J-210	J-219	233.81	-11,524.39	7,473.43	160	1.07	6.49	21.46791	HDPE	145	0.24
PP-817	30.5	20.447	20.247	17.13072	J-219	J-226	233.84	-11,523.09	7,511.08	160	0.85	4.27	17.13072	HDPE	145	0.13
PP-818	27.5	20.247	19.967	10.23135	J-226	J-235	233.91	-11,521.90	7,541.45	125	0.83	5.48	10.23135	HDPE	145	0.15
PP-819	39	20.448	20.217	5.127	J-218	J-209	234.05	-11,614.99	7,443.56	110	0.54	2.84	5.127	HDPE	145	0.11
PP-820	37	20.217	20.072	8.56834	J-209	J-220	234.17	-11,610.69	7,482.22	125	0.7	3.94	8.56834	HDPE	145	0.15
PP-821	33.5	20.072	19.966	10.7546	J-220	J-225	234.17	-11,607.00	7,519.07	140	0.7	3.46	10.7546	HDPE	145	0.12
PP-822	25.5	19.966	19.874	4.70806	J-225	PJ-587	234.16	-11,603.80	7,552.23	110	0.5	2.42	4.70806	HDPE	145	0.06
PP-823	25	19.874	19.821	4.41453	PJ-587	J-237	234.19	-11,602.02	7,577.84	110	0.46	2.15	4.41453	HDPE	145	0.05
PP-824	22	19.874	19.874	-0.06837	PJ-588	PJ-587	234.19	-11,623.12	7,584.24	110	0.01	0	0.06837	HDPE	145	0
PP-825	53.5	19.862	19.822	2.51684	J-224	J-238	234.19	-11,649.35	7,560.23	110	0.26	0.76	2.51684	HDPE	145	0.04

PP-826	23.5	19.816	19.906	0.07302	J-239	PJ-589	234.19	-11,653.91	7,613.59	110	0.01	0	0.07302	HDPE	145	0
PP-827	24	19.811	19.811	0.07458	J-241	PJ-590	234.19	-11,700.25	7,631.17	110	0.01	0	0.07458	HDPE	145	0
PP-828	59.5	19.813	19.826	-1.31962	J-242	J-222	234.19	-11,710.16	7,636.93	110	0.14	0.23	1.31962	HDPE	145	0.01
PP-829	24	19.826	19.826	0.29514	J-222	PJ-591	234.19	-11,724.06	7,579.00	110	0.03	0.01	0.29514	HDPE	145	0
PP-830	24.5	19.826	19.826	0.07613	PJ-591	PJ-592	234.19	-11,747.45	7,584.56	110	0.01	0	0.07613	HDPE	145	0
PP-831	11	19.826	19.826	0.03422	PJ-591	PJ-593	234.19	-11,747.45	7,584.56	110	0	0	0.03422	HDPE	145	0
PP-832	92	19.694	19.745	-0.2857	PJ-594	J-244	234.09	-11,744.26	7,699.30	110	0.03	0.01	0.2857	HDPE	145	0
PP-833	93	19.612	19.703	-0.2888	PJ-595	J-245	234.06	-11,731.79	7,724.23	110	0.03	0.01	0.2888	HDPE	145	0
PP-834	87	19.567	19.638	-0.27018	PJ-596	J-246	233.98	-11,711.66	7,757.16	110	0.03	0.01	0.27018	HDPE	145	0
PP-835	109.5	19.166	19.617	-0.34003	PJ-597	J-247	234.27	-11,723.16	7,787.20	110	0.04	0.02	0.34003	HDPE	145	0
PP-836	39.5	19.745	19.665	0.04467	PJ-534	PJ-598	233.58	-11,565.09	7,827.38	110	0	0	0.04467	HDPE	145	0
PP-837	22	19.665	19.654	-1.75013	PJ-598	J-259	233.66	-11,600.75	7,809.90	110	0.18	0.39	1.75013	HDPE	145	0.01
PP-838	62	19.665	19.459	1.41129	PJ-598	J-258	233.66	-11,600.75	7,809.90	110	0.15	0.26	1.41129	HDPE	145	0.02
PP-839	222	19.459	18.819	2.91951	J-258	PJ-599	233.85	-11,661.55	7,801.82	110	0.31	1	2.91951	HDPE	145	0.22
PP-840	174.5	18.819	18.755	1.68842	PJ-599	PJ-600	234.27	-11,878.82	7,845.05	110	0.18	0.36	1.68842	HDPE	145	0.06
PP-841	108.5	18.755	18.745	0.80971	PJ-600	PJ-601	234.27	-12,052.06	7,865.83	110	0.09	0.09	0.80971	HDPE	145	0.01
PP-842	135	18.745	18.745	0.05364	PJ-601	PJ-602	234.27	-12,160.10	7,873.50	110	0.01	0	0.05364	HDPE	145	0
PP-843	123.5	18.745	18.755	-0.749	PJ-602	PJ-603	234.27	-12,293.22	7,894.20	110	0.08	0.08	0.749	HDPE	145	0.01
PP-844	144	18.755	18.801	-1.57958	PJ-603	PJ-604	234.27	-12,413.08	7,923.36	110	0.17	0.32	1.57958	HDPE	145	0.05
PP-845	161	18.801	18.924	-2.52659	PJ-604	PJ-605	234.27	-12,343.59	7,797.08	110	0.27	0.77	2.52659	HDPE	145	0.12
PP-846	133.5	18.924	19.105	-3.441	PJ-605	PJ-606	234.27	-12,266.34	7,655.84	110	0.36	1.36	3.441	HDPE	145	0.18
PP-847	101	19.105	19.38	-4.16913	PJ-606	PJ-607	234.27	-12,203.91	7,538.01	110	0.44	1.94	4.16913	HDPE	145	0.2
PP-848	87	19.38	19.584	-4.75288	PJ-607	PJ-608	234.19	-12,148.51	7,453.73	110	0.5	2.47	4.75288	HDPE	145	0.21
PP-849	107.5	19.584	19.689	-2.72551	PJ-608	J-187	234.2	-12,109.94	7,375.86	110	0.29	0.88	2.72551	HDPE	145	0.09
PP-850	50	19.689	19.772	-4.31132	J-187	J-184	234.19	-12,006.25	7,347.01	110	0.45	2.06	4.31132	HDPE	145	0.1
PP-851	35.5	19.772	19.834	-3.96491	J-184	J-183	234.21	-11,957.90	7,333.82	110	0.42	1.76	3.96491	HDPE	145	0.06
PP-852	39	19.834	19.915	-4.31912	J-183	J-182	234.21	-11,923.70	7,325.03	110	0.45	2.07	4.31912	HDPE	145	0.08
PP-853	80.5	19.915	20.229	-5.99677	J-182	J-195	234.21	-11,885.67	7,315.45	110	0.63	3.8	5.99677	HDPE	145	0.31
PP-854	116	20.229	20.762	-4.16471	J-195	J-148	234.2	-11,808.07	7,294.25	110	0.44	1.93	4.16471	HDPE	145	0.22
PP-855	11	20.762	20.816	-7.46605	J-148	PJ-609	233.89	-11,696.36	7,263.38	125	0.61	3.06	7.46605	HDPE	145	0.03
PP-856	35.5	20.816	20.753	1.71629	PJ-609	J-196	233.87	-11,685.37	7,262.24	110	0.18	0.37	1.71629	HDPE	145	0.01
PP-857	26	20.663	20.723	-0.08079	PJ-610	J-197	234	-11,727.72	7,317.78	110	0.01	0	0.08079	HDPE	145	0
PP-858	26	20.816	20.978	-9.4075	PJ-609	J-202	233.87	-11,685.37	7,262.24	125	0.77	4.69	9.4075	HDPE	145	0.12
PP-859	11.5	20.978	21.031	-14.02092	J-202	PJ-611	233.83	-11,660.23	7,255.29	160	0.7	2.95	14.02092	HDPE	145	0.03
PP-860	45	21.031	21.302	-17.532	PJ-611	J-20	233.81	-11,650.21	7,249.46	160	0.87	4.46	17.532	HDPE	145	0.2
PP-861	18	21.302	21.413	-9.26355	J-20	J-22	233.74	-11,607.30	7,235.72	125	0.75	4.56	9.26355	HDPE	145	0.08

PP-862	26.5	21.413	21.482	-3.04537	J-22	J-25	233.71	-11,589.66	7,231.11	110	0.32	1.08	3.04537	HDPE	145	0.03
PP-863	36.5	20.734	20.983	-5.02042	J-152	J-145	233.96	-11,653.91	7,172.61	110	0.53	2.73	5.02042	HDPE	145	0.1
PP-864	40.5	20.983	21.031	-3.20986	J-145	PJ-611	233.81	-11,652.48	7,209.07	110	0.34	1.19	3.20986	HDPE	145	0.05
PP-865	28	20.556	20.685	-7.64964	J-153	J-151	233.95	-11,678.20	7,144.74	125	0.62	3.2	7.64964	HDPE	145	0.09
PP-866	22.5	20.685	20.701	1.12011	J-151	J-150	233.91	-11,676.93	7,172.61	110	0.12	0.17	1.12011	HDPE	145	0
PP-867	114	20.701	20.238	3.31157	J-150	J-193	233.89	-11,698.92	7,176.19	110	0.35	1.26	3.31157	HDPE	145	0.14
PP-868	100.5	20.238	19.718	5.54967	J-193	J-177	234.21	-11,812.42	7,185.32	110	0.58	3.29	5.54967	HDPE	145	0.33
PP-869	6.5	19.971	19.981	0.02024	J-161	PJ-612	234.16	-11,756.96	7,095.90	110	0	0	0.02024	HDPE	145	0
PP-870	21	20.112	20.102	-0.06526	PJ-613	J-163	234.07	-11,730.92	7,108.92	110	0.01	0	0.06526	HDPE	145	0
PP-871	20.5	20.281	20.261	-0.06371	PJ-614	J-164	233.97	-11,696.72	7,112.03	110	0.01	0	0.06371	HDPE	145	0
PP-872	19	20.248	20.198	0.05905	J-167	PJ-615	233.88	-11,759.26	7,049.61	110	0.01	0	0.05905	HDPE	145	0
PP-873	19	20.211	20.176	2.59958	J-129	J-113	234.01	-11,671.89	7,040.90	110	0.27	0.81	2.59958	HDPE	145	0.02
PP-874	90	20.211	20.399	2.96117	J-129	J-166	234.01	-11,671.89	7,040.90	110	0.31	1.03	2.96117	HDPE	145	0.09
PP-875	71.5	20.399	20.108	1.86743	J-166	J-169	233.73	-11,760.80	7,027.88	110	0.2	0.44	1.86743	HDPE	145	0.03
PP-876	93.5	20.108	19.77	1.81645	J-169	PJ-616	233.99	-11,831.37	7,017.14	110	0.19	0.42	1.81645	HDPE	145	0.04
PP-877	46.5	19.77	20.037	1.38172	PJ-616	PJ-617	234.29	-11,924.07	7,003.74	110	0.15	0.25	1.38172	HDPE	145	0.01
PP-878	24.5	20.037	20.334	0.90347	PJ-617	PJ-618	234.01	-11,943.64	7,045.69	110	0.1	0.11	0.90347	HDPE	145	0
PP-879	22	20.334	20.339	-1.33812	PJ-618	J-173	233.71	-11,951.63	7,068.86	110	0.14	0.24	1.33812	HDPE	145	0.01
PP-880	32	20.339	20.198	0.55357	J-173	J-175	233.71	-11,930.07	7,072.37	110	0.06	0.05	0.55357	HDPE	145	0
PP-881	34	20.198	20.237	2.24502	J-175	PJ-619	233.85	-11,929.56	7,104.33	110	0.24	0.62	2.24502	HDPE	145	0.02
PP-882	35	20.237	20.334	-1.98849	PJ-619	PJ-618	233.79	-11,963.22	7,101.63	110	0.21	0.49	1.98849	HDPE	145	0.02
PP-883	41.5	20.037	20.117	0.12891	PJ-617	PJ-620	234.01	-11,943.64	7,045.69	110	0.01	0	0.12891	HDPE	145	0
PP-884	24	20.31	20.19	-0.07458	PJ-621	J-170	233.79	-11,853.75	7,058.48	110	0.01	0	0.07458	HDPE	145	0
PP-885	76.5	20.198	19.627	0.42994	J-175	J-179	233.85	-11,929.56	7,104.33	110	0.05	0.03	0.42994	HDPE	145	0
PP-886	82	19.566	20.237	-1.44469	J-180	PJ-619	234.44	-11,970.64	7,183.05	110	0.15	0.27	1.44469	HDPE	145	0.02
PP-887	92	20.237	19.541	2.0343	PJ-619	J-181	233.79	-11,963.22	7,101.63	110	0.21	0.51	2.0343	HDPE	145	0.05
PP-888	44	19.541	19.458	4.13044	J-181	J-190	234.44	-12,001.07	7,185.35	110	0.43	1.9	4.13044	HDPE	145	0.08
PP-889	57.5	19.458	19.545	1.75273	J-190	J-188	234.44	-12,020.23	7,225.15	110	0.18	0.39	1.75273	HDPE	145	0.02
PP-890	45	19.545	19.584	1.9175	J-188	J-185	234.33	-12,048.20	7,275.49	110	0.2	0.46	1.9175	HDPE	145	0.02
PP-891	73	19.584	19.584	2.85796	J-185	PJ-608	234.27	-12,071.77	7,313.85	110	0.3	0.96	2.85796	HDPE	145	0.07
PP-892	13.5	20.062	20.062	-0.04198	PJ-622	PJ-623	234.19	-11,809.32	7,503.44	110	0	0	0.04198	HDPE	145	0
PP-893	38	20.062	20.062	0.11804	PJ-623	PJ-624	234.19	-11,795.89	7,502.80	110	0.01	0	0.11804	HDPE	145	0
PP-894	8.5	20.062	20.062	-0.34637	PJ-623	PJ-625	234.19	-11,795.89	7,502.80	110	0.04	0.02	0.34637	HDPE	145	0
PP-895	62	20.062	20.062	0.19256	PJ-625	PJ-626	234.19	-11,787.58	7,501.52	110	0.02	0.01	0.19256	HDPE	145	0
PP-896	30	20.062	20.065	-0.85101	PJ-625	PJ-627	234.19	-11,787.58	7,501.52	110	0.09	0.1	0.85101	HDPE	145	0
PP-897	18.5	20.065	20.065	0.0575	PJ-627	PJ-628	234.19	-11,757.54	7,498.32	110	0.01	0	0.0575	HDPE	145	0

PP-898	11	20.065	20.067	-1.09331	PJ-627	PJ-629	234.19	-11,757.54	7,498.32	110	0.12	0.16	1.09331	HDPE	145	0
PP-899	60	20.067	20.117	0.18635	PJ-629	PJ-630	234.19	-11,746.67	7,496.09	110	0.02	0.01	0.18635	HDPE	145	0
PP-900	26.5	20.067	20.076	-1.58243	PJ-629	J-208	234.19	-11,746.67	7,496.09	110	0.17	0.32	1.58243	HDPE	145	0.01
PP-901	37	20.076	20.064	1.55624	J-208	J-221	234.19	-11,720.16	7,493.81	110	0.16	0.31	1.55624	HDPE	145	0.01
PP-902	32.5	20.064	20.064	0.10097	J-221	PJ-631	234.19	-11,714.87	7,530.26	110	0.01	0	0.10097	HDPE	145	0
PP-903	50.5	20.105	20.225	0.15685	J-207	PJ-632	234.17	-11,712.57	7,492.61	110	0.02	0	0.15685	HDPE	145	0
PP-904	24.5	20.197	20.257	0.07613	J-206	PJ-633	234.14	-11,675.01	7,487.82	110	0.01	0	0.07613	HDPE	145	0
PP-905	19.5	20.502	20.502	-0.06061	PJ-634	J-214	233.71	-11,368.87	7,492.44	110	0.01	0	0.06061	HDPE	145	0
PP-906	23.5	20.358	20.348	0.07302	J-228	PJ-635	233.77	-11,385.25	7,518.27	110	0.01	0	0.07302	HDPE	145	0
PP-907	39	19.766	19.749	-1.58264	J-321	J-307	233.96	-11,489.84	7,629.42	110	0.17	0.32	1.58264	HDPE	145	0.01
PP-908	43.5	20.031	20.041	-0.13512	PJ-636	J-309	233.89	-11,439.25	7,574.26	110	0.01	0	0.13512	HDPE	145	0
PP-909	49	20.041	20.071	0.1522	J-309	PJ-637	233.88	-11,397.47	7,562.93	110	0.02	0	0.1522	HDPE	145	0
PP-910	49.5	19.652	19.453	-0.15375	PJ-638	J-311	233.92	-11,327.91	7,617.49	110	0.02	0	0.15375	HDPE	145	0
PP-911	35	19.453	19.771	-7.2477	J-311	J-308	234.12	-11,375.41	7,631.01	110	0.76	5.39	7.2477	HDPE	145	0.19
PP-912	80	19.771	20.028	-3.06038	J-308	PJ-639	233.99	-11,386.60	7,598.09	110	0.32	1.09	3.06038	HDPE	145	0.09
PP-913	38	20.028	20.132	-3.55727	PJ-639	PJ-640	233.82	-11,311.29	7,582.01	110	0.37	1.44	3.55727	HDPE	145	0.05
PP-914	22	20.132	20.199	-3.83061	PJ-640	J-323	233.77	-11,313.21	7,544.30	110	0.4	1.65	3.83061	HDPE	145	0.04
PP-915	14	20.102	20.132	-0.04353	PJ-641	PJ-640	233.8	-11,326.95	7,547.17	110	0	0	0.04353	HDPE	145	0
PP-916	21	20.028	19.988	0.06526	PJ-639	PJ-642	233.82	-11,311.29	7,582.01	110	0.01	0	0.06526	HDPE	145	0
PP-917	28.5	19.676	19.508	3.85	J-485	J-317	233.79	-11,277.69	7,627.78	110	0.41	1.67	3.85	HDPE	145	0.05
PP-918	34.5	19.508	19.371	1.3343	J-317	PJ-643	233.91	-11,305.09	7,635.49	110	0.14	0.23	1.3343	HDPE	145	0.01
PP-919	35	19.371	19.325	1.11846	PJ-643	J-315	234.04	-11,338.78	7,643.06	110	0.12	0.17	1.11846	HDPE	145	0.01
PP-920	75.5	19.289	19.319	-0.00606	J-302	J-301	234.04	-11,331.94	7,764.75	110	0	0	0.00606	HDPE	145	0
	38836.5															

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	13	110	PVC	450	HDPE	Replacement
P-10	J-9	J-10	31.5	75	PVC	160	HDPE	Replacement
P-100	J-73	J-74	33.5	110	PVC	110	uPVC	Retained
P-101	J-74	J-69	20.5	110	PVC	110	uPVC	Retained
P-102	J-68	J-75	27	110	PVC	110	uPVC	Retained
P-103	J-75	J-76	30.5	110	PVC	110	uPVC	Retained
P-104	J-76	J-77	19	110	PVC	110	uPVC	Retained
P-105	J-77	J-78	38.5	110	PVC	110	uPVC	Retained
P-106	J-78	J-74	27	110	PVC	110	uPVC	Retained
P-107	J-74	J-79	82	110	PVC	110	uPVC	Retained
P-108	J-78	J-80	31	110	PVC	110	uPVC	Retained
P-109	J-80	J-81	26.5	110	PVC	110	uPVC	Retained
P-11	J-10	J-6	57	75	PVC	125	HDPE	Replacement
P-110	J-81	J-82	25.5	110	PVC	110	uPVC	Retained
P-112	J-83	J-84	29	110	PVC	110	uPVC	Retained
P-113	J-84	J-85	51.5	160	PVC	160	uPVC	Retained
P-114	J-85	J-86	26.5	110	PVC	110	uPVC	Retained
P-115	J-86	J-87	21.5	110	PVC	110	uPVC	Retained
P-116	J-87	J-80	37	110	PVC	110	uPVC	Retained
P-117	J-77	J-88	37.5	110	PVC	110	uPVC	Retained
P-118	J-88	J-87	69.5	110	PVC	110	uPVC	Retained
P-119	J-88	J-89	22.5	110	PVC	110	uPVC	Retained
P-12	J-1	J-11	55.5	200	PVC	280	HDPE	Replacement
P-120	J-89	J-90	25.5	110	PVC	110	uPVC	Retained
P-121	J-90	J-91	46.5	160	PVC	160	uPVC	Retained
P-122	J-91	J-85	25.5	160	PVC	160	uPVC	Retained
P-123	J-90	J-92	5	160	PVC	160	uPVC	Retained
P-124	J-92	J-93	42	160	PVC	160	uPVC	Retained
P-125	J-93	J-94	23	110	PVC	110	uPVC	Retained
P-126	J-94	J-95	47.5	110	PVC	110	uPVC	Retained
P-127	J-95	J-75	13.5	110	PVC	110	uPVC	Retained
P-128	J-92	J-96	35.5	110	PVC	110	uPVC	Retained
P-129	J-97	J-93	57	110	PVC	110	uPVC	Retained
P-13	J-11	J-10	60	75	PVC	140	HDPE	Replacement
P-130	J-93	J-98	40.5	160	PVC	160	uPVC	Retained
P-131	J-98	J-99	76.5	110	PVC	110	uPVC	Retained
P-132	J-98	J-100	39.5	160	PVC	160	uPVC	Retained
P-133	J-100	J-101	75.5	110	PVC	110	uPVC	Retained
P-134	J-100	J-102	37	160	PVC	160	uPVC	Retained
P-135	J-102	J-103	75	110	PVC	110	uPVC	Retained
P-136	J-102	J-104	35	160	PVC	160	uPVC	Retained
P-137	J-104	J-105	73.5	110	PVC	110	uPVC	Retained
P-138	J-104	J-106	38.5	160	PVC	160	uPVC	Retained
P-139	J-106	J-107	72.5	110	PVC	110	uPVC	Retained
P-14	J-9	J-12	27	75	PVC	160	HDPE	Replacement
P-140	J-106	J-108	6	160	PVC	160	uPVC	Retained
P-141	J-108	J-109	34	160	PVC	160	uPVC	Retained
P-142	J-109	J-110	79.5	110	PVC	110	uPVC	Retained
P-143	J-109	J-111	38.5	160	PVC	160	uPVC	Retained
P-144	J-111	J-112	78.5	110	PVC	110	uPVC	Retained
P-145	J-111	J-113	66.5	110	PVC	110	uPVC	Retained
P-146	J-113	J-114	39	110	PVC	110	uPVC	Retained
P-147	J-114	J-109	64	110	PVC	110	uPVC	Retained
P-148	J-114	J-115	32.5	110	PVC	110	uPVC	Retained
P-149	J-115	J-108	65	110	PVC	110	uPVC	Retained
P-15	J-12	J-13	24.5	75	PVC	180	HDPE	Replacement
P-150	J-115	J-116	41.5	110	PVC	110	uPVC	Retained
P-151	J-116	J-104	68	110	PVC	110	uPVC	Retained
P-152	J-116	J-117	33.5	110	PVC	110	uPVC	Retained

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-153	J-117	J-102	68	110	PVC	110	uPVC	Retained
P-154	J-117	J-118	35	110	PVC	110	uPVC	Retained
P-155	J-118	J-119	4	110	PVC	110	uPVC	Retained
P-156	J-119	J-100	67.5	110	PVC	110	uPVC	Retained
P-157	J-119	J-120	40	110	PVC	110	uPVC	Retained
P-158	J-120	J-95	41	110	PVC	110	uPVC	Retained
P-159	J-98	J-120	67.5	110	PVC	110	uPVC	Retained
P-16	J-13	J-14	15	75	PVC	110	HDPE	Replacement
P-160	J-120	J-121	83.5	110	PVC	110	uPVC	Retained
P-161	J-118	J-122	73	110	PVC	110	uPVC	Retained
P-162	J-122	J-123	11.5	110	PVC	110	uPVC	Retained
P-163	J-117	J-124	60	110	PVC	110	uPVC	Retained
P-164	J-124	J-125	16.5	110	PVC	125	HDPE	Replacement
P-165	J-125	J-122	21.5	110	PVC	110	uPVC	Retained
P-167	J-116	J-126	49	110	PVC	110	uPVC	Retained
P-168	J-126	J-124	36.5	110	PVC	110	uPVC	Retained
P-169	J-115	J-127	30	110	PVC	110	uPVC	Retained
P-17	J-14	J-15	49	75	PVC	125	HDPE	Replacement
P-170	J-127	J-126	45	110	PVC	110	uPVC	Retained
P-171	J-127	J-128	4	110	PVC	110	uPVC	Retained
P-172	J-128	J-129	66.5	110	PVC	110	uPVC	Retained
P-173	J-129	J-130	25	75	PVC	110	HDPE	Replacement
P-174	J-130	J-131	16.5	75	PVC	110	HDPE	Replacement
P-175	J-131	J-132	70	110	PVC	110	uPVC	Retained
P-176	J-132	J-128	20	110	PVC	110	uPVC	Retained
P-177	J-132	J-133	21	110	PVC	125	HDPE	Replacement
P-178	J-133	J-134	30.5	110	PVC	125	HDPE	Replacement
P-179	J-134	J-135	13.5	110	PVC	140	HDPE	Replacement
P-18	J-15	J-16	29	75	PVC	160	HDPE	Replacement
P-180	J-135	J-136	44.5	110	PVC	160	HDPE	Replacement
P-181	J-136	J-137	85	110	PVC	110	uPVC	Retained
P-182	J-137	J-138	52.5	110	PVC	160	HDPE	Replacement
P-183	J-138	J-125	21.5	110	PVC	160	HDPE	Replacement
P-184	J-134	J-138	81.5	110	PVC	110	uPVC	Retained
P-185	J-46	J-137	42.5	110	PVC	160	HDPE	Replacement
P-186	J-137	J-139	45.5	110	PVC	110	uPVC	Retained
P-187	J-139	J-47	31.5	110	PVC	140	HDPE	Replacement
P-188	J-139	J-140	31	110	PVC	125	HDPE	Replacement
P-189	J-140	J-141	30	110	PVC	125	HDPE	Replacement
P-19	J-16	J-17	25.5	75	PVC	180	HDPE	Replacement
P-190	J-136	J-142	23	110	PVC	180	HDPE	Replacement
P-191	J-142	J-143	14.5	110	PVC	180	HDPE	Replacement
P-192	J-143	J-22	25	110	PVC	200	HDPE	Replacement
P-193	J-142	J-144	60.5	110	PVC	110	uPVC	Retained
P-194	J-143	J-145	61	110	PVC	140	HDPE	Replacement
P-195	J-145	J-146	45	110	PVC	125	HDPE	Replacement
P-196	J-146	J-147	29.5	110	PVC	110	uPVC	Retained
P-197	J-147	J-148	21.5	110	PVC	110	uPVC	Retained
P-198	J-146	J-149	4.5	110	PVC	110	uPVC	Retained
P-199	J-149	J-150	31	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	27.5	200	PVC	250	HDPE	Replacement
P-20	J-17	J-11	25.5	75	PVC	200	HDPE	Replacement
P-200	J-151	J-152	23	110	PVC	125	HDPE	Replacement
P-201	J-152	J-136	62	110	PVC	110	uPVC	Retained
P-202	J-135	J-153	87	110	PVC	110	uPVC	Retained
P-203	J-153	J-154	108	110	PVC	110	uPVC	Retained
P-204	J-153	J-155	23	110	PVC	140	HDPE	Replacement
P-205	J-155	J-156	9	110	PVC	110	uPVC	Retained
P-206	J-156	J-133	74	110	PVC	110	uPVC	Retained
P-207	J-156	J-157	23	110	PVC	110	uPVC	Retained

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-208	J-157	J-131	8.5	75	PVC	110	HDPE	Replacement
P-209	J-155	J-158	165	110	PVC	110	uPVC	Retained
P-21	J-11	J-18	27	200	PVC	200	uPVC	Retained
P-210	J-158	J-159	34	110	PVC	110	uPVC	Retained
P-211	J-159	J-160	16	110	PVC	110	uPVC	Retained
P-212	J-160	J-161	72.5	110	PVC	110	uPVC	Retained
P-213	J-161	J-162	11.5	110	PVC	110	uPVC	Retained
P-214	J-162	J-163	25.5	75	PVC	110	HDPE	Replacement
P-215	J-163	J-164	33.5	75	PVC	110	HDPE	Replacement
P-216	J-164	J-157	18.5	75	PVC	110	HDPE	Replacement
P-217	J-165	J-130	62.5	75	PVC	110	HDPE	Replacement
P-218	J-166	J-167	22	75	PVC	110	HDPE	Replacement
P-219	J-167	J-168	14	75	PVC	110	HDPE	Replacement
P-22	J-18	J-19	53.5	75	PVC	160	HDPE	Replacement
P-220	J-168	J-162	21	75	PVC	110	HDPE	Replacement
P-221	J-169	J-170	41.5	110	PVC	110	uPVC	Retained
P-222	J-170	J-168	72.5	110	PVC	110	uPVC	Retained
P-223	J-170	J-171	19	110	PVC	110	uPVC	Retained
P-224	J-171	J-160	15.5	110	PVC	110	uPVC	Retained
P-225	J-171	J-172	49.5	110	PVC	110	uPVC	Retained
P-226	J-172	J-173	50.5	110	PVC	110	uPVC	Retained
P-227	J-172	J-174	31.5	110	PVC	110	uPVC	Retained
P-228	J-174	J-175	41	110	PVC	110	uPVC	Retained
P-229	J-159	J-174	54.5	110	PVC	110	uPVC	Retained
P-23	J-19	J-1	26.5	200	PVC	280	HDPE	Replacement
P-230	J-174	J-176	34	110	PVC	110	uPVC	Retained
P-231	J-176	J-158	51.5	110	PVC	110	uPVC	Retained
P-232	J-176	J-177	38	110	PVC	110	uPVC	Retained
P-233	J-177	J-178	5.5	110	PVC	110	uPVC	Retained
P-234	J-178	J-179	35.5	75	PVC	110	HDPE	Replacement
P-235	J-179	J-180	35	75	PVC	110	HDPE	Replacement
P-236	J-180	J-181	30.5	110	PVC	110	uPVC	Retained
P-237	J-178	J-182	138.5	75	PVC	110	HDPE	Replacement
P-238	J-183	J-179	145	75	PVC	110	HDPE	Replacement
P-239	J-180	J-184	151.5	75	PVC	110	HDPE	Replacement
P-24	J-17	J-12	91.5	75	PVC	125	HDPE	Replacement
P-240	J-185	J-186	63	75	PVC	110	HDPE	Replacement
P-241	J-186	J-187	49	75	PVC	110	HDPE	Replacement
P-242	J-188	J-189	34.5	75	PVC	110	HDPE	Replacement
P-243	J-189	J-186	29.5	75	PVC	110	HDPE	Replacement
P-244	J-190	J-189	44.5	75	PVC	110	HDPE	Replacement
P-245	J-191	J-192	25	75	PVC	110	HDPE	Replacement
P-246	J-192	J-193	21.5	75	PVC	110	HDPE	Replacement
P-247	J-149	J-192	115.5	110	PVC	110	uPVC	Retained
P-248	J-192	J-194	36.5	75	PVC	110	HDPE	Replacement
P-249	J-194	J-195	51	75	PVC	110	HDPE	Replacement
P-25	J-3	J-20	84.5	75	PVC	125	HDPE	Replacement
P-250	J-194	J-147	113.5	110	PVC	110	uPVC	Retained
P-251	J-196	J-197	33.5	75	PVC	110	HDPE	Replacement
P-252	J-197	J-198	14.5	75	PVC	110	HDPE	Replacement
P-253	J-198	J-199	50.5	75	PVC	110	HDPE	Replacement
P-254	J-199	J-200	51.5	75	PVC	110	HDPE	Replacement
P-255	J-198	J-201	43	75	PVC	110	HDPE	Replacement
P-256	J-201	J-202	73	75	PVC	110	HDPE	Replacement
P-257	J-201	J-203	105.5	75	PVC	110	HDPE	Replacement
P-258	J-203	J-204	18	110	PVC	110	uPVC	Retained
P-259	J-204	J-205	39	110	PVC	110	uPVC	Retained
P-26	J-2	J-21	49.5	200	PVC	225	HDPE	Replacement
P-260	J-205	J-206	26	110	PVC	110	uPVC	Retained
P-261	J-206	J-207	38	110	PVC	110	uPVC	Retained

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-262	J-207	J-208	7.5	110	PVC	110	uPVC	Retained
P-263	J-205	J-209	39	110	PVC	110	uPVC	Retained
P-264	J-209	J-210	86.5	110	PVC	110	uPVC	Retained
P-265	J-210	J-211	84.5	110	PVC	110	uPVC	Retained
P-266	J-211	J-212	53	110	PVC	110	uPVC	Retained
P-267	J-212	J-37	37.5	110	PVC	140	HDPE	Replacement
P-268	J-36	J-211	33	110	PVC	160	HDPE	Replacement
P-269	J-211	J-213	37	110	PVC	140	HDPE	Replacement
P-27	J-21	J-22	37.5	200	PVC	225	HDPE	Replacement
P-270	J-213	J-214	49.5	110	PVC	110	uPVC	Retained
P-271	J-214	J-212	36.5	110	PVC	125	HDPE	Replacement
P-272	J-212	J-215	36.5	110	PVC	110	uPVC	Retained
P-273	J-215	J-216	57.5	110	PVC	125	HDPE	Replacement
P-274	J-216	J-35	26.5	110	PVC	160	HDPE	Replacement
P-275	J-36	J-217	84	110	PVC	110	uPVC	Retained
P-276	J-217	J-218	87.5	110	PVC	125	HDPE	Replacement
P-277	J-218	J-204	38.5	110	PVC	110	uPVC	Retained
P-278	J-213	J-219	86.5	110	PVC	110	uPVC	Retained
P-279	J-219	J-220	84.5	110	PVC	110	uPVC	Retained
P-28	J-21	J-23	27.5	200	PVC	200	uPVC	Retained
P-280	J-220	J-221	108.5	110	PVC	110	uPVC	Retained
P-281	J-222	J-223	38.5	160	PVC	160	uPVC	Retained
P-282	J-223	J-224	38.5	160	PVC	160	uPVC	Retained
P-283	J-224	J-225	46	160	PVC	160	uPVC	Retained
P-284	J-225	J-226	82.5	160	PVC	160	uPVC	Retained
P-285	J-226	J-227	86	160	PVC	160	uPVC	Retained
P-286	J-227	J-213	27.5	110	PVC	140	HDPE	Replacement
P-287	J-214	J-228	24	110	PVC	140	HDPE	Replacement
P-288	J-228	J-227	52.5	160	PVC	160	uPVC	Retained
P-289	J-227	J-229	21	110	PVC	110	uPVC	Retained
P-29	J-23	J-19	23.5	200	PVC	280	HDPE	Replacement
P-291	J-230	J-228	20	160	PVC	160	uPVC	Retained
P-292	J-229	J-231	33	160	PVC	160	uPVC	Retained
P-293	J-231	J-230	21.5	160	PVC	160	uPVC	Retained
P-294	J-215	J-232	72.5	75	PVC	125	HDPE	Replacement
P-295	J-232	J-230	51.5	160	PVC	160	uPVC	Retained
P-296	J-229	J-233	41.5	160	PVC	160	uPVC	Retained
P-297	J-233	J-234	38.5	160	PVC	160	uPVC	Retained
P-298	J-234	J-235	6.5	160	PVC	160	uPVC	Retained
P-299	J-235	J-236	39	160	PVC	160	uPVC	Retained
P-3	J-2	J-3	15.5	200	PVC	200	uPVC	Retained
P-30	J-23	J-24	7	200	PVC	250	HDPE	Replacement
P-300	J-236	J-237	45	160	PVC	160	uPVC	Retained
P-301	J-237	J-238	44.5	110	PVC	110	uPVC	Retained
P-302	J-238	J-239	13.5	110	PVC	110	uPVC	Retained
P-303	J-239	J-240	22	110	PVC	110	uPVC	Retained
P-304	J-240	J-241	28	110	PVC	110	uPVC	Retained
P-305	J-241	J-242	11.5	110	PVC	110	uPVC	Retained
P-306	J-242	J-243	15.5	110	PVC	110	uPVC	Retained
P-307	J-223	J-240	51	160	PVC	160	uPVC	Retained
P-308	J-240	J-244	47	75	PVC	110	HDPE	Replacement
P-309	J-244	J-245	31.5	75	PVC	110	HDPE	Replacement
P-31	J-24	J-25	36	200	PVC	225	HDPE	Replacement
P-310	J-245	J-246	33	75	PVC	110	HDPE	Replacement
P-311	J-246	J-247	33.5	75	PVC	110	HDPE	Replacement
P-312	J-247	J-248	27	75	PVC	110	HDPE	Replacement
P-313	J-248	J-249	30.5	75	PVC	110	HDPE	Replacement
P-314	J-249	J-250	92	75	PVC	110	HDPE	Replacement
P-315	J-250	J-251	23.5	75	PVC	110	HDPE	Replacement
P-316	J-251	J-252	35	75	PVC	110	HDPE	Replacement

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-317	J-252	J-253	32.5	75	PVC	110	HDPE	Replacement
P-318	J-253	J-254	5	75	PVC	125	HDPE	Replacement
P-319	J-254	J-236	58.5	75	PVC	110	HDPE	Replacement
P-32	J-25	J-26	55	200	PVC	225	HDPE	Replacement
P-320	J-237	J-255	26.5	110	PVC	110	uPVC	Retained
P-321	J-255	J-256	27	75	PVC	110	HDPE	Replacement
P-322	J-257	J-255	43	75	PVC	110	HDPE	Replacement
P-323	J-245	J-253	121.5	75	PVC	110	HDPE	Replacement
P-324	J-246	J-252	122.5	75	PVC	110	HDPE	Replacement
P-325	J-247	J-251	122	75	PVC	110	HDPE	Replacement
P-326	J-248	J-258	57.5	75	PVC	110	HDPE	Replacement
P-327	J-248	J-259	27	75	PVC	110	HDPE	Replacement
P-328	J-259	J-260	38	75	PVC	110	HDPE	Replacement
P-329	J-249	J-261	45.5	75	PVC	110	HDPE	Replacement
P-33	J-26	J-27	25.5	200	PVC	200	uPVC	Retained
P-330	J-250	J-262	36	75	PVC	110	HDPE	Replacement
P-331	J-262	J-263	19.5	75	PVC	110	HDPE	Replacement
P-332	J-263	J-264	15.5	75	PVC	110	HDPE	Replacement
P-333	J-263	J-265	10	110	PVC	110	uPVC	Retained
P-334	J-265	J-266	16	75	PVC	110	HDPE	Replacement
P-335	J-266	J-267	35.5	75	PVC	110	HDPE	Replacement
P-336	J-267	J-268	44.5	75	PVC	110	HDPE	Replacement
P-337	J-268	J-269	10.5	110	PVC	110	uPVC	Retained
P-338	J-268	J-270	57.5	75	PVC	110	HDPE	Replacement
P-339	J-270	J-271	22.5	75	PVC	110	HDPE	Replacement
P-34	J-27	J-28	25	110	PVC	200	HDPE	Replacement
P-340	J-271	J-272	72.5	75	PVC	110	HDPE	Replacement
P-341	J-271	J-273	26	75	PVC	110	HDPE	Replacement
P-342	J-273	J-274	39.5	75	PVC	110	HDPE	Replacement
P-343	J-274	J-275	21	75	PVC	110	HDPE	Replacement
P-344	J-276	J-274	24.5	75	PVC	110	HDPE	Replacement
P-345	J-273	J-277	35.5	75	PVC	110	HDPE	Replacement
P-346	J-277	J-278	46	75	PVC	110	HDPE	Replacement
P-347	J-270	J-279	36.5	75	PVC	110	HDPE	Replacement
P-348	J-279	J-280	60.5	75	PVC	110	HDPE	Replacement
P-349	J-280	J-277	30.5	75	PVC	110	HDPE	Replacement
P-35	J-28	J-24	52.5	200	PVC	200	uPVC	Retained
P-350	J-280	J-281	33.5	75	PVC	110	HDPE	Replacement
P-351	J-281	J-282	66.5	75	PVC	110	HDPE	Replacement
P-352	J-281	J-283	33	75	PVC	110	HDPE	Replacement
P-353	J-283	J-284	57	75	PVC	110	HDPE	Replacement
P-354	J-285	J-286	29	75	PVC	110	HDPE	Replacement
P-355	J-286	J-287	9.5	75	PVC	110	HDPE	Replacement
P-356	J-287	J-283	35	75	PVC	110	HDPE	Replacement
P-357	J-283	J-288	53	75	PVC	110	HDPE	Replacement
P-358	J-288	J-289	45.5	75	PVC	110	HDPE	Replacement
P-359	J-289	J-290	21.5	75	PVC	110	HDPE	Replacement
P-36	J-28	J-18	30.5	200	PVC	200	uPVC	Retained
P-360	J-290	J-291	12.5	75	PVC	110	HDPE	Replacement
P-361	J-291	J-292	7.5	75	PVC	110	HDPE	Replacement
P-362	J-292	J-293	31	75	PVC	110	HDPE	Replacement
P-363	J-293	J-294	31	75	PVC	110	HDPE	Replacement
P-364	J-294	J-280	51.5	75	PVC	110	HDPE	Replacement
P-365	J-281	J-295	52	75	PVC	110	HDPE	Replacement
P-366	J-295	J-291	42	75	PVC	110	HDPE	Replacement
P-367	J-279	J-296	22.5	75	PVC	110	HDPE	Replacement
P-368	J-296	J-297	65	75	PVC	110	HDPE	Replacement
P-369	J-297	J-298	26.5	75	PVC	110	HDPE	Replacement
P-37	J-18	J-29	50.5	75	PVC	180	HDPE	Replacement
P-370	J-298	J-299	25	75	PVC	110	HDPE	Replacement

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-371	J-299	J-300	34.5	75	PVC	110	HDPE	Replacement
P-372	J-300	J-296	28.5	75	PVC	110	HDPE	Replacement
P-373	J-296	J-301	29	75	PVC	110	HDPE	Replacement
P-374	J-301	J-302	28	75	PVC	110	HDPE	Replacement
P-375	J-302	J-293	45.5	75	PVC	110	HDPE	Replacement
P-376	J-302	J-303	28.5	75	PVC	110	HDPE	Replacement
P-377	J-303	J-304	27.5	75	PVC	110	HDPE	Replacement
P-378	J-304	J-300	37	75	PVC	110	HDPE	Replacement
P-379	J-300	J-305	34.5	75	PVC	110	HDPE	Replacement
P-38	J-29	J-16	26.5	75	PVC	110	HDPE	Replacement
P-380	J-305	J-306	34.5	75	PVC	110	HDPE	Replacement
P-381	J-306	J-307	86	75	PVC	110	HDPE	Replacement
P-382	J-307	J-233	63.5	110	PVC	110	uPVC	Retained
P-383	J-307	J-308	69	75	PVC	110	HDPE	Replacement
P-384	J-308	J-309	37	75	PVC	110	HDPE	Replacement
P-385	J-309	J-231	21.5	75	PVC	110	HDPE	Replacement
P-386	J-310	J-311	43	75	PVC	110	HDPE	Replacement
P-387	J-311	J-312	29.5	75	PVC	110	HDPE	Replacement
P-388	J-312	J-304	109	75	PVC	110	HDPE	Replacement
P-389	J-303	J-313	13.5	75	PVC	110	HDPE	Replacement
P-39	J-27	J-30	51.5	200	PVC	200	uPVC	Retained
P-390	J-313	J-314	42	75	PVC	110	HDPE	Replacement
P-391	J-314	J-312	27	75	PVC	110	HDPE	Replacement
P-392	J-314	J-315	35	75	PVC	110	HDPE	Replacement
P-393	J-315	J-316	34	75	PVC	110	HDPE	Replacement
P-394	J-316	J-317	32.5	75	PVC	110	HDPE	Replacement
P-395	J-313	J-318	70.5	75	PVC	110	HDPE	Replacement
P-396	J-318	J-316	44	75	PVC	110	HDPE	Replacement
P-397	J-318	J-292	45.5	75	PVC	110	HDPE	Replacement
P-398	J-262	J-319	44	75	PVC	110	HDPE	Replacement
P-399	J-319	J-299	31.5	75	PVC	110	HDPE	Replacement
P-4	J-3	J-4	93.5	75	PVC	110	HDPE	Replacement
P-40	J-30	J-31	25	110	PVC	125	HDPE	Replacement
P-400	J-250	J-320	44.5	75	PVC	110	HDPE	Replacement
P-401	J-320	J-319	37	75	PVC	110	HDPE	Replacement
P-402	J-306	J-320	35	75	PVC	110	HDPE	Replacement
P-403	J-320	J-321	86	75	PVC	110	HDPE	Replacement
P-404	J-321	J-322	7.5	75	PVC	110	HDPE	Replacement
P-405	J-322	J-254	45.5	75	PVC	110	HDPE	Replacement
P-406	J-234	J-322	58	75	PVC	110	HDPE	Replacement
P-407	J-232	J-323	19	160	PVC	160	uPVC	Retained
P-408	J-323	J-324	19.5	160	PVC	160	uPVC	Retained
P-409	J-324	J-325	73.5	75	PVC	110	HDPE	Replacement
P-41	J-31	J-29	30	75	PVC	125	HDPE	Replacement
P-410	J-325	J-215	37	110	PVC	110	uPVC	Retained
P-411	J-216	J-326	19	110	PVC	110	uPVC	Retained
P-412	J-326	J-327	20	110	PVC	125	HDPE	Replacement
P-413	J-327	J-325	59	110	PVC	110	uPVC	Retained
P-414	J-325	J-328	44.5	75	PVC	110	HDPE	Replacement
P-415	J-328	J-329	67.5	75	PVC	110	HDPE	Replacement
P-416	J-329	J-324	20	160	PVC	160	uPVC	Retained
P-417	J-327	J-330	29	110	PVC	110	uPVC	Retained
P-418	J-330	J-331	41	110	PVC	110	uPVC	Retained
P-419	J-331	J-40	59	75	PVC	110	HDPE	Replacement
P-42	J-29	J-32	40.5	75	PVC	180	HDPE	Replacement
P-420	J-331	J-332	44.5	75	PVC	110	HDPE	Replacement
P-421	J-332	J-333	43	75	PVC	110	HDPE	Replacement
P-422	J-333	J-334	37	160	PVC	160	uPVC	Retained
P-423	J-334	J-41	46.5	160	PVC	160	uPVC	Retained
P-424	J-57	J-334	36	160	PVC	160	uPVC	Retained

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-425	J-334	J-335	54	160	PVC	160	uPVC	Retained
P-426	J-335	J-336	39	75	PVC	110	HDPE	Replacement
P-427	J-336	J-333	43	75	PVC	110	HDPE	Replacement
P-428	J-336	J-337	23	75	PVC	110	HDPE	Replacement
P-429	J-337	J-338	14	75	PVC	110	HDPE	Replacement
P-43	J-32	J-33	54	75	PVC	110	HDPE	Replacement
P-430	J-338	J-332	41	160	PVC	160	uPVC	Retained
P-431	J-338	J-339	31	75	PVC	110	HDPE	Replacement
P-432	J-339	J-340	11.5	75	PVC	110	HDPE	Replacement
P-433	J-340	J-341	33.5	75	PVC	110	HDPE	Replacement
P-434	J-58	J-342	32.5	160	PVC	160	uPVC	Retained
P-435	J-342	J-343	25.5	160	PVC	160	uPVC	Retained
P-436	J-343	J-344	8	160	PVC	160	uPVC	Retained
P-437	J-344	J-345	13.5	160	PVC	160	uPVC	Retained
P-438	J-345	J-335	34	160	PVC	160	uPVC	Retained
P-439	J-57	J-345	59.5	160	PVC	160	uPVC	Retained
P-44	J-33	J-34	49	75	PVC	110	HDPE	Replacement
P-440	J-342	J-346	91.5	160	PVC	160	uPVC	Retained
P-441	J-346	J-347	20	160	PVC	160	uPVC	Retained
P-442	J-347	J-348	25.5	160	PVC	160	uPVC	Retained
P-443	J-348	J-72	14.5	160	PVC	160	uPVC	Retained
P-444	J-346	J-349	29	160	PVC	160	uPVC	Retained
P-445	J-349	J-350	43	160	PVC	160	uPVC	Retained
P-446	J-350	J-343	63.5	160	PVC	160	uPVC	Retained
P-447	J-344	J-351	61.5	110	PVC	110	uPVC	Retained
P-448	J-351	J-352	74	110	PVC	110	uPVC	Retained
P-449	J-352	J-350	69	160	PVC	160	uPVC	Retained
P-45	J-34	J-35	13.5	75	PVC	140	HDPE	Replacement
P-450	J-352	J-353	50.5	110	PVC	110	uPVC	Retained
P-451	J-353	J-354	25.5	110	PVC	110	uPVC	Retained
P-452	J-354	J-355	41	110	PVC	110	uPVC	Retained
P-453	J-355	J-356	6.5	110	PVC	110	uPVC	Retained
P-454	J-356	J-351	53.5	110	PVC	110	uPVC	Retained
P-455	J-353	J-357	15.5	110	PVC	110	uPVC	Retained
P-456	J-357	J-358	99.5	110	PVC	110	uPVC	Retained
P-457	J-358	J-359	49.5	110	PVC	110	uPVC	Retained
P-458	J-359	J-360	51.5	110	PVC	110	uPVC	Retained
P-459	J-360	J-354	45.5	110	PVC	110	uPVC	Retained
P-46	J-35	J-13	48.5	75	PVC	125	HDPE	Replacement
P-460	J-355	J-361	34	160	PVC	160	uPVC	Retained
P-461	J-361	J-362	11	160	PVC	160	uPVC	Retained
P-462	J-362	J-363	49.5	160	PVC	160	uPVC	Retained
P-463	J-363	J-359	42.5	160	PVC	160	uPVC	Retained
P-464	J-356	J-364	30.5	110	PVC	110	uPVC	Retained
P-465	J-364	J-365	35.5	160	PVC	160	uPVC	Retained
P-466	J-365	J-366	9.5	160	PVC	160	uPVC	Retained
P-467	J-366	J-361	24.5	160	PVC	160	uPVC	Retained
P-468	J-366	J-367	52.5	160	PVC	160	uPVC	Retained
P-469	J-367	J-368	41.5	160	PVC	160	uPVC	Retained
P-47	J-13	J-36	26	75	PVC	160	HDPE	Replacement
P-470	J-368	J-369	25.5	160	PVC	160	uPVC	Retained
P-471	J-369	J-363	34	160	PVC	160	uPVC	Retained
P-472	J-368	J-370	24	160	PVC	160	uPVC	Retained
P-473	J-370	J-371	23.5	160	PVC	160	uPVC	Retained
P-474	J-371	J-372	78.5	110	PVC	110	uPVC	Retained
P-475	J-372	J-373	27.5	110	PVC	110	uPVC	Retained
P-476	J-373	J-374	26	110	PVC	110	uPVC	Retained
P-477	J-374	J-375	19	110	PVC	110	uPVC	Retained
P-478	J-370	J-373	79.5	110	PVC	110	uPVC	Retained
P-479	J-368	J-374	79	110	PVC	110	uPVC	Retained

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-48	J-36	J-37	49	110	PVC	110	uPVC	Retained
P-480	J-369	J-376	82.5	160	PVC	160	uPVC	Retained
P-481	J-376	J-377	41.5	160	PVC	160	uPVC	Retained
P-482	J-377	J-378	57	160	PVC	160	uPVC	Retained
P-483	J-378	J-379	60	160	PVC	160	uPVC	Retained
P-484	J-379	J-380	121.5	160	PVC	160	uPVC	Retained
P-485	J-380	J-357	61	110	PVC	110	uPVC	Retained
P-486	J-349	J-381	8	160	PVC	160	uPVC	Retained
P-487	J-381	J-382	57	160	PVC	160	uPVC	Retained
P-488	J-382	J-383	18.5	160	PVC	160	uPVC	Retained
P-489	J-383	J-384	5.5	160	PVC	160	uPVC	Retained
P-49	J-37	J-35	25.5	110	PVC	125	HDPE	Replacement
P-490	J-384	J-380	40.5	160	PVC	160	uPVC	Retained
P-491	J-384	J-385	67	160	PVC	160	uPVC	Retained
P-492	J-385	J-386	25	160	PVC	160	uPVC	Retained
P-493	J-386	J-387	24.5	110	PVC	110	uPVC	Retained
P-494	J-387	J-388	26	110	PVC	110	uPVC	Retained
P-495	J-388	J-382	20	110	PVC	110	uPVC	Retained
P-496	J-82	J-389	10.5	110	PVC	110	uPVC	Retained
P-497	J-389	J-390	24	110	PVC	110	uPVC	Retained
P-498	J-390	J-83	24.5	110	PVC	110	uPVC	Retained
P-499	J-83	J-386	52.5	160	PVC	160	uPVC	Retained
P-5	J-2	J-5	94.5	75	PVC	110	HDPE	Replacement
P-50	J-14	J-34	47.5	75	PVC	125	HDPE	Replacement
P-500	J-84	J-391	69.5	160	PVC	160	uPVC	Retained
P-501	J-391	J-385	52	160	PVC	160	uPVC	Retained
P-502	J-84	J-392	75.5	160	PVC	160	uPVC	Retained
P-503	J-391	J-393	21.5	110	PVC	110	uPVC	Retained
P-504	J-335	J-394	48	75	PVC	125	HDPE	Replacement
P-505	J-394	J-395	32.5	75	PVC	110	HDPE	Replacement
P-506	J-395	J-396	35	75	PVC	110	HDPE	Replacement
P-507	J-396	J-397	38.5	110	PVC	110	uPVC	Retained
P-508	J-397	J-398	12.5	160	PVC	160	uPVC	Retained
P-509	J-398	J-365	25	160	PVC	160	uPVC	Retained
P-51	J-15	J-33	45	75	PVC	125	HDPE	Replacement
P-510	J-398	J-399	50.5	160	PVC	160	uPVC	Retained
P-511	J-399	J-367	40.5	160	PVC	160	uPVC	Retained
P-512	J-371	J-399	43.5	160	PVC	160	uPVC	Retained
P-513	J-399	J-400	40.5	110	PVC	110	uPVC	Retained
P-514	J-400	J-401	50.5	110	PVC	110	uPVC	Retained
P-515	J-401	J-397	25	110	PVC	110	uPVC	Retained
P-516	J-401	J-402	24.5	110	PVC	110	uPVC	Retained
P-517	J-402	J-403	41.5	75	PVC	110	HDPE	Replacement
P-518	J-403	J-404	9	110	PVC	110	uPVC	Retained
P-519	J-404	J-400	22	110	PVC	110	uPVC	Retained
P-52	J-32	J-38	22.5	75	PVC	180	HDPE	Replacement
P-520	J-402	J-405	23.5	75	PVC	110	HDPE	Replacement
P-521	J-405	J-406	13	75	PVC	110	HDPE	Replacement
P-522	J-406	J-407	23.5	75	PVC	110	HDPE	Replacement
P-523	J-406	J-408	34	75	PVC	110	HDPE	Replacement
P-524	J-408	J-409	17	75	PVC	110	HDPE	Replacement
P-525	J-409	J-410	19	75	PVC	125	HDPE	Replacement
P-526	J-410	J-337	45.5	75	PVC	110	HDPE	Replacement
P-527	J-410	J-394	56	110	PVC	110	uPVC	Retained
P-528	J-408	J-395	55	75	PVC	110	HDPE	Replacement
P-529	J-409	J-411	44.5	75	PVC	110	HDPE	Replacement
P-53	J-38	J-39	13.5	75	PVC	160	HDPE	Replacement
P-530	J-411	J-412	27	75	PVC	110	HDPE	Replacement
P-531	J-412	J-413	21.5	75	PVC	110	HDPE	Replacement
P-532	J-413	J-339	18.5	75	PVC	140	HDPE	Replacement

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-533	J-411	J-414	9	110	PVC	110	uPVC	Retained
P-534	J-414	J-415	24	75	PVC	110	HDPE	Replacement
P-535	J-415	J-416	31.5	75	PVC	110	HDPE	Replacement
P-536	J-416	J-405	47	75	PVC	110	HDPE	Replacement
P-537	J-416	J-417	22	75	PVC	110	HDPE	Replacement
P-538	J-417	J-418	36.5	75	PVC	110	HDPE	Replacement
P-539	J-418	J-419	7	110	PVC	110	uPVC	Retained
P-54	J-39	J-40	40.5	75	PVC	140	HDPE	Replacement
P-540	J-419	J-403	44	75	PVC	110	HDPE	Replacement
P-541	J-419	J-420	36.5	75	PVC	110	HDPE	Replacement
P-542	J-420	J-421	16	160	PVC	160	uPVC	Retained
P-543	J-421	J-422	43	110	PVC	110	uPVC	Retained
P-544	J-422	J-404	45	110	PVC	110	uPVC	Retained
P-545	J-371	J-423	28	110	PVC	110	uPVC	Retained
P-546	J-423	J-422	34	110	PVC	110	uPVC	Retained
P-547	J-422	J-424	31.5	110	PVC	110	uPVC	Retained
P-548	J-424	J-425	36.5	110	PVC	110	uPVC	Retained
P-549	J-425	J-423	34	110	PVC	110	uPVC	Retained
P-55	J-40	J-41	22.5	75	PVC	110	HDPE	Replacement
P-550	J-372	J-426	26	110	PVC	110	uPVC	Retained
P-551	J-426	J-425	44	110	PVC	110	uPVC	Retained
P-552	J-424	J-427	42	110	PVC	110	uPVC	Retained
P-553	J-427	J-428	23.5	110	PVC	110	uPVC	Retained
P-554	J-428	J-421	6.5	160	PVC	160	uPVC	Retained
P-555	J-426	J-429	115	110	PVC	110	uPVC	Retained
P-556	J-429	J-430	21.5	110	PVC	110	uPVC	Retained
P-557	J-430	J-431	21	110	PVC	110	uPVC	Retained
P-558	J-431	J-432	12.5	110	PVC	110	uPVC	Retained
P-559	J-432	J-433	31	110	PVC	110	uPVC	Retained
P-56	J-41	J-42	7	75	PVC	125	HDPE	Replacement
P-560	J-433	J-434	35	110	PVC	110	uPVC	Retained
P-561	J-427	J-435	36.5	110	PVC	110	uPVC	Retained
P-562	J-435	J-436	19.5	110	PVC	110	uPVC	Retained
P-563	J-436	J-437	82	160	PVC	160	uPVC	Retained
P-564	J-437	J-438	28	160	PVC	160	uPVC	Retained
P-565	J-438	J-428	140	160	PVC	160	uPVC	Retained
P-566	J-420	J-439	140	75	PVC	110	HDPE	Replacement
P-567	J-439	J-438	22.5	75	PVC	110	HDPE	Replacement
P-568	J-438	J-440	44.5	75	PVC	110	HDPE	Replacement
P-569	J-440	J-441	24	75	PVC	110	HDPE	Replacement
P-57	J-42	J-43	48.5	75	PVC	125	HDPE	Replacement
P-570	J-441	J-442	27	75	PVC	110	HDPE	Replacement
P-571	J-442	J-443	38.5	75	PVC	110	HDPE	Replacement
P-572	J-441	J-444	46	75	PVC	110	HDPE	Replacement
P-573	J-444	J-445	37	75	PVC	110	HDPE	Replacement
P-574	J-445	J-446	15.5	110	PVC	110	uPVC	Retained
P-575	J-444	J-447	14	75	PVC	110	HDPE	Replacement
P-576	J-439	J-448	13.5	75	PVC	110	HDPE	Replacement
P-577	J-448	J-449	13	75	PVC	110	HDPE	Replacement
P-578	J-449	J-450	40.5	75	PVC	110	HDPE	Replacement
P-579	J-450	J-451	49	75	PVC	110	HDPE	Replacement
P-58	J-43	J-44	9.5	75	PVC	140	HDPE	Replacement
P-580	J-451	J-452	29	75	PVC	110	HDPE	Replacement
P-581	J-452	J-442	27	75	PVC	110	HDPE	Replacement
P-582	J-448	J-453	27	75	PVC	110	HDPE	Replacement
P-583	J-453	J-454	17.5	75	PVC	110	HDPE	Replacement
P-584	J-454	J-455	16.5	75	PVC	110	HDPE	Replacement
P-585	J-455	J-449	45.5	75	PVC	110	HDPE	Replacement
P-586	J-455	J-456	39.5	75	PVC	110	HDPE	Replacement
P-587	J-456	J-450	45.5	75	PVC	110	HDPE	Replacement

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-588	J-456	J-457	60.5	75	PVC	110	HDPE	Replacement
P-589	J-457	J-458	60	75	PVC	110	HDPE	Replacement
P-59	J-44	J-38	29.5	75	PVC	110	HDPE	Replacement
P-590	J-452	J-458	28	75	PVC	110	HDPE	Replacement
P-591	J-458	J-459	25.5	75	PVC	110	HDPE	Replacement
P-592	J-459	J-460	25	75	PVC	110	HDPE	Replacement
P-593	J-460	J-461	12.5	75	PVC	110	HDPE	Replacement
P-594	J-461	J-462	103.5	75	PVC	110	HDPE	Replacement
P-595	J-462	J-463	50	75	PVC	110	HDPE	Replacement
P-596	J-463	J-464	15	75	PVC	110	HDPE	Replacement
P-597	J-464	J-465	27	75	PVC	110	HDPE	Replacement
P-598	J-465	J-466	47	75	PVC	110	HDPE	Replacement
P-599	J-467	J-457	43	75	PVC	110	HDPE	Replacement
P-6	J-1	J-6	62.5	75	PVC	200	HDPE	Replacement
P-60	J-31	J-45	26.5	75	PVC	160	HDPE	Replacement
P-600	J-457	J-465	33	75	PVC	110	HDPE	Replacement
P-601	J-465	J-468	117	75	PVC	110	HDPE	Replacement
P-602	J-468	J-469	14.5	75	PVC	110	HDPE	Replacement
P-603	J-469	J-454	17.5	75	PVC	110	HDPE	Replacement
P-604	J-469	J-470	42	75	PVC	110	HDPE	Replacement
P-605	J-470	J-471	24.5	75	PVC	110	HDPE	Replacement
P-606	J-471	J-417	80.5	75	PVC	110	HDPE	Replacement
P-607	J-418	J-453	144	75	PVC	110	HDPE	Replacement
P-608	J-471	J-472	50	75	PVC	110	HDPE	Replacement
P-609	J-472	J-473	21.5	75	PVC	110	HDPE	Replacement
P-61	J-45	J-44	34.5	75	PVC	125	HDPE	Replacement
P-611	J-474	J-475	14	75	PVC	110	HDPE	Replacement
P-612	J-475	J-468	41.5	75	PVC	110	HDPE	Replacement
P-613	J-475	J-476	70	75	PVC	110	HDPE	Replacement
P-614	J-464	J-477	43.5	75	PVC	110	HDPE	Replacement
P-615	J-463	J-478	19.5	75	PVC	110	HDPE	Replacement
P-616	J-478	J-479	41.5	75	PVC	110	HDPE	Replacement
P-617	J-478	J-480	22	75	PVC	110	HDPE	Replacement
P-618	J-480	J-481	122.5	75	PVC	110	HDPE	Replacement
P-619	J-481	J-474	25	160	PVC	160	uPVC	Retained
P-62	J-26	J-46	6.5	200	PVC	225	HDPE	Replacement
P-620	J-481	J-482	33.5	160	PVC	160	uPVC	Retained
P-621	J-482	J-483	122	75	PVC	110	HDPE	Replacement
P-622	J-483	J-484	30.5	75	PVC	110	HDPE	Replacement
P-623	J-484	J-485	11.5	75	PVC	110	HDPE	Replacement
P-624	J-485	J-329	109	75	PVC	110	HDPE	Replacement
P-625	J-329	J-482	37	160	PVC	160	uPVC	Retained
P-626	J-483	J-486	55.5	75	PVC	110	HDPE	Replacement
P-627	J-486	J-487	16.5	75	PVC	110	HDPE	Replacement
P-628	J-487	J-488	19.5	75	PVC	110	HDPE	Replacement
P-629	J-488	J-290	19.5	75	PVC	110	HDPE	Replacement
P-63	J-46	J-47	47	200	PVC	200	uPVC	Retained
P-630	J-289	J-489	35	75	PVC	110	HDPE	Replacement
P-631	J-489	J-490	28.5	75	PVC	110	HDPE	Replacement
P-632	J-490	J-491	15	75	PVC	110	HDPE	Replacement
P-633	J-491	J-492	20	75	PVC	110	HDPE	Replacement
P-634	J-492	J-462	12	75	PVC	110	HDPE	Replacement
P-635	J-486	J-493	28	75	PVC	110	HDPE	Replacement
P-636	J-493	J-492	40	75	PVC	110	HDPE	Replacement
P-637	J-493	J-480	59.5	75	PVC	110	HDPE	Replacement
P-638	J-478	J-494	25	75	PVC	110	HDPE	Replacement
P-639	J-488	J-490	61	75	PVC	110	HDPE	Replacement
P-64	J-47	J-30	40	200	PVC	200	uPVC	Retained
P-640	J-490	J-495	86	75	PVC	110	HDPE	Replacement
P-641	J-495	J-496	13.5	75	PVC	110	HDPE	Replacement

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-642	J-496	J-497	13.5	75	PVC	110	HDPE	Replacement
P-643	J-497	J-498	8	75	PVC	110	HDPE	Replacement
P-644	J-498	J-461	10.5	75	PVC	110	HDPE	Replacement
P-645	J-498	J-492	96	75	PVC	110	HDPE	Replacement
P-646	J-487	J-491	64.5	75	PVC	110	HDPE	Replacement
P-647	J-491	J-496	88.5	75	PVC	110	HDPE	Replacement
P-648	J-489	J-499	32.5	75	PVC	110	HDPE	Replacement
P-649	J-499	J-500	43.5	75	PVC	110	HDPE	Replacement
P-65	J-47	J-48	29.5	200	PVC	200	uPVC	Retained
P-650	J-500	J-501	23.5	75	PVC	110	HDPE	Replacement
P-651	J-501	J-495	15.5	75	PVC	110	HDPE	Replacement
P-652	J-502	J-500	30.5	75	PVC	110	HDPE	Replacement
P-653	J-500	J-503	21	75	PVC	110	HDPE	Replacement
P-654	J-503	J-504	28	75	PVC	110	HDPE	Replacement
P-655	J-286	J-505	48	75	PVC	110	HDPE	Replacement
P-656	J-287	J-506	20.5	75	PVC	110	HDPE	Replacement
P-657	J-506	J-507	65	75	PVC	110	HDPE	Replacement
P-658	J-506	J-508	33	75	PVC	110	HDPE	Replacement
P-659	J-508	J-509	33	75	PVC	110	HDPE	Replacement
P-66	J-48	J-49	43.5	110	PVC	125	HDPE	Replacement
P-660	J-509	J-510	40.5	75	PVC	110	HDPE	Replacement
P-661	J-510	J-503	29.5	75	PVC	110	HDPE	Replacement
P-662	J-503	J-511	28.5	75	PVC	110	HDPE	Replacement
P-663	J-509	J-499	49	75	PVC	110	HDPE	Replacement
P-664	J-413	J-512	86.5	75	PVC	110	HDPE	Replacement
P-665	J-512	J-513	19.5	75	PVC	110	HDPE	Replacement
P-666	J-513	J-473	39.5	75	PVC	110	HDPE	Replacement
P-667	J-412	J-513	86	75	PVC	110	HDPE	Replacement
P-668	J-473	J-414	84	75	PVC	110	HDPE	Replacement
P-669	J-472	J-415	83	75	PVC	110	HDPE	Replacement
P-67	J-49	J-45	25.5	75	PVC	110	HDPE	Replacement
P-670	J-514	J-515	60	110	PVC	110	uPVC	Retained
P-671	J-515	J-430	67	110	PVC	110	uPVC	Retained
P-672	J-515	J-516	43.5	110	PVC	110	uPVC	Retained
P-673	J-516	J-431	63.5	110	PVC	110	uPVC	Retained
P-674	J-516	J-517	55.5	110	PVC	110	uPVC	Retained
P-675	J-517	J-518	63	160	PVC	160	uPVC	Retained
P-676	J-518	J-432	44.5	110	PVC	110	uPVC	Retained
P-677	J-437	J-518	54	160	PVC	160	uPVC	Retained
P-678	J-518	J-519	35.5	110	PVC	110	uPVC	Retained
P-679	J-519	J-440	83	75	PVC	110	HDPE	Replacement
P-68	J-49	J-50	25	75	PVC	160	HDPE	Replacement
P-680	J-519	J-520	7.5	110	PVC	110	uPVC	Retained
P-681	J-520	J-521	34	110	PVC	110	uPVC	Retained
P-682	J-521	J-522	32.5	75	PVC	110	HDPE	Replacement
P-683	J-522	J-445	22.5	110	PVC	110	uPVC	Retained
P-684	J-520	J-523	98.5	75	PVC	110	HDPE	Replacement
P-685	J-522	J-524	21	110	PVC	110	uPVC	Retained
P-686	J-524	J-525	7	110	PVC	110	uPVC	Retained
P-687	J-525	J-526	35.5	75	PVC	110	HDPE	Replacement
P-688	J-526	J-527	25.5	75	PVC	110	HDPE	Replacement
P-689	J-527	J-528	14.5	75	PVC	110	HDPE	Replacement
P-69	J-50	J-51	19	75	PVC	110	HDPE	Replacement
P-690	J-524	J-529	76	75	PVC	110	HDPE	Replacement
P-691	J-530	J-526	77.5	75	PVC	110	HDPE	Replacement
P-692	J-526	J-531	120	75	PVC	110	HDPE	Replacement
P-693	J-525	J-532	102	75	PVC	110	HDPE	Replacement
P-7	J-6	J-7	31.5	75	PVC	180	HDPE	Replacement
P-70	J-51	J-43	27	75	PVC	110	HDPE	Replacement
P-71	J-51	J-52	50	75	PVC	125	HDPE	Replacement

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-72	J-52	J-42	29.5	110	PVC	110	uPVC	Retained
P-73	J-48	J-53	35.5	110	PVC	180	HDPE	Replacement
P-74	J-53	J-54	24	160	PVC	160	uPVC	Retained
P-75	J-54	J-50	23.5	110	PVC	125	HDPE	Replacement
P-76	J-54	J-55	40.5	160	PVC	160	uPVC	Retained
P-77	J-55	J-56	26.5	160	PVC	160	uPVC	Retained
P-78	J-56	J-52	23	160	PVC	160	uPVC	Retained
P-79	J-52	J-57	38.5	160	PVC	160	uPVC	Retained
P-8	J-7	J-8	25	110	PVC	200	HDPE	Replacement
P-80	J-57	J-58	21.5	110	PVC	110	uPVC	Retained
P-807	J-473	J-584	24	110	PVC	110	uPVC	Retained
P-808	J-584	J-474	42.5	110	PVC	110	uPVC	Retained
P-81	J-58	J-59	5	160	PVC	160	uPVC	Retained
P-82	J-59	J-56	34.5	160	PVC	160	uPVC	Retained
P-83	J-56	J-60	51.5	160	PVC	160	uPVC	Retained
P-84	J-60	J-61	9.5	160	PVC	160	uPVC	Retained
P-85	J-61	J-62	18.5	160	PVC	160	uPVC	Retained
P-86	J-62	J-63	37	160	PVC	160	uPVC	Retained
P-87	J-63	J-53	7.5	160	PVC	160	uPVC	Retained
P-88	J-55	J-62	40	160	PVC	160	uPVC	Retained
P-89	J-63	J-64	22.5	110	PVC	110	uPVC	Retained
P-9	J-8	J-9	33	75	PVC	110	HDPE	Replacement
P-90	J-64	J-65	29.5	110	PVC	110	uPVC	Retained
P-91	J-65	J-66	9.5	110	PVC	140	HDPE	Replacement
P-92	J-66	J-67	18.5	110	PVC	125	HDPE	Replacement
P-93	J-67	J-68	27	110	PVC	110	uPVC	Retained
P-94	J-68	J-69	68	110	PVC	110	uPVC	Retained
P-95	J-69	J-70	26	110	PVC	110	uPVC	Retained
P-96	J-70	J-71	24	110	PVC	110	uPVC	Retained
P-97	J-71	J-61	25.5	110	PVC	110	uPVC	Retained
P-98	J-60	J-72	14.5	160	PVC	160	uPVC	Retained
P-99	J-72	J-73	28.5	110	PVC	110	uPVC	Retained
PP-694	PJ-533	J-261	8.5	#N/A	#N/A	110	HDPE	New
PP-695	J-261	J-260	24	#N/A	#N/A	110	HDPE	New
PP-696	J-260	PJ-534	20	#N/A	#N/A	110	HDPE	New
PP-697	PJ-534	PJ-535	32	#N/A	#N/A	110	HDPE	New
PP-698	PJ-535	J-265	77	#N/A	#N/A	110	HDPE	New
PP-699	PJ-535	PJ-536	11.5	#N/A	#N/A	110	HDPE	New
PP-700	PJ-536	J-266	67	#N/A	#N/A	110	HDPE	New
PP-701	PJ-536	PJ-537	36	#N/A	#N/A	110	HDPE	New
PP-702	PJ-537	J-267	49	#N/A	#N/A	110	HDPE	New
PP-703	PJ-537	PJ-538	35.5	#N/A	#N/A	110	HDPE	New
PP-704	PJ-538	J-269	15.5	#N/A	#N/A	110	HDPE	New
PP-705	PJ-538	J-272	24.5	#N/A	#N/A	110	HDPE	New
PP-706	J-272	J-275	63	#N/A	#N/A	110	HDPE	New
PP-707	J-275	PJ-539	36	#N/A	#N/A	110	HDPE	New
PP-708	PJ-539	J-278	13.5	#N/A	#N/A	110	HDPE	New
PP-709	PJ-539	PJ-540	33.5	#N/A	#N/A	110	HDPE	New
PP-710	PJ-540	J-282	15	#N/A	#N/A	110	HDPE	New
PP-711	PJ-540	PJ-541	36	#N/A	#N/A	110	HDPE	New
PP-712	PJ-541	J-284	11.5	#N/A	#N/A	110	HDPE	New
PP-713	PJ-541	PJ-542	39.5	#N/A	#N/A	110	HDPE	New
PP-714	PJ-542	J-285	18	#N/A	#N/A	110	HDPE	New
PP-715	PJ-542	PJ-543	106	#N/A	#N/A	110	HDPE	New
PP-716	PJ-543	J-505	46	#N/A	#N/A	110	HDPE	New
PP-717	J-507	PJ-544	50.5	#N/A	#N/A	110	HDPE	New
PP-718	PJ-544	PJ-543	40.5	#N/A	#N/A	110	HDPE	New
PP-719	J-510	PJ-545	62	#N/A	#N/A	110	HDPE	New
PP-720	PJ-545	PJ-544	36	#N/A	#N/A	110	HDPE	New
PP-721	PJ-545	PJ-546	33.5	#N/A	#N/A	110	HDPE	New

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-722	PJ-546	J-504	50	#N/A	#N/A	110	HDPE	New
PP-723	J-502	PJ-547	49	#N/A	#N/A	110	HDPE	New
PP-724	PJ-547	PJ-546	20.5	#N/A	#N/A	110	HDPE	New
PP-725	PJ-547	PJ-548	94	#N/A	#N/A	110	HDPE	New
PP-726	PJ-548	PJ-549	62	#N/A	#N/A	110	HDPE	New
PP-727	PJ-549	J-497	92	#N/A	#N/A	110	HDPE	New
PP-728	J-501	PJ-550	22	#N/A	#N/A	110	HDPE	New
PP-729	J-460	PJ-551	22	#N/A	#N/A	110	HDPE	New
PP-730	J-459	PJ-552	29	#N/A	#N/A	110	HDPE	New
PP-731	J-452	PJ-553	21.5	#N/A	#N/A	110	HDPE	New
PP-732	J-532	J-531	22.5	#N/A	#N/A	110	HDPE	New
PP-733	J-531	PJ-549	24	#N/A	#N/A	110	HDPE	New
PP-734	PJ-548	J-528	144.5	#N/A	#N/A	110	HDPE	New
PP-735	J-528	PJ-554	75.5	#N/A	#N/A	110	HDPE	New
PP-736	PJ-554	PJ-555	17.5	#N/A	#N/A	110	HDPE	New
PP-737	PJ-555	J-527	72.5	#N/A	#N/A	110	HDPE	New
PP-738	J-530	PJ-556	11	#N/A	#N/A	110	HDPE	New
PP-739	PJ-556	PJ-557	45.5	#N/A	#N/A	110	HDPE	New
PP-740	PJ-557	PJ-554	5.5	#N/A	#N/A	110	HDPE	New
PP-741	J-529	J-530	39	#N/A	#N/A	110	HDPE	New
PP-742	PJ-557	PJ-558	67.5	#N/A	#N/A	110	HDPE	New
PP-743	PJ-558	PJ-559	56.5	#N/A	#N/A	110	HDPE	New
PP-744	PJ-559	PJ-560	8.5	#N/A	#N/A	110	HDPE	New
PP-745	J-523	PJ-561	49	#N/A	#N/A	110	HDPE	New
PP-746	PJ-561	PJ-556	60.5	#N/A	#N/A	110	HDPE	New
PP-747	PJ-562	PJ-561	11	#N/A	#N/A	110	HDPE	New
PP-748	PJ-561	PJ-559	46	#N/A	#N/A	110	HDPE	New
PP-749	J-517	PJ-563	12	#N/A	#N/A	110	HDPE	New
PP-750	J-436	J-434	20.5	#N/A	#N/A	110	HDPE	New
PP-751	J-434	J-430	30	#N/A	#N/A	110	HDPE	New
PP-752	J-435	J-429	49.5	#N/A	#N/A	110	HDPE	New
PP-753	J-515	PJ-564	14.5	#N/A	#N/A	110	HDPE	New
PP-754	J-514	PJ-565	28.5	#N/A	#N/A	110	HDPE	New
PP-755	PJ-565	PJ-566	66	#N/A	#N/A	110	HDPE	New
PP-756	J-426	PJ-565	98	#N/A	#N/A	110	HDPE	New
PP-757	J-375	J-376	22	#N/A	#N/A	110	HDPE	New
PP-758	J-369	PJ-567	36.5	#N/A	#N/A	110	HDPE	New
PP-759	PJ-567	PJ-568	30.5	#N/A	#N/A	110	HDPE	New
PP-760	PJ-568	J-377	49.5	#N/A	#N/A	110	HDPE	New
PP-761	J-378	PJ-568	64	#N/A	#N/A	110	HDPE	New
PP-762	J-360	J-362	41.5	#N/A	#N/A	110	HDPE	New
PP-763	J-383	PJ-569	32	#N/A	#N/A	110	HDPE	New
PP-764	J-82	J-79	27.5	#N/A	#N/A	110	HDPE	New
PP-765	J-79	J-381	8	#N/A	#N/A	110	HDPE	New
PP-766	J-379	J-393	202	#N/A	#N/A	110	HDPE	New
PP-767	J-393	J-392	102.5	#N/A	#N/A	110	HDPE	New
PP-768	J-392	PJ-570	79.5	#N/A	#N/A	110	HDPE	New
PP-769	PJ-570	PJ-571	49	#N/A	#N/A	110	HDPE	New
PP-770	PJ-571	PJ-572	42	#N/A	#N/A	110	HDPE	New
PP-771	PJ-572	J-99	39	#N/A	#N/A	110	HDPE	New
PP-772	J-99	J-101	39	#N/A	#N/A	110	HDPE	New
PP-773	J-101	J-103	35.5	#N/A	#N/A	110	HDPE	New
PP-774	J-103	J-105	38	#N/A	#N/A	110	HDPE	New
PP-775	J-105	J-107	36	#N/A	#N/A	110	HDPE	New
PP-776	J-107	J-110	38.5	#N/A	#N/A	110	HDPE	New
PP-777	J-110	J-112	37	#N/A	#N/A	110	HDPE	New
PP-778	J-112	PJ-573	222.5	#N/A	#N/A	110	HDPE	New
PP-779	J-97	PJ-572	19.5	#N/A	#N/A	110	HDPE	New
PP-780	PJ-571	J-96	41	#N/A	#N/A	110	HDPE	New
PP-781	J-96	PJ-574	50	#N/A	#N/A	110	HDPE	New

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-782	PJ-574	PJ-570	41	#N/A	#N/A	110	HDPE	New
PP-783	PJ-574	J-91	36.5	#N/A	#N/A	110	HDPE	New
PP-784	J-94	PJ-575	30	#N/A	#N/A	110	HDPE	New
PP-785	PJ-575	J-89	16.5	#N/A	#N/A	110	HDPE	New
PP-786	J-89	J-86	72	#N/A	#N/A	110	HDPE	New
PP-787	J-86	PJ-576	25.5	#N/A	#N/A	110	HDPE	New
PP-788	PJ-576	J-81	58.5	#N/A	#N/A	110	HDPE	New
PP-789	PJ-576	J-83	26	#N/A	#N/A	110	HDPE	New
PP-790	PJ-575	J-76	58.5	#N/A	#N/A	110	HDPE	New
PP-791	J-67	PJ-577	42	#N/A	#N/A	110	HDPE	New
PP-792	PJ-577	J-70	25	#N/A	#N/A	110	HDPE	New
PP-793	PJ-577	PJ-578	18.5	#N/A	#N/A	110	HDPE	New
PP-794	PJ-578	J-71	32	#N/A	#N/A	110	HDPE	New
PP-795	J-66	PJ-578	40.5	#N/A	#N/A	110	HDPE	New
PP-796	J-73	J-347	38	#N/A	#N/A	110	HDPE	New
PP-797	J-65	J-141	26	#N/A	#N/A	125	HDPE	New
PP-798	J-123	J-121	40.5	#N/A	#N/A	110	HDPE	New
PP-799	J-121	PJ-579	21.5	#N/A	#N/A	110	HDPE	New
PP-800	J-139	J-64	63.5	#N/A	#N/A	125	HDPE	New
PP-801	J-348	J-59	68	#N/A	#N/A	110	HDPE	New
PP-802	J-39	J-326	117	#N/A	#N/A	110	HDPE	New
PP-803	J-330	J-340	72	#N/A	#N/A	110	HDPE	New
PP-804	J-341	PJ-580	48.5	#N/A	#N/A	110	HDPE	New
PP-805	J-328	PJ-581	9.5	#N/A	#N/A	110	HDPE	New
PP-806	J-512	J-482	69.5	#N/A	#N/A	110	HDPE	New
PP-808	J-584	J-470	70	#N/A	#N/A	110	HDPE	New
PP-809	PJ-584	J-199	23	#N/A	#N/A	110	HDPE	New
PP-810	J-199	PJ-585	7	#N/A	#N/A	110	HDPE	New
PP-811	J-200	PJ-586	25.5	#N/A	#N/A	110	HDPE	New
PP-812	J-4	J-5	14	#N/A	#N/A	110	HDPE	New
PP-813	J-5	J-7	27	#N/A	#N/A	140	HDPE	New
PP-814	J-8	J-217	27	#N/A	#N/A	250	HDPE	New
PP-815	J-217	J-210	37	#N/A	#N/A	180	HDPE	New
PP-816	J-210	J-219	37.5	#N/A	#N/A	160	HDPE	New
PP-817	J-219	J-226	30.5	#N/A	#N/A	160	HDPE	New
PP-818	J-226	J-235	27.5	#N/A	#N/A	125	HDPE	New
PP-819	J-218	J-209	39	#N/A	#N/A	110	HDPE	New
PP-820	J-209	J-220	37	#N/A	#N/A	125	HDPE	New
PP-821	J-220	J-225	33.5	#N/A	#N/A	140	HDPE	New
PP-822	J-225	PJ-587	25.5	#N/A	#N/A	110	HDPE	New
PP-823	PJ-587	J-237	25	#N/A	#N/A	110	HDPE	New
PP-824	PJ-588	PJ-587	22	#N/A	#N/A	110	HDPE	New
PP-825	J-224	J-238	53.5	#N/A	#N/A	110	HDPE	New
PP-826	J-239	PJ-589	23.5	#N/A	#N/A	110	HDPE	New
PP-827	J-241	PJ-590	24	#N/A	#N/A	110	HDPE	New
PP-828	J-242	J-222	59.5	#N/A	#N/A	110	HDPE	New
PP-829	J-222	PJ-591	24	#N/A	#N/A	110	HDPE	New
PP-830	PJ-591	PJ-592	24.5	#N/A	#N/A	110	HDPE	New
PP-831	PJ-591	PJ-593	11	#N/A	#N/A	110	HDPE	New
PP-832	PJ-594	J-244	92	#N/A	#N/A	110	HDPE	New
PP-833	PJ-595	J-245	93	#N/A	#N/A	110	HDPE	New
PP-834	PJ-596	J-246	87	#N/A	#N/A	110	HDPE	New
PP-835	PJ-597	J-247	109.5	#N/A	#N/A	110	HDPE	New
PP-836	PJ-534	PJ-598	39.5	#N/A	#N/A	110	HDPE	New
PP-837	PJ-598	J-259	22	#N/A	#N/A	110	HDPE	New
PP-838	PJ-598	J-258	62	#N/A	#N/A	110	HDPE	New
PP-839	J-258	PJ-599	222	#N/A	#N/A	110	HDPE	New
PP-840	PJ-599	PJ-600	174.5	#N/A	#N/A	110	HDPE	New
PP-841	PJ-600	PJ-601	108.5	#N/A	#N/A	110	HDPE	New
PP-842	PJ-601	PJ-602	135	#N/A	#N/A	110	HDPE	New

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-843	PJ-602	PJ-603	123.5	#N/A	#N/A	110	HDPE	New
PP-844	PJ-603	PJ-604	144	#N/A	#N/A	110	HDPE	New
PP-845	PJ-604	PJ-605	161	#N/A	#N/A	110	HDPE	New
PP-846	PJ-605	PJ-606	133.5	#N/A	#N/A	110	HDPE	New
PP-847	PJ-606	PJ-607	101	#N/A	#N/A	110	HDPE	New
PP-848	PJ-607	PJ-608	87	#N/A	#N/A	110	HDPE	New
PP-849	PJ-608	J-187	107.5	#N/A	#N/A	110	HDPE	New
PP-850	J-187	J-184	50	#N/A	#N/A	110	HDPE	New
PP-851	J-184	J-183	35.5	#N/A	#N/A	110	HDPE	New
PP-852	J-183	J-182	39	#N/A	#N/A	110	HDPE	New
PP-853	J-182	J-195	80.5	#N/A	#N/A	110	HDPE	New
PP-854	J-195	J-148	116	#N/A	#N/A	110	HDPE	New
PP-855	J-148	PJ-609	11	#N/A	#N/A	125	HDPE	New
PP-856	PJ-609	J-196	35.5	#N/A	#N/A	110	HDPE	New
PP-857	PJ-610	J-197	26	#N/A	#N/A	110	HDPE	New
PP-858	PJ-609	J-202	26	#N/A	#N/A	125	HDPE	New
PP-859	J-202	PJ-611	11.5	#N/A	#N/A	160	HDPE	New
PP-860	PJ-611	J-20	45	#N/A	#N/A	160	HDPE	New
PP-861	J-20	J-22	18	#N/A	#N/A	125	HDPE	New
PP-862	J-22	J-25	26.5	#N/A	#N/A	110	HDPE	New
PP-863	J-152	J-145	36.5	#N/A	#N/A	110	HDPE	New
PP-864	J-145	PJ-611	40.5	#N/A	#N/A	110	HDPE	New
PP-865	J-153	J-151	28	#N/A	#N/A	125	HDPE	New
PP-866	J-151	J-150	22.5	#N/A	#N/A	110	HDPE	New

BOQ for Z7								
				Existing		roposal to meet 2041 requiremen		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-867	J-150	J-193	114	#N/A	#N/A	110	HDPE	New
PP-868	J-193	J-177	100.5	#N/A	#N/A	110	HDPE	New
PP-869	J-161	PJ-612	6.5	#N/A	#N/A	110	HDPE	New
PP-870	PJ-613	J-163	21	#N/A	#N/A	110	HDPE	New
PP-871	PJ-614	J-164	20.5	#N/A	#N/A	110	HDPE	New
PP-872	J-167	PJ-615	19	#N/A	#N/A	110	HDPE	New
PP-873	J-129	J-113	19	#N/A	#N/A	110	HDPE	New
PP-874	J-129	J-166	90	#N/A	#N/A	110	HDPE	New
PP-875	J-166	J-169	71.5	#N/A	#N/A	110	HDPE	New
PP-876	J-169	PJ-616	93.5	#N/A	#N/A	110	HDPE	New
PP-877	PJ-616	PJ-617	46.5	#N/A	#N/A	110	HDPE	New
PP-878	PJ-617	PJ-618	24.5	#N/A	#N/A	110	HDPE	New
PP-879	PJ-618	J-173	22	#N/A	#N/A	110	HDPE	New
PP-880	J-173	J-175	32	#N/A	#N/A	110	HDPE	New
PP-881	J-175	PJ-619	34	#N/A	#N/A	110	HDPE	New
PP-882	PJ-619	PJ-618	35	#N/A	#N/A	110	HDPE	New
PP-883	PJ-617	PJ-620	41.5	#N/A	#N/A	110	HDPE	New
PP-884	PJ-621	J-170	24	#N/A	#N/A	110	HDPE	New
PP-885	J-175	J-179	76.5	#N/A	#N/A	110	HDPE	New
PP-886	J-180	PJ-619	82	#N/A	#N/A	110	HDPE	New
PP-887	PJ-619	J-181	92	#N/A	#N/A	110	HDPE	New
PP-888	J-181	J-190	44	#N/A	#N/A	110	HDPE	New
PP-889	J-190	J-188	57.5	#N/A	#N/A	110	HDPE	New
PP-890	J-188	J-185	45	#N/A	#N/A	110	HDPE	New
PP-891	J-185	PJ-608	73	#N/A	#N/A	110	HDPE	New
PP-892	PJ-622	PJ-623	13.5	#N/A	#N/A	110	HDPE	New
PP-893	PJ-623	PJ-624	38	#N/A	#N/A	110	HDPE	New
PP-894	PJ-623	PJ-625	8.5	#N/A	#N/A	110	HDPE	New
PP-895	PJ-625	PJ-626	62	#N/A	#N/A	110	HDPE	New
PP-896	PJ-625	PJ-627	30	#N/A	#N/A	110	HDPE	New
PP-897	PJ-627	PJ-628	18.5	#N/A	#N/A	110	HDPE	New
PP-898	PJ-627	PJ-629	11	#N/A	#N/A	110	HDPE	New
PP-899	PJ-629	PJ-630	60	#N/A	#N/A	110	HDPE	New
PP-900	PJ-629	J-208	26.5	#N/A	#N/A	110	HDPE	New
PP-901	J-208	J-221	37	#N/A	#N/A	110	HDPE	New
PP-902	J-221	PJ-631	32.5	#N/A	#N/A	110	HDPE	New
PP-903	J-207	PJ-632	50.5	#N/A	#N/A	110	HDPE	New
PP-904	J-206	PJ-633	24.5	#N/A	#N/A	110	HDPE	New
PP-905	PJ-634	J-214	19.5	#N/A	#N/A	110	HDPE	New
PP-906	J-228	PJ-635	23.5	#N/A	#N/A	110	HDPE	New
PP-907	J-321	J-307	39	#N/A	#N/A	110	HDPE	New
PP-908	PJ-636	J-309	43.5	#N/A	#N/A	110	HDPE	New
PP-909	J-309	PJ-637	49	#N/A	#N/A	110	HDPE	New
PP-910	PJ-638	J-311	49.5	#N/A	#N/A	110	HDPE	New
PP-911	J-311	J-308	35	#N/A	#N/A	110	HDPE	New
PP-912	J-308	PJ-639	80	#N/A	#N/A	110	HDPE	New
PP-913	PJ-639	PJ-640	38	#N/A	#N/A	110	HDPE	New
PP-914	PJ-640	J-323	22	#N/A	#N/A	110	HDPE	New
PP-915	PJ-641	PJ-640	14	#N/A	#N/A	110	HDPE	New
PP-916	PJ-639	PJ-642	21	#N/A	#N/A	110	HDPE	New
PP-917	J-485	J-317	28.5	#N/A	#N/A	110	HDPE	New
PP-918	J-317	PJ-643	34.5	#N/A	#N/A	110	HDPE	New
PP-919	PJ-643	J-315	35	#N/A	#N/A	110	HDPE	New
PP-920	J-302	J-301	75.5	#N/A	#N/A	110	HDPE	New
			38836.50					

Zone -8

Distribution Network Design Output: Zone 8

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	27.5	1.796	21.652	130.50001	T-1	J-1	233.95	-9,867.46	6,598.97	355	1.32	3.79	130.50001	HDPE	145	0.1
P-10	64.5	21.003	20.864	3.27558	J-9	J-10	233.95	-9,693.21	6,599.52	110	0.34	1.24	3.27558	uPVC	145	0.08
P-100	101	16.674	17.262	-16.20132	J-95	J-96	234.88	-9,263.74	6,793.29	160	0.81	3.85	16.20132	HDPE	145	0.39
P-101	26	17.262	17.347	-14.84962	J-96	J-97	234.68	-9,351.90	6,842.58	160	0.74	3.28	14.84962	HDPE	145	0.09
P-102	107	17.347	17.096	-0.75361	J-97	J-69	234.68	-9,360.93	6,817.94	110	0.08	0.08	0.75361	uPVC	145	0.01
P-103	153	17.096	16.466	4.05611	J-69	J-98	234.94	-9,382.12	6,713.28	110	0.43	1.84	4.05611	uPVC	145	0.28
P-104	42.5	16.466	16.161	3.37033	J-98	J-99	235.29	-9,373.43	6,560.38	110	0.35	1.31	3.37033	uPVC	145	0.06
P-105	141	16.161	16.742	-2.69241	J-99	J-70	235.54	-9,330.73	6,561.77	110	0.28	0.86	2.69241	uPVC	145	0.12
P-106	39.5	16.161	15.824	5.28055	J-99	J-100	235.54	-9,330.73	6,561.77	110	0.56	3	5.28055	uPVC	145	0.12
P-107	49	15.824	16.082	4.9699	J-100	J-72	235.76	-9,291.16	6,564.20	110	0.52	2.68	4.9699	uPVC	145	0.13
P-108	143	17.262	17.354	-2.29867	J-96	J-101	234.68	-9,351.90	6,842.58	110	0.24	0.64	2.29867	uPVC	145	0.09
P-109	46	16.343	16.225	-0.49205	J-92	J-102	234.99	-9,226.94	6,771.77	110	0.05	0.04	0.49205	uPVC	145	0
P-11	39.5	20.864	20.799	5.43431	J-10	J-11	234.01	-9,628.79	6,605.96	110	0.57	3.16	5.43431	uPVC	145	0.12
P-110	19	16.088	15.939	6.70472	J-91	J-103	235.11	-9,189.45	6,749.21	110	0.71	4.67	6.70472	uPVC	145	0.09
P-111	70	15.939	15.701	0.93789	J-103	J-104	235.17	-9,172.10	6,740.97	110	0.1	0.12	0.93789	uPVC	145	0.01
P-112	52.5	15.939	15.633	5.27037	J-103	J-105	235.17	-9,172.10	6,740.97	110	0.55	2.99	5.27037	uPVC	145	0.16
P-113	12.5	15.633	15.542	4.81034	J-105	J-106	235.32	-9,127.41	6,713.20	110	0.51	2.52	4.81034	uPVC	145	0.03
P-114	42	15.542	15.468	2.15238	J-106	J-107	235.38	-9,116.56	6,706.70	110	0.23	0.57	2.15238	uPVC	145	0.02
P-115	29.5	15.468	15.358	0.24029	J-107	J-108	235.43	-9,102.67	6,746.18	110	0.03	0.01	0.24029	uPVC	145	0
P-116	39.5	15.358	15.264	-2.29942	J-108	J-109	235.54	-9,093.13	6,773.95	110	0.24	0.64	2.29942	uPVC	145	0.03
P-117	58	15.468	15.452	1.4577	J-107	J-110	235.43	-9,102.67	6,746.18	110	0.15	0.28	1.4577	uPVC	145	0.02
P-118	69.5	15.452	15.381	1.88431	J-110	J-111	235.43	-9,047.14	6,728.82	110	0.2	0.44	1.88431	HDPE	145	0.03
P-119	18.5	15.381	15.363	1.87074	J-111	J-112	235.47	-8,979.45	6,712.34	110	0.2	0.44	1.87074	uPVC	145	0.01
P-12	74.5	20.799	20.909	-3.61002	J-11	J-12	233.95	-9,633.01	6,645.28	110	0.38	1.48	3.61002	uPVC	145	0.11
P-120	47.5	15.542	15.511	2.29998	J-106	J-113	235.38	-9,116.56	6,706.70	110	0.24	0.64	2.29998	HDPE	145	0.03
P-121	59	15.511	15.452	1.08083	J-113	J-110	235.38	-9,078.38	6,678.49	110	0.11	0.16	1.08083	HDPE	145	0.01
P-122	22.5	15.511	15.579	0.76651	J-113	J-114	235.38	-9,078.38	6,678.49	110	0.08	0.08	0.76651	uPVC	145	0
P-123	30.5	15.579	15.679	0.23637	J-114	J-115	235.31	-9,059.72	6,666.34	110	0.02	0.01	0.23637	HDPE	145	0
P-124	12.5	15.679	15.652	-3.04955	J-115	J-88	235.21	-9,037.59	6,645.08	110	0.32	1.08	3.04955	HDPE	145	0.01
P-125	20.5	15.679	15.696	3.06292	J-115	J-116	235.21	-9,037.59	6,645.08	110	0.32	1.09	3.06292	HDPE	145	0.02

Distribution Network Design Output: Zone 8

P-126	11.5	15.696	15.686	2.75365	J-116	J-117	235.17	-9,021.54	6,632.50	110	0.29	0.9	2.75365	uPVC	145	0.01
P-127	59	15.686	15.568	1.55517	J-117	J-118	235.17	-9,012.86	6,625.12	110	0.16	0.31	1.55517	uPVC	145	0.02
P-128	93.5	15.686	15.381	0.62313	J-117	J-111	235.17	-9,012.86	6,625.12	110	0.07	0.06	0.62313	HDPE	145	0.01
P-129	143.5	15.358	15.25	1.79433	J-108	J-119	235.54	-9,093.13	6,773.95	110	0.19	0.41	1.79433	uPVC	145	0.06
P-13	82.5	20.909	21.22	-8.36852	J-12	J-13	233.95	-9,707.21	6,637.51	125	0.68	3.77	8.36852	HDPE	145	0.31
P-130	64.5	15.25	15.104	0.82682	J-119	J-120	235.59	-8,952.55	6,750.09	110	0.09	0.1	0.82682	uPVC	145	0.01
P-131	34.5	15.104	14.994	2.16947	J-120	J-121	235.73	-8,954.72	6,814.74	110	0.23	0.58	2.16947	HDPE	145	0.02
P-132	29	14.994	14.902	0.75874	J-121	J-122	235.82	-8,920.00	6,814.30	110	0.08	0.08	0.75874	HDPE	145	0
P-133	43	21.652	21.448	24.72962	J-1	J-123	233.95	-9,891.40	6,585.40	180	0.97	4.75	24.72962	HDPE	145	0.2
P-134	12.5	21.448	21.448	0.15587	J-123	J-124	233.95	-9,917.76	6,551.63	110	0.02	0	0.15587	uPVC	145	0
P-135	123	21.448	20.161	9.43789	J-124	J-125	233.95	-9,929.70	6,548.30	125	0.77	4.72	9.43789	HDPE	145	0.58
P-136	164.5	20.179	21.448	-7.77605	J-126	J-123	234.68	-10,058.55	6,504.42	125	0.63	3.29	7.77605	HDPE	145	0.54
P-137	41.5	21.448	21.362	15.88052	J-123	J-127	233.95	-9,917.76	6,551.63	180	0.62	2.09	15.88052	HDPE	145	0.09
P-138	123.5	21.362	21.192	9.28837	J-127	J-128	233.95	-9,876.11	6,553.85	160	0.46	1.38	9.28837	uPVC	145	0.17
P-139	71	21.192	20.949	12.26938	J-128	J-129	233.95	-9,752.81	6,563.30	160	0.61	2.3	12.26938	uPVC	145	0.16
P-14	21.5	21.22	21.288	-19.78159	J-13	J-14	233.95	-9,789.63	6,630.18	180	0.78	3.14	19.78159	HDPE	145	0.07
P-140	59	20.949	20.711	9.10785	J-129	J-130	234.03	-9,682.28	6,570.24	160	0.45	1.33	9.10785	uPVC	145	0.08
P-141	90.5	20.711	20.236	5.83174	J-130	J-131	234.19	-9,623.41	6,574.13	110	0.61	3.6	5.83174	uPVC	145	0.33
P-142	67	20.236	19.817	5.12455	J-131	J-132	234.34	-9,533.99	6,586.90	110	0.54	2.84	5.12455	HDPE	145	0.19
P-143	115	19.817	18.947	12.44322	J-132	J-133	234.57	-9,545.93	6,652.99	140	0.81	4.53	12.44322	HDPE	145	0.52
P-144	33	18.947	18.879	15.59353	J-133	J-63	234.92	-9,591.75	6,756.85	160	0.78	3.59	15.59353	HDPE	145	0.12
P-145	69.5	19.628	19.245	4.31365	J-62	J-134	234.43	-9,675.00	6,741.92	110	0.45	2.06	4.31365	uPVC	145	0.14
P-146	254.5	20.217	19.744	5.89093	J-135	J-136	233.8	-10,181.50	6,898.63	110	0.62	3.67	5.89093	uPVC	145	0.93
P-147	159	19.744	19.374	1.73043	J-136	J-137	233.34	-10,435.74	6,892.53	110	0.18	0.38	1.73043	uPVC	145	0.06
P-148	59	19.374	19.22	-0.8112	J-137	J-138	233.65	-10,448.62	6,733.88	110	0.09	0.09	0.8112	uPVC	145	0.01
P-149	86.5	19.22	19.025	-0.62125	J-138	J-139	233.81	-10,395.74	6,707.44	110	0.07	0.06	0.62125	uPVC	145	0
P-15	81	21.288	21.471	-12.16935	J-14	J-2	233.95	-9,810.95	6,627.51	160	0.61	2.27	12.16935	uPVC	145	0.18
P-150	23	19.025	18.975	0.08101	J-139	J-140	234.01	-10,319.13	6,667.44	110	0.01	0	0.08101	uPVC	145	0
P-151	39	19.025	18.983	-1.22327	J-139	J-141	234.01	-10,319.13	6,667.44	110	0.13	0.2	1.22327	uPVC	145	0.01
P-152	46.5	18.983	19.122	-2.67045	J-141	J-142	234.06	-10,325.91	6,628.80	110	0.28	0.85	2.67045	uPVC	145	0.04
P-153	51.5	19.122	19.533	-5.58702	J-142	J-143	233.96	-10,332.69	6,582.70	110	0.59	3.33	5.58702	uPVC	145	0.17
P-154	38	19.533	19.601	-7.51255	J-143	J-144	233.72	-10,340.15	6,531.85	110	0.79	5.76	7.51255	uPVC	145	0.22
P-155	49	19.601	19.694	-7.37747	J-144	J-145	233.87	-10,302.86	6,524.39	110	0.78	5.57	7.37747	uPVC	145	0.27
P-156	98.5	19.694	19.8	-9.67302	J-145	J-146	234.05	-10,254.72	6,514.90	125	0.79	4.94	9.67302	HDPE	145	0.49
P-157	85	19.8	20.011	-16.81919	J-146	J-147	234.43	-10,157.77	6,498.63	160	0.84	4.13	16.81919	HDPE	145	0.35
P-158	131	19.8	19.856	6.04318	J-146	J-148	234.43	-10,157.77	6,498.63	110	0.64	3.85	6.04318	uPVC	145	0.5

P-159	52.5	19.856	19.846	6.78136	J-148	J-149	233.87	-10,259.29	6,458.48	110	0.71	4.77	6.78136	uPVC	145	0.25
P-16	53	21.471	21.156	46.73581	J-2	J-15	233.95	-9,891.59	6,619.51	250	0.95	3.12	46.73581	HDPE	145	0.17
P-160	88	19.846	20.181	5.36763	J-149	J-150	233.63	-10,311.77	6,456.26	160	0.27	0.5	5.36763	uPVC	145	0.04
P-161	82	20.181	19.709	4.63765	J-150	J-151	233.25	-10,399.70	6,458.13	110	0.49	2.36	4.63765	uPVC	145	0.19
P-162	51	19.709	19.533	-1.43258	J-151	J-143	233.53	-10,390.33	6,539.70	110	0.15	0.27	1.43258	uPVC	145	0.01
P-163	68.5	19.601	19.846	-0.68062	J-144	J-149	233.87	-10,302.86	6,524.39	110	0.07	0.07	0.68062	uPVC	145	0
P-164	56.5	19.694	19.856	1.57997	J-145	J-148	234.05	-10,254.72	6,514.90	110	0.17	0.32	1.57997	uPVC	145	0.02
P-165	63.5	19.709	19.492	5.38094	J-151	J-152	233.53	-10,390.33	6,539.70	110	0.57	3.11	5.38094	uPVC	145	0.2
P-166	74	19.492	19.235	3.38241	J-152	J-153	233.55	-10,452.46	6,551.85	110	0.36	1.31	3.38241	uPVC	145	0.1
P-167	42	19.235	19.554	0.14762	J-153	J-154	233.71	-10,458.02	6,478.26	110	0.02	0	0.14762	uPVC	145	0
P-168	42.5	19.235	19.449	2.67873	J-153	J-155	233.71	-10,458.02	6,478.26	110	0.28	0.85	2.67873	uPVC	145	0.04
P-169	17.5	19.449	19.446	0.9378	J-155	J-156	233.46	-10,500.02	6,484.16	110	0.1	0.12	0.9378	uPVC	145	0
P-17	19	21.156	21.084	2.30453	J-15	J-16	234.1	-9,890.26	6,672.39	110	0.24	0.65	2.30453	uPVC	145	0.01
P-170	41	19.446	19.438	1.22181	J-156	J-157	233.46	-10,517.37	6,485.20	110	0.13	0.2	1.22181	uPVC	145	0.01
P-171	33.5	19.438	19.354	0.96025	J-157	J-158	233.46	-10,558.33	6,486.59	110	0.1	0.13	0.96025	uPVC	145	0
P-172	60.5	19.354	19.441	-0.89275	J-158	J-159	233.54	-10,561.11	6,453.27	110	0.09	0.11	0.89275	uPVC	145	0.01
P-173	15.5	19.441	19.443	-1.15957	J-159	J-160	233.46	-10,500.71	6,450.84	110	0.12	0.18	1.15957	uPVC	145	0
P-174	18	19.443	19.449	-1.46709	J-160	J-155	233.46	-10,500.02	6,466.11	110	0.15	0.28	1.46709	uPVC	145	0.01
P-175	79.5	19.354	19.208	1.24435	J-158	J-161	233.54	-10,561.11	6,453.27	110	0.13	0.21	1.24435	uPVC	145	0.02
P-176	36	19.208	19.307	0.43548	J-161	J-162	233.67	-10,631.23	6,443.89	110	0.05	0.03	0.43548	uPVC	145	0
P-177	44	19.307	19.167	0.15464	J-162	J-163	233.57	-10,631.57	6,479.99	110	0.02	0	0.15464	uPVC	145	0
P-178	57.5	19.208	19.168	0.20197	J-161	J-164	233.67	-10,631.23	6,443.89	110	0.02	0.01	0.20197	uPVC	145	0
P-179	69	19.446	19.452	-0.73139	J-156	J-165	233.46	-10,517.37	6,485.20	110	0.08	0.08	0.73139	uPVC	145	0.01
P-18	20.5	21.084	21.038	-3.18181	J-16	J-17	234.16	-9,908.48	6,667.94	110	0.33	1.17	3.18181	uPVC	145	0.02
P-180	63	19.452	19.402	-1.56655	J-165	J-166	233.46	-10,510.87	6,553.78	110	0.16	0.32	1.56655	uPVC	145	0.02
P-181	97	19.402	19.234	-2.48935	J-166	J-167	233.53	-10,504.97	6,616.61	110	0.26	0.74	2.48935	uPVC	145	0.07
P-182	64	19.234	19.374	-1.55258	J-167	J-137	233.77	-10,451.51	6,670.07	110	0.16	0.31	1.55258	uPVC	145	0.02
P-183	68.5	19.234	19.56	-1.74175	J-167	J-168	233.77	-10,451.51	6,670.07	110	0.18	0.38	1.74175	uPVC	145	0.03
P-184	50	19.56	19.492	-1.3408	J-168	J-152	233.47	-10,452.55	6,601.69	110	0.14	0.24	1.3408	uPVC	145	0.01
P-185	56	19.56	19.348	-1.01311	J-168	J-169	233.47	-10,452.55	6,601.69	110	0.11	0.14	1.01311	uPVC	145	0.01
P-186	65	19.348	19.122	-2.34472	J-169	J-142	233.69	-10,397.01	6,593.36	110	0.25	0.67	2.34472	uPVC	145	0.04
P-187	71.5	19.348	19.154	0.65635	J-169	J-170	233.69	-10,397.01	6,593.36	110	0.07	0.06	0.65635	uPVC	145	0
P-188	42.5	19.154	19.22	0.84943	J-170	J-138	233.88	-10,396.32	6,664.86	110	0.09	0.1	0.84943	uPVC	145	0
P-189	79	19.154	18.983	-0.87009	J-170	J-141	233.88	-10,396.32	6,664.86	110	0.09	0.11	0.87009	uPVC	145	0.01
P-19	43	21.038	20.701	11.47918	J-17	J-18	234.23	-9,927.81	6,661.06	140	0.75	3.9	11.47918	HDPE	145	0.17
P-2	34	21.652	21.471	62.48876	J-1	J-2	233.95	-9,891.40	6,585.40	250	1.27	5.34	62.48876	HDPE	145	0.18

Distribution Network Design Output: Zone 8

P-20	46.5	20.701	20.177	7.158	J-18	J-19	234.4	-9,969.35	6,650.39	110	0.75	5.27	7.158	HDPE	145	0.24
P-21	48	20.701	20.432	3.83875	J-18	J-20	234.4	-9,969.35	6,650.39	110	0.4	1.66	3.83875	HDPE	145	0.08
P-22	40	20.432	20.383	8.31288	J-20	J-21	234.59	-9,966.68	6,698.16	125	0.68	3.73	8.31288	HDPE	145	0.15
P-23	40.5	20.383	20.226	5.63625	J-21	J-22	234.49	-9,964.68	6,738.14	110	0.59	3.38	5.63625	HDPE	145	0.14
P-24	72	20.383	20.237	5.01371	J-21	J-23	234.49	-9,964.68	6,738.14	110	0.53	2.72	5.01371	HDPE	145	0.2
P-25	40	20.237	20.39	2.33897	J-23	J-24	234.44	-9,960.02	6,809.90	110	0.25	0.66	2.33897	HDPE	145	0.03
P-26	58.5	20.237	20.19	2.60608	J-23	J-25	234.44	-9,960.02	6,809.90	110	0.27	0.81	2.60608	HDPE	145	0.05
P-27	67.5	20.19	20.151	2.16396	J-25	J-26	234.44	-9,957.57	6,868.55	110	0.23	0.57	2.16396	HDPE	145	0.04
P-28	61	20.151	20.232	-9.09409	J-26	J-27	234.44	-9,890.04	6,864.33	160	0.45	1.32	9.09409	uPVC	145	0.08
P-29	27	20.232	20.237	-1.21161	J-27	J-28	234.44	-9,888.71	6,803.24	110	0.13	0.2	1.21161	uPVC	145	0.01
P-3	37	21.471	21.335	2.8645	J-2	J-3	233.95	-9,891.59	6,619.51	160	0.14	0.16	2.8645	uPVC	145	0.01
P-30	14	20.232	20.247	-8.24046	J-27	J-29	234.44	-9,888.71	6,803.24	160	0.41	1.1	8.24046	uPVC	145	0.02
P-31	8.5	20.247	20.278	-15.75981	J-29	J-30	234.44	-9,888.26	6,789.24	160	0.78	3.66	15.75981	HDPE	145	0.03
P-32	42	20.278	20.504	-18.49244	J-30	J-31	234.44	-9,887.82	6,780.58	160	0.92	4.92	18.49244	uPVC	145	0.21
P-33	9	20.504	20.579	-22.27059	J-31	J-32	234.42	-9,887.60	6,738.81	180	0.88	3.92	22.27059	HDPE	145	0.04
P-34	57.5	20.579	21.156	-25.9091	J-32	J-15	234.38	-9,889.15	6,729.70	180	1.02	5.18	25.9091	HDPE	145	0.3
P-35	28.5	21.156	21.083	17.96788	J-15	J-33	234.1	-9,890.26	6,672.39	160	0.89	4.67	17.96788	uPVC	145	0.13
P-36	53.5	21.083	21.024	11.51352	J-33	J-34	234.04	-9,861.60	6,674.39	160	0.57	2.05	11.51352	uPVC	145	0.11
P-37	17.5	21.024	20.944	3.12914	J-34	J-35	233.99	-9,808.29	6,679.05	110	0.33	1.14	3.12914	uPVC	145	0.02
P-38	63.5	20.944	20.708	13.54227	J-35	J-36	234.05	-9,790.74	6,680.38	140	0.88	5.3	13.54227	HDPE	145	0.34
P-39	28.5	20.708	20.464	21.52756	J-36	J-37	233.95	-9,727.20	6,685.27	180	0.85	3.68	21.52756	HDPE	145	0.1
P-4	51	21.335	21.225	0.17918	J-3	J-4	234.08	-9,928.25	6,616.85	110	0.02	0.01	0.17918	HDPE	145	0
P-40	50.5	20.464	19.853	18.63502	J-37	J-38	234.09	-9,722.98	6,713.71	160	0.93	5	18.63502	HDPE	145	0.25
P-41	55	19.853	19.626	4.58362	J-38	J-39	234.45	-9,716.09	6,763.69	110	0.48	2.31	4.58362	uPVC	145	0.13
P-42	53	19.626	19.852	-9.53041	J-39	J-40	234.55	-9,710.09	6,818.34	140	0.62	2.77	9.53041	HDPE	145	0.15
P-43	34	19.852	20.018	-6.17194	J-40	J-41	234.47	-9,762.97	6,818.56	110	0.65	4	6.17194	uPVC	145	0.14
P-44	31	20.018	20.201	-6.4002	J-41	J-42	234.44	-9,796.73	6,819.45	110	0.67	4.28	6.4002	uPVC	145	0.13
P-45	75	20.201	20.357	2.66287	J-42	J-43	234.39	-9,795.62	6,788.35	110	0.28	0.84	2.66287	uPVC	145	0.06
P-46	18	20.357	20.306	2.2344	J-43	J-44	234.17	-9,794.51	6,713.49	110	0.24	0.61	2.2344	uPVC	145	0.01
P-47	53.5	20.306	20.464	-2.42764	J-44	J-37	234.21	-9,776.30	6,713.26	110	0.26	0.71	2.42764	uPVC	145	0.04
P-48	69	20.306	20.013	4.16908	J-44	J-45	234.21	-9,776.30	6,713.26	110	0.44	1.94	4.16908	uPVC	145	0.13
P-49	37.5	20.013	19.852	3.79532	J-45	J-40	234.37	-9,771.63	6,781.91	110	0.4	1.63	3.79532	uPVC	145	0.06
P-5	44	21.382	21.551	-0.15464	J-5	J-6	234.12	-9,974.01	6,579.75	110	0.02	0	0.15464	HDPE	145	0
P-50	38.5	20.247	20.293	7.30511	J-29	J-46	234.44	-9,888.26	6,789.24	160	0.36	0.88	7.30511	uPVC	145	0.03
P-51	31	20.293	20.234	-1.1297	J-46	J-47	234.36	-9,849.61	6,789.24	160	0.06	0.03	1.1297	uPVC	145	0
P-52	51	20.234	20.082	4.88791	J-47	J-48	234.42	-9,818.51	6,789.02	110	0.51	2.6	4.88791	uPVC	145	0.13

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P-53	13	20.081	20.138	-9.04037	J-49	J-50	234.44	-9,834.71	6,862.13	125	0.74	4.35	9.04037	HDPE	145	0.06
P-54	42.5	20.138	20.151	-1.55992	J-50	J-26	234.44	-9,847.79	6,862.47	110	0.16	0.31	1.55992	uPVC	145	0.01
P-55	35	20.151	20.106	8.97554	J-26	J-51	234.44	-9,890.04	6,864.33	160	0.45	1.29	8.97554	uPVC	145	0.05
P-56	102.5	20.106	20.021	2.09066	J-51	J-52	234.44	-9,891.33	6,899.18	110	0.22	0.54	2.09066	HDPE	145	0.06
P-57	22.5	20.252	20.205	-7.70773	J-53	J-54	234.11	-10,061.31	6,904.80	125	0.63	3.24	7.70773	HDPE	145	0.07
P-58	29	20.205	20.05	-3.21169	J-54	J-55	234.23	-10,038.82	6,905.91	110	0.34	1.19	3.21169	uPVC	145	0.03
P-59	21.5	20.205	20.298	-4.75235	J-54	J-56	234.23	-10,038.82	6,905.91	110	0.5	2.47	4.75235	uPVC	145	0.05
P-6	39	21.551	21.652	-23.50334	J-6	J-1	233.95	-9,930.25	6,583.08	200	0.75	2.59	23.50334	HDPE	145	0.1
P-60	21.5	20.298	20.371	-3.69934	J-56	J-57	234.19	-10,041.60	6,884.81	110	0.39	1.55	3.69934	uPVC	145	0.03
P-61	118	20.371	20.348	-3.28517	J-57	J-58	234.15	-10,045.21	6,863.70	110	0.35	1.25	3.28517	uPVC	145	0.15
P-62	57	20.348	20.282	-1.3761	J-58	J-59	234.32	-10,073.30	6,749.07	110	0.14	0.25	1.3761	uPVC	145	0.01
P-63	23	20.282	20.242	-2.70199	J-59	J-60	234.4	-10,076.97	6,692.43	110	0.28	0.87	2.70199	uPVC	145	0.02
P-64	110.5	21.024	20.234	7.74768	J-34	J-47	233.99	-9,808.29	6,679.05	125	0.63	3.27	7.74768	HDPE	145	0.36
P-65	89	19.626	19.093	13.42299	J-39	J-61	234.55	-9,710.09	6,818.34	140	0.87	5.21	13.42299	HDPE	145	0.46
P-66	46.5	19.853	19.628	13.51812	J-38	J-62	234.45	-9,716.09	6,763.69	140	0.88	5.28	13.51812	HDPE	145	0.25
P-67	79.5	19.628	18.879	8.51869	J-62	J-63	234.43	-9,675.00	6,741.92	125	0.69	3.9	8.51869	HDPE	145	0.31
P-68	101.5	18.879	18.506	23.36158	J-63	J-64	234.87	-9,608.62	6,785.31	180	0.92	4.28	23.36158	HDPE	145	0.43
P-69	45	18.506	18.788	-6.70802	J-64	J-65	234.81	-9,646.80	6,879.47	125	0.55	2.51	6.70802	HDPE	145	0.11
P-7	81.5	21.652	21.415	18.98909	J-1	J-7	233.95	-9,891.40	6,585.40	180	0.75	2.91	18.98909	HDPE	145	0.24
P-70	175	18.506	17.302	28.94208	J-64	J-66	234.81	-9,646.80	6,879.47	200	0.92	3.81	28.94208	HDPE	145	0.67
P-71	95	17.302	17.346	20.72434	J-66	J-67	235.35	-9,501.44	6,793.12	180	0.81	3.43	20.72434	HDPE	145	0.33
P-72	39.5	17.346	17.112	15.77501	J-67	J-68	234.98	-9,419.00	6,774.03	160	0.78	3.67	15.77501	HDPE	145	0.14
P-73	43	17.112	17.096	15.08535	J-68	J-69	235.07	-9,409.03	6,735.85	160	0.75	3.38	15.08535	HDPE	145	0.15
P-74	49.5	17.096	16.742	9.03942	J-69	J-70	234.94	-9,382.12	6,713.28	125	0.74	4.35	9.03942	HDPE	145	0.22
P-75	35	16.742	16.567	5.55606	J-70	J-71	235.08	-9,333.96	6,702.87	110	0.58	3.29	5.55606	HDPE	145	0.12
P-76	90.5	16.567	16.082	5.11569	J-71	J-72	235.14	-9,298.82	6,703.30	110	0.54	2.83	5.11569	HDPE	145	0.26
P-77	34	16.082	15.759	9.47694	J-72	J-73	235.37	-9,293.61	6,613.05	140	0.62	2.74	9.47694	HDPE	145	0.09
P-78	26	15.759	15.465	9.0134	J-73	J-74	235.6	-9,260.92	6,615.48	140	0.59	2.49	9.0134	HDPE	145	0.06
P-79	3.5	15.465	15.419	5.65507	J-74	J-75	235.83	-9,235.22	6,617.71	125	0.46	1.82	5.65507	HDPE	145	0.01
P-8	54	21.415	21.243	10.28927	J-7	J-8	233.95	-9,810.29	6,591.52	140	0.67	3.19	10.28927	HDPE	145	0.17
P-80	31.5	15.419	15.366	6.49379	J-75	J-76	235.87	-9,231.52	6,617.58	160	0.32	0.71	6.49379	uPVC	145	0.02
P-81	41.5	15.366	15.346	3.74593	J-76	J-77	235.9	-9,199.83	6,617.93	160	0.19	0.26	3.74593	uPVC	145	0.01
P-82	19.5	15.346	15.3	3.38056	J-77	J-78	235.91	-9,174.39	6,602.52	110	0.36	1.31	3.38056	HDPE	145	0.03
P-83	4	15.3	15.302	-1.51848	J-78	J-79	235.93	-9,173.83	6,582.80	110	0.16	0.3	1.51848	uPVC	145	0
P-84	44	15.302	15.3	-1.84178	J-79	J-80	235.93	-9,177.44	6,583.91	110	0.19	0.43	1.84178	HDPE	145	0.02
P-85	15	15.3	15.335	-2.84009	J-80	J-81	235.95	-9,221.32	6,588.91	110	0.3	0.95	2.84009	HDPE	145	0.01

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P-86	11	15.288	15.268	-0.03894	J-82	J-83	235.96	-9,245.48	6,568.36	110	0	0	0.03894	HDPE	145	0
P-87	21.5	15.268	15.248	-0.22025	J-83	J-84	235.98	-9,245.48	6,557.53	110	0.02	0.01	0.22025	HDPE	145	0
P-88	32	15.248	15.3	-0.6789	J-84	J-80	236	-9,223.82	6,556.98	110	0.07	0.07	0.6789	HDPE	145	0
P-89	28.5	15.248	15.258	0.17079	J-84	J-85	236	-9,223.82	6,556.98	110	0.02	0.01	0.17079	HDPE	145	0
P-9	63.5	21.243	21.003	5.98929	J-8	J-9	233.95	-9,756.30	6,594.85	110	0.63	3.79	5.98929	HDPE	145	0.24
P-90	9.5	15.268	15.248	0.03368	J-83	J-86	235.98	-9,245.48	6,557.53	110	0	0	0.03368	HDPE	145	0
P-91	131	15.3	15.545	4.357	J-78	J-87	235.93	-9,173.83	6,582.80	110	0.46	2.1	4.357	HDPE	145	0.28
P-92	34	15.545	15.652	3.6726	J-87	J-88	235.41	-9,047.48	6,599.46	110	0.39	1.53	3.6726	HDPE	145	0.05
P-93	65.5	15.652	15.382	0.23001	J-88	J-89	235.25	-9,040.82	6,632.79	110	0.02	0.01	0.23001	HDPE	145	0
P-94	15	15.545	15.465	0.05297	J-87	J-90	235.41	-9,047.48	6,599.46	110	0.01	0	0.05297	HDPE	145	0
P-95	131.5	15.366	16.088	2.03053	J-76	J-91	235.9	-9,199.83	6,617.93	110	0.21	0.51	2.03053	uPVC	145	0.07
P-96	44	16.088	16.343	-5.35646	J-91	J-92	235.11	-9,189.45	6,749.21	110	0.56	3.08	5.35646	uPVC	145	0.14
P-97	107.5	16.343	15.826	1.66512	J-92	J-93	234.99	-9,226.94	6,771.77	110	0.18	0.35	1.66512	uPVC	145	0.04
P-98	19.5	16.343	16.509	-7.29069	J-92	J-94	234.99	-9,226.94	6,771.77	110	0.77	5.45	7.29069	uPVC	145	0.11
P-99	23	16.509	16.674	-9.76047	J-94	J-95	234.93	-9,243.95	6,781.49	125	0.8	5.02	9.76047	HDPE	145	0.12
PP-190	120.5	20.217	20.252	-7.20601	J-135	J-53	233.8	-10,181.50	6,898.63	125	0.59	2.86	7.20601	HDPE	145	0.34
PP-191	386.5	19.87	19.744	-1.35541	PJ-171	J-136	233.12	-10,821.86	6,877.88	110	0.14	0.24	1.35541	HDPE	145	0.09
PP-192	27	19.443	19.443	0.09504	J-160	PJ-172	233.46	-10,500.02	6,466.11	110	0.01	0	0.09504	HDPE	145	0
PP-193	19	20.181	20.251	0.06699	J-150	PJ-173	233.25	-10,399.70	6,458.13	110	0.01	0	0.06699	HDPE	145	0
PP-194	53	19.452	19.372	0.18619	J-165	PJ-174	233.46	-10,510.87	6,553.78	110	0.02	0.01	0.18619	HDPE	145	0
PP-195	51.5	19.402	19.232	0.18093	J-166	PJ-175	233.53	-10,504.97	6,616.61	110	0.02	0.01	0.18093	HDPE	145	0
PP-196	42	20.011	20.051	0.14762	J-147	PJ-176	234.57	-10,096.76	6,535.24	110	0.02	0	0.14762	HDPE	145	0
PP-197	10.5	20.011	20.037	-17.44925	J-147	PJ-177	234.57	-10,096.76	6,535.24	160	0.87	4.42	17.44925	HDPE	145	0.05
PP-198	38.5	20.037	20.117	-12.24801	PJ-177	PJ-178	234.59	-10,091.25	6,544.25	140	0.8	4.4	12.24801	HDPE	145	0.17
PP-199	28.5	20.117	20.161	-2.66311	PJ-178	J-125	234.68	-10,057.84	6,525.24	110	0.28	0.84	2.66311	HDPE	145	0.02
PP-200	21.5	20.161	20.156	-1.32144	J-125	PJ-179	234.66	-10,049.67	6,552.74	110	0.14	0.23	1.32144	HDPE	145	0
PP-201	72	20.156	20.177	-1.87437	PJ-179	J-19	234.67	-10,042.37	6,573.04	110	0.2	0.44	1.87437	HDPE	145	0.03
PP-202	32	20.156	20.235	0.11257	PJ-179	PJ-180	234.67	-10,042.37	6,573.04	110	0.01	0	0.11257	HDPE	145	0
PP-203	21	20.117	20.179	-9.8938	PJ-178	J-126	234.68	-10,057.84	6,525.24	140	0.64	2.96	9.8938	HDPE	145	0.06
PP-204	48.5	20.179	20.168	-2.9385	J-126	PJ-181	234.68	-10,058.55	6,504.42	110	0.31	1.01	2.9385	HDPE	145	0.05
PP-205	42.5	20.168	20.278	0.14938	PJ-181	PJ-182	234.74	-10,055.81	6,456.31	110	0.02	0	0.14938	HDPE	145	0
PP-206	111	20.168	20.149	-3.79645	PJ-181	PJ-183	234.74	-10,055.81	6,456.31	110	0.4	1.63	3.79645	HDPE	145	0.18
PP-207	74.5	20.149	20.629	-2.13017	PJ-183	PJ-184	234.94	-9,944.73	6,461.51	110	0.22	0.56	2.13017	HDPE	145	0.04
PP-208	50	20.629	21.217	-2.56703	PJ-184	PJ-185	234.5	-9,870.10	6,464.64	110	0.27	0.79	2.56703	HDPE	145	0.04
PP-209	39.5	21.217	21.362	-5.87482	PJ-185	J-127	233.95	-9,873.92	6,514.28	110	0.62	3.65	5.87482	HDPE	145	0.14
PP-210	96.5	20.149	21.217	-2.65532	PJ-183	PJ-185	234.94	-9,944.73	6,461.51	110	0.28	0.84	2.65532	HDPE	145	0.08

PP-211	35	21.448	21.551	-9.88015	J-124	J-6	233.95	-9,929.70	6,548.30	140	0.64	2.96	9.88015	HDPE	145	0.1
PP-212	34	21.551	21.335	12.93528	J-6	J-3	233.95	-9,930.25	6,583.08	160	0.64	2.54	12.93528	HDPE	145	0.09
PP-213	44	21.335	21.038	15.03825	J-3	J-17	234.08	-9,928.25	6,616.85	160	0.75	3.36	15.03825	HDPE	145	0.15
PP-214	36	21.415	21.288	8.09818	J-7	J-14	233.95	-9,810.29	6,591.52	125	0.66	3.55	8.09818	HDPE	145	0.13
PP-215	32	21.243	21.192	3.77548	J-8	J-128	233.95	-9,756.30	6,594.85	110	0.4	1.61	3.77548	HDPE	145	0.05
PP-216	31.5	20.949	21.003	2.59495	J-129	J-9	234.03	-9,682.28	6,570.24	110	0.27	0.8	2.59495	HDPE	145	0.03
PP-217	40.5	21.003	20.909	4.60711	J-9	J-12	233.95	-9,693.21	6,599.52	110	0.48	2.33	4.60711	HDPE	145	0.09
PP-218	52	20.909	20.708	8.49051	J-12	J-36	233.95	-9,707.21	6,637.51	125	0.69	3.88	8.49051	HDPE	145	0.2
PP-219	50	20.944	21.22	-10.87278	J-35	J-13	234.05	-9,790.74	6,680.38	140	0.71	3.53	10.87278	HDPE	145	0.18
PP-220	14.5	20.357	20.417	0.05121	J-43	PJ-186	234.17	-9,794.51	6,713.49	110	0.01	0	0.05121	HDPE	145	0
PP-221	32.5	20.711	20.864	2.63766	J-130	J-10	234.19	-9,623.41	6,574.13	110	0.28	0.83	2.63766	HDPE	145	0.03
PP-222	98	20.799	19.817	8.3007	J-11	J-132	233.95	-9,633.01	6,645.28	125	0.68	3.72	8.3007	HDPE	145	0.36
PP-223	22	20.236	20.116	0.07751	J-131	PJ-187	234.34	-9,533.99	6,586.90	110	0.01	0	0.07751	HDPE	145	0
PP-224	73	21.083	20.734	5.91057	J-33	PJ-188	234.04	-9,861.60	6,674.39	110	0.62	3.69	5.91057	HDPE	145	0.27
PP-225	49.5	20.734	20.234	8.71508	PJ-188	J-47	234.12	-9,837.34	6,743.39	125	0.71	4.07	8.71508	HDPE	145	0.2
PP-226	23	20.234	20.201	9.51571	J-47	J-42	234.42	-9,818.51	6,789.02	140	0.62	2.76	9.51571	HDPE	145	0.06
PP-227	52	20.504	20.734	3.41667	J-31	PJ-188	234.42	-9,887.60	6,738.81	110	0.36	1.34	3.41667	HDPE	145	0.07
PP-228	80.5	20.432	21.084	-5.06525	J-20	J-16	234.59	-9,966.68	6,698.16	110	0.53	2.78	5.06525	HDPE	145	0.22
PP-229	76	20.383	20.579	-3.13855	J-21	J-32	234.49	-9,964.68	6,738.14	110	0.33	1.14	3.13855	HDPE	145	0.09
PP-230	58	20.278	20.239	2.35186	J-30	PJ-189	234.44	-9,887.82	6,780.58	110	0.25	0.67	2.35186	HDPE	145	0.04
PP-231	10	20.239	20.237	1.3417	PJ-189	J-28	234.44	-9,925.42	6,807.17	110	0.14	0.24	1.3417	HDPE	145	0
PP-232	34.5	20.237	20.239	-0.65043	J-23	PJ-189	234.44	-9,960.02	6,809.90	110	0.07	0.06	0.65043	HDPE	145	0
PP-233	69	20.226	20.348	2.89498	J-22	J-58	234.51	-10,004.89	6,740.37	110	0.3	0.99	2.89498	HDPE	145	0.07
PP-234	18.5	20.348	20.388	0.06524	J-58	PJ-190	234.32	-10,073.30	6,749.07	110	0.01	0	0.06524	HDPE	145	0
PP-235	45	20.242	20.068	-2.94076	J-60	PJ-191	234.46	-10,054.19	6,690.48	110	0.31	1.01	2.94076	HDPE	145	0.05
PP-236	56	20.068	20.226	1.25703	PJ-191	J-22	234.68	-10,009.59	6,684.38	110	0.13	0.21	1.25703	HDPE	145	0.01
PP-237	45	20.177	20.068	4.71003	J-19	PJ-191	234.68	-10,014.67	6,639.51	110	0.5	2.43	4.71003	HDPE	145	0.11
PP-238	46.5	20.298	20.06	-1.36716	J-56	PJ-192	234.19	-10,041.60	6,884.81	110	0.14	0.25	1.36716	HDPE	145	0.01
PP-239	22.5	20.06	20.021	1.77388	PJ-192	J-52	234.44	-9,995.44	6,881.40	110	0.19	0.4	1.77388	HDPE	145	0.01
PP-240	16	20.021	20.05	3.36983	J-52	J-55	234.47	-9,993.83	6,903.69	110	0.35	1.31	3.36983	HDPE	145	0.02
PP-241	48	20.371	20.129	-1.0719	J-57	PJ-193	234.15	-10,045.21	6,863.70	110	0.11	0.16	1.0719	HDPE	145	0.01
PP-242	21.5	20.129	20.06	3.4587	PJ-193	PJ-192	234.4	-9,997.57	6,860.22	110	0.36	1.37	3.4587	HDPE	145	0.03
PP-243	46	20.129	20.39	-4.93591	PJ-193	J-24	234.4	-9,997.57	6,860.22	110	0.52	2.65	4.93591	HDPE	145	0.12
PP-244	74	20.39	20.226	-3.15826	J-24	J-22	234.26	-10,000.01	6,814.34	110	0.33	1.16	3.15826	HDPE	145	0.09
PP-245	73.5	20.293	20.138	7.93308	J-46	J-50	234.36	-9,849.61	6,789.24	160	0.39	1.03	7.93308	HDPE	145	0.08
PP-246	22	20.082	20.03	4.63161	J-48	PJ-194	234.44	-9,824.36	6,839.50	110	0.49	2.35	4.63161	HDPE	145	0.05

PP-247	12	20.03	20.081	-8.95234	PJ-194	J-49	234.44	-9,822.84	6,861.59	125	0.73	4.28	8.95234	HDPE	145	0.05
PP-248	82.5	20.106	19.782	6.1132	J-51	PJ-195	234.44	-9,891.33	6,899.18	110	0.64	3.93	6.1132	HDPE	145	0.32
PP-249	48.5	19.782	20.03	-13.29434	PJ-195	PJ-194	234.44	-9,820.75	6,909.84	140	0.86	5.12	13.29434	HDPE	145	0.25
PP-250	127	19.782	19.008	18.50264	PJ-195	PJ-196	234.44	-9,820.75	6,909.84	160	0.92	4.93	18.50264	HDPE	145	0.63
PP-251	23.5	19.008	19.093	-13.0282	PJ-196	J-61	234.59	-9,695.10	6,929.63	140	0.85	4.93	13.0282	HDPE	145	0.12
PP-252	31	19.008	18.835	30.89415	PJ-196	PJ-197	234.59	-9,695.10	6,929.63	200	0.98	4.3	30.89415	HDPE	145	0.13
PP-253	14	18.835	18.788	6.91524	PJ-197	J-65	234.63	-9,664.55	6,935.18	125	0.56	2.65	6.91524	HDPE	145	0.04
PP-254	194.5	18.835	17.32	23.13887	PJ-197	PJ-198	234.63	-9,664.55	6,935.18	180	0.91	4.2	23.13887	HDPE	145	0.82
PP-255	74.5	17.32	17.359	16.92253	PJ-198	PJ-199	235.33	-9,470.59	6,950.21	160	0.84	4.18	16.92253	HDPE	145	0.31
PP-256	79	17.359	17.346	15.56675	PJ-199	PJ-200	234.98	-9,401.16	6,976.79	160	0.77	3.58	15.56675	HDPE	145	0.28
PP-257	79	17.346	16.88	12.05078	PJ-200	PJ-201	234.71	-9,327.66	7,005.86	140	0.78	4.27	12.05078	HDPE	145	0.34
PP-258	134.5	16.88	16.395	6.03321	PJ-201	PJ-202	234.84	-9,253.03	7,032.33	110	0.63	3.84	6.03321	HDPE	145	0.52
PP-259	145.5	16.395	16.139	2.81584	PJ-202	PJ-203	234.81	-9,131.10	7,089.17	110	0.3	0.94	2.81584	HDPE	145	0.14
PP-260	113.5	16.139	15.758	1.90744	PJ-203	PJ-204	234.93	-9,000.07	7,152.09	110	0.2	0.45	1.90744	HDPE	145	0.05
PP-261	119	15.758	15.673	3.59953	PJ-204	PJ-205	235.26	-8,964.49	7,044.05	110	0.38	1.47	3.59953	HDPE	145	0.18
PP-262	118	15.673	14.902	1.44597	PJ-205	J-122	235.17	-8,928.47	6,930.37	110	0.15	0.27	1.44597	HDPE	145	0.03
PP-263	151	14.902	14.945	1.15957	J-122	PJ-206	235.91	-8,891.37	6,818.21	110	0.12	0.18	1.15957	HDPE	145	0.03
PP-264	217	14.945	14.458	0.76116	PJ-206	PJ-207	235.84	-8,817.83	6,687.82	110	0.08	0.08	0.76116	HDPE	145	0.02
PP-265	61.5	14.945	15.174	-1.10774	PJ-206	PJ-208	235.84	-8,817.83	6,687.82	110	0.12	0.17	1.10774	HDPE	145	0.01
PP-266	39	15.174	15.254	0.13711	PJ-208	PJ-209	235.62	-8,875.97	6,668.29	110	0.01	0	0.13711	HDPE	145	0
PP-267	27	15.174	15.264	-1.69223	PJ-208	PJ-210	235.62	-8,875.97	6,668.29	110	0.18	0.36	1.69223	HDPE	145	0.01
PP-268	148.5	15.264	14.994	-0.6671	PJ-210	J-121	235.54	-8,902.87	6,668.29	110	0.07	0.07	0.6671	HDPE	145	0.01
PP-270	9	15.35	15.363	-1.77395	PJ-211	J-112	235.49	-8,953.20	6,706.04	110	0.19	0.4	1.77395	HDPE	145	0
PP-271	44	15.25	15.35	0.08365	J-119	PJ-211	235.59	-8,952.55	6,750.09	110	0.01	0	0.08365	HDPE	145	0
PP-272	56.5	15.264	15.438	-1.83887	PJ-210	PJ-212	235.54	-8,902.87	6,668.29	110	0.19	0.43	1.83887	HDPE	145	0.02
PP-273	38.5	15.438	15.35	-1.53643	PJ-212	PJ-211	235.39	-8,959.28	6,667.86	110	0.16	0.3	1.53643	HDPE	145	0.01
PP-274	85.5	15.438	15.568	-0.93563	PJ-212	J-118	235.39	-8,959.28	6,667.86	110	0.1	0.12	0.93563	HDPE	145	0.01
PP-275	16	15.568	15.528	0.05647	J-118	PJ-213	235.27	-8,971.20	6,583.04	110	0.01	0	0.05647	HDPE	145	0
PP-276	28	15.696	15.577	0.09854	J-116	PJ-214	235.17	-9,021.54	6,632.50	110	0.01	0	0.09854	HDPE	145	0
PP-277	33	15.633	15.493	0.11607	J-105	PJ-215	235.32	-9,127.41	6,713.20	110	0.01	0	0.11607	HDPE	145	0
PP-278	49	15.579	15.389	0.17217	J-114	PJ-216	235.31	-9,059.72	6,666.34	110	0.02	0.01	0.17217	HDPE	145	0
PP-279	21.5	15.346	15.426	0.07575	J-77	PJ-217	235.91	-9,174.39	6,602.52	110	0.01	0	0.07575	HDPE	145	0
PP-280	22	15.302	15.272	0.07751	J-79	PJ-218	235.93	-9,177.44	6,583.91	110	0.01	0	0.07751	HDPE	145	0
PP-281	10	15.258	15.278	0.03544	J-85	PJ-219	235.99	-9,206.32	6,565.86	110	0	0	0.03544	HDPE	145	0
PP-282	25	15.335	15.335	0.08802	J-81	PJ-220	235.93	-9,236.04	6,591.41	110	0.01	0	0.08802	HDPE	145	0
PP-283	26.5	15.465	15.335	3.16163	J-74	J-81	235.83	-9,235.22	6,617.71	110	0.33	1.16	3.16163	HDPE	145	0.03

PP-284	36	15.759	15.969	0.12659	J-73	PJ-221	235.6	-9,260.92	6,615.48	110	0.01	0	0.12659	HDPE	145	0
PP-285	46.5	15.419	15.826	-1.12483	J-75	J-93	235.87	-9,231.52	6,617.58	110	0.12	0.17	1.12483	HDPE	145	0.01
PP-286	55.5	16.674	16.474	0.19495	J-95	PJ-222	234.88	-9,263.74	6,793.29	110	0.02	0.01	0.19495	HDPE	145	0
PP-287	57	17.071	17.112	-0.20021	PJ-223	J-68	235.11	-9,465.29	6,726.99	110	0.02	0.01	0.20021	HDPE	145	0
PP-288	101.5	17.302	17.223	6.91493	J-66	PJ-224	235.35	-9,501.44	6,793.12	125	0.56	2.65	6.91493	HDPE	145	0.27
PP-289	40	17.223	17.219	10.97614	PJ-224	PJ-225	235.16	-9,435.09	6,854.73	140	0.71	3.59	10.97614	HDPE	145	0.14
PP-290	42	17.219	17.346	-4.33016	PJ-225	J-67	235.02	-9,426.06	6,815.51	110	0.46	2.08	4.33016	HDPE	145	0.09
PP-291	65	17.219	17.347	14.79055	PJ-225	J-97	235.02	-9,426.06	6,815.51	160	0.74	3.26	14.79055	HDPE	145	0.21
PP-292	102	17.223	17.32	-4.91527	PJ-224	PJ-198	235.16	-9,435.09	6,854.73	110	0.52	2.63	4.91527	HDPE	145	0.27
PP-293	116.5	17.359	17.536	0.40881	PJ-199	PJ-226	234.98	-9,401.16	6,976.79	110	0.04	0.03	0.40881	HDPE	145	0
PP-294	23	17.354	17.346	-2.88102	J-101	PJ-200	234.68	-9,327.39	6,982.67	110	0.3	0.98	2.88102	HDPE	145	0.02
PP-295	103.5	16.88	16.3	4.90582	PJ-201	PJ-227	234.84	-9,253.03	7,032.33	110	0.52	2.62	4.90582	HDPE	145	0.27
PP-296	107.5	16.3	16.561	-0.885	PJ-227	PJ-228	235.15	-9,257.24	6,929.03	110	0.09	0.11	0.885	HDPE	145	0.01
PP-297	28.5	16.561	16.674	-5.51629	PJ-228	J-95	234.9	-9,260.91	6,821.41	110	0.58	3.25	5.51629	HDPE	145	0.09
PP-298	55	15.104	15.324	0.04652	J-120	PJ-229	235.73	-8,954.72	6,814.74	110	0	0	0.04652	HDPE	145	0
PP-299	59.5	15.324	15.585	-0.50992	PJ-229	PJ-230	235.51	-8,962.53	6,869.11	110	0.05	0.04	0.50992	HDPE	145	0
PP-300	40	15.585	15.673	-1.18205	PJ-230	PJ-205	235.25	-8,967.74	6,921.53	110	0.12	0.19	1.18205	HDPE	145	0.01
PP-301	46	15.585	15.755	0.16165	PJ-230	PJ-231	235.25	-8,967.74	6,921.53	110	0.02	0	0.16165	HDPE	145	0
PP-302	22	15.324	15.304	0.07751	PJ-229	PJ-232	235.51	-8,962.53	6,869.11	110	0.01	0	0.07751	HDPE	145	0
PP-303	130.5	15.104	15.264	-2.38697	J-120	J-109	235.73	-8,954.72	6,814.74	110	0.25	0.69	2.38697	HDPE	145	0.09
PP-304	55.5	15.264	15.671	-5.47735	J-109	PJ-233	235.66	-9,085.32	6,812.57	110	0.58	3.21	5.47735	HDPE	145	0.18
PP-305	8.5	15.671	15.701	-0.6623	PJ-233	J-104	235.43	-9,140.96	6,812.70	110	0.07	0.07	0.6623	HDPE	145	0
PP-306	57.5	15.671	16.03	-5.24139	PJ-233	PJ-234	235.43	-9,140.96	6,812.70	110	0.55	2.96	5.24139	HDPE	145	0.17
PP-307	23.5	16.03	16.215	-5.06805	PJ-234	PJ-235	235.24	-9,190.42	6,821.34	110	0.53	2.78	5.06805	HDPE	145	0.07
PP-308	6.5	16.215	16.225	0.67649	PJ-235	J-102	235.12	-9,214.02	6,821.28	110	0.07	0.07	0.67649	HDPE	145	0
PP-309	42	16.509	16.405	2.17316	J-94	PJ-236	234.93	-9,243.95	6,781.49	110	0.23	0.58	2.17316	HDPE	145	0.02
PP-310	21.5	16.405	16.215	5.92547	PJ-236	PJ-235	235.01	-9,235.66	6,821.67	110	0.62	3.71	5.92547	HDPE	145	0.08
PP-311	25.5	16.561	16.405	4.06471	PJ-228	PJ-236	234.9	-9,260.91	6,821.41	110	0.43	1.85	4.06471	HDPE	145	0.05
PP-312	103.5	16.03	16.11	-0.82055	PJ-234	PJ-237	235.24	-9,190.42	6,821.34	110	0.09	0.1	0.82055	HDPE	145	0.01
PP-313	67.5	16.11	16.3	-4.81406	PJ-237	PJ-227	235.17	-9,189.83	6,924.69	110	0.51	2.53	4.81406	HDPE	145	0.17
PP-314	84.5	16.11	16.086	3.09737	PJ-237	PJ-238	235.17	-9,189.83	6,924.69	110	0.33	1.12	3.09737	HDPE	145	0.09
PP-315	47.5	16.086	16.159	2.1325	PJ-238	PJ-239	235.1	-9,133.43	6,972.42	110	0.22	0.56	2.1325	HDPE	145	0.03
PP-316	136	16.159	15.758	2.98439	PJ-239	PJ-204	235	-9,090.04	6,991.94	110	0.31	1.04	2.98439	HDPE	145	0.14
PP-317	105.5	16.395	16.159	1.86547	PJ-202	PJ-239	234.81	-9,131.10	7,089.17	110	0.2	0.44	1.86547	HDPE	145	0.05
PP-318	71.5	16.086	15.915	0.25105	PJ-238	PJ-240	235.1	-9,133.43	6,972.42	110	0.03	0.01	0.25105	HDPE	145	0
PP-319	27	19.365	19.245	-0.09504	PJ-241	J-134	234.55	-9,601.06	6,718.06	110	0.01	0	0.09504	HDPE	145	0

Distribution Network Design Output: Zone 8

PP-320	30	19.245	18.947	3.77474	J-134	J-133	234.67	-9,616.74	6,740.19	110	0.4	1.61	3.77474	HDPE	145	0.05
PP-321	13	20.037	20.068	-5.41898	PJ-177	PJ-242	234.59	-10,091.25	6,544.25	110	0.57	3.15	5.41898	HDPE	145	0.04
PP-322	13	20.068	20.101	-4.78155	PJ-242	PJ-243	234.6	-10,090.18	6,557.28	110	0.5	2.5	4.78155	HDPE	145	0.03
PP-323	40.5	20.101	20.161	-7.34733	PJ-243	J-125	234.6	-10,086.20	6,569.65	125	0.6	2.97	7.34733	HDPE	145	0.12
PP-324	55	20.068	20.165	-0.92178	PJ-242	PJ-244	234.6	-10,090.18	6,557.28	110	0.1	0.12	0.92178	HDPE	145	0.01
PP-325	11	20.165	20.186	-1.15354	PJ-244	PJ-245	234.51	-10,140.09	6,579.89	110	0.12	0.18	1.15354	HDPE	145	0
PP-326	16	20.186	20.139	-1.12346	PJ-245	PJ-246	234.49	-10,136.11	6,590.12	110	0.12	0.17	1.12346	HDPE	145	0
PP-327	14.5	20.139	20.126	-1.97841	PJ-246	PJ-247	234.54	-10,121.18	6,584.15	110	0.21	0.49	1.97841	HDPE	145	0.01
PP-328	12.5	20.126	20.114	-2.16498	PJ-247	PJ-248	234.56	-10,107.67	6,578.46	110	0.23	0.57	2.16498	HDPE	145	0.01
PP-329	10.5	20.114	20.101	-2.34102	PJ-248	PJ-243	234.58	-10,095.87	6,573.77	110	0.25	0.67	2.34102	HDPE	145	0.01
PP-330	13.5	20.114	20.104	0.04771	PJ-248	PJ-249	234.58	-10,095.87	6,573.77	110	0.01	0	0.04771	HDPE	145	0
PP-331	13	20.126	20.126	0.04595	PJ-247	PJ-250	234.56	-10,107.67	6,578.46	110	0	0	0.04595	HDPE	145	0
PP-332	38.5	20.139	20.157	0.61266	PJ-246	PJ-251	234.54	-10,121.18	6,584.15	110	0.06	0.06	0.61266	HDPE	145	0
PP-333	20	20.157	20.207	0.04999	PJ-251	PJ-252	234.52	-10,107.39	6,616.57	110	0.01	0	0.04999	HDPE	145	0
PP-334	14	20.207	20.237	-0.3072	PJ-252	PJ-253	234.47	-10,100.28	6,635.48	110	0.03	0.02	0.3072	HDPE	145	0
PP-335	15.5	20.237	20.277	0.29747	PJ-253	PJ-254	234.44	-10,096.86	6,648.99	110	0.03	0.01	0.29747	HDPE	145	0
PP-336	12	20.277	20.257	0.20068	PJ-254	PJ-255	234.4	-10,111.65	6,652.97	110	0.02	0.01	0.20068	HDPE	145	0
PP-337	21.5	20.257	20.247	0.20477	PJ-255	PJ-256	234.42	-10,115.49	6,641.59	110	0.02	0.01	0.20477	HDPE	145	0
PP-338	34	20.247	20.186	0.24431	PJ-256	PJ-245	234.43	-10,124.02	6,621.83	110	0.03	0.01	0.24431	HDPE	145	0
PP-339	17.5	20.247	20.157	-0.29585	PJ-256	PJ-251	234.43	-10,124.02	6,621.83	110	0.03	0.01	0.29585	HDPE	145	0
PP-340	16.5	20.257	20.207	-0.17976	PJ-255	PJ-252	234.42	-10,115.49	6,641.59	110	0.02	0.01	0.17976	HDPE	145	0
PP-341	48	20.237	20.282	-0.87675	PJ-253	J-59	234.44	-10,096.86	6,648.99	110	0.09	0.11	0.87675	HDPE	145	0.01
	18611.5															

BOQ for Z8								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m	Diameter (mm	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	27.5	110	PVC	355	HDPE	Replacement
P-10	J-9	J-10	64.5	110	PVC	110	uPVC	Retained
P-100	J-95	J-96	101	110	PVC	160	HDPE	Replacement
P-101	J-96	J-97	26	110	PVC	160	HDPE	Replacement
P-102	J-97	J-69	107	110	PVC	110	uPVC	Retained
P-103	J-69	J-98	153	110	PVC	110	uPVC	Retained
P-104	J-98	J-99	42.5	110	PVC	110	uPVC	Retained
P-105	J-99	J-70	141	110	PVC	110	uPVC	Retained
P-106	J-99	J-100	39.5	110	PVC	110	uPVC	Retained
P-107	J-100	J-72	49	110	PVC	110	uPVC	Retained
P-108	J-96	J-101	143	110	PVC	110	uPVC	Retained
P-109	J-92	J-102	46	110	PVC	110	uPVC	Retained
P-11	J-10	J-11	39.5	110	PVC	110	uPVC	Retained
P-110	J-91	J-103	19	110	PVC	110	uPVC	Retained
P-111	J-103	J-104	70	110	PVC	110	uPVC	Retained
P-112	J-103	J-105	52.5	110	PVC	110	uPVC	Retained
P-113	J-105	J-106	12.5	110	PVC	110	uPVC	Retained
P-114	J-106	J-107	42	110	PVC	110	uPVC	Retained
P-115	J-107	J-108	29.5	110	PVC	110	uPVC	Retained
P-116	J-108	J-109	39.5	110	PVC	110	uPVC	Retained
P-117	J-107	J-110	58	110	PVC	110	uPVC	Retained
P-118	J-110	J-111	69.5	75	PVC	110	HDPE	Replacement
P-119	J-111	J-112	18.5	110	PVC	110	uPVC	Retained
P-12	J-11	J-12	74.5	110	PVC	110	uPVC	Retained
P-120	J-106	J-113	47.5	75	PVC	110	HDPE	Replacement
P-121	J-113	J-110	59	75	PVC	110	HDPE	Replacement
P-122	J-113	J-114	22.5	110	PVC	110	uPVC	Retained
P-123	J-114	J-115	30.5	75	PVC	110	HDPE	Replacement
P-124	J-115	J-88	12.5	75	PVC	110	HDPE	Replacement
P-125	J-115	J-116	20.5	75	PVC	110	HDPE	Replacement
P-126	J-116	J-117	11.5	110	PVC	110	uPVC	Retained
P-127	J-117	J-118	59	110	PVC	110	uPVC	Retained
P-128	J-117	J-111	93.5	75	PVC	110	HDPE	Replacement
P-129	J-108	J-119	143.5	110	PVC	110	uPVC	Retained
P-13	J-12	J-13	82.5	110	PVC	125	HDPE	Replacement
P-130	J-119	J-120	64.5	110	PVC	110	uPVC	Retained
P-131	J-120	J-121	34.5	75	PVC	110	HDPE	Replacement
P-132	J-121	J-122	29	75	PVC	110	HDPE	Replacement
P-133	J-1	J-123	43	160	PVC	180	HDPE	Replacement
P-134	J-123	J-124	12.5	110	PVC	110	uPVC	Retained
P-135	J-124	J-125	123	75	PVC	125	HDPE	Replacement
P-136	J-126	J-123	164.5	75	PVC	125	HDPE	Replacement
P-137	J-123	J-127	41.5	160	PVC	180	HDPE	Replacement
P-138	J-127	J-128	123.5	160	PVC	160	uPVC	Retained
P-139	J-128	J-129	71	160	PVC	160	uPVC	Retained
P-14	J-13	J-14	21.5	160	PVC	180	HDPE	Replacement
P-140	J-129	J-130	59	160	PVC	160	uPVC	Retained
P-141	J-130	J-131	90.5	110	PVC	110	uPVC	Retained
P-142	J-131	J-132	67	75	PVC	110	HDPE	Replacement
P-143	J-132	J-133	115	75	PVC	140	HDPE	Replacement
P-144	J-133	J-63	33	75	PVC	160	HDPE	Replacement
P-145	J-62	J-134	69.5	110	PVC	110	uPVC	Retained
P-146	J-135	J-136	254.5	110	PVC	110	uPVC	Retained
P-147	J-136	J-137	159	110	PVC	110	uPVC	Retained
P-148	J-137	J-138	59	110	PVC	110	uPVC	Retained
P-149	J-138	J-139	86.5	110	PVC	110	uPVC	Retained
P-15	J-14	J-2	81	160	PVC	160	uPVC	Retained
P-150	J-139	J-140	23	110	PVC	110	uPVC	Retained
P-151	J-139	J-141	39	110	PVC	110	uPVC	Retained

BOQ for Z8								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m	Diameter (mm	Material	Diameter (mm)	Material	Status
P-152	J-141	J-142	46.5	110	PVC	110	uPVC	Retained
P-153	J-142	J-143	51.5	110	PVC	110	uPVC	Retained
P-154	J-143	J-144	38	110	PVC	110	uPVC	Retained
P-155	J-144	J-145	49	110	PVC	110	uPVC	Retained
P-156	J-145	J-146	98.5	110	PVC	125	HDPE	Replacement
P-157	J-146	J-147	85	110	PVC	160	HDPE	Replacement
P-158	J-146	J-148	131	110	PVC	110	uPVC	Retained
P-159	J-148	J-149	52.5	110	PVC	110	uPVC	Retained
P-16	J-2	J-15	53	160	PVC	250	HDPE	Replacement
P-160	J-149	J-150	88	160	PVC	160	uPVC	Retained
P-161	J-150	J-151	82	110	PVC	110	uPVC	Retained
P-162	J-151	J-143	51	110	PVC	110	uPVC	Retained
P-163	J-144	J-149	68.5	110	PVC	110	uPVC	Retained
P-164	J-145	J-148	56.5	110	PVC	110	uPVC	Retained
P-165	J-151	J-152	63.5	110	PVC	110	uPVC	Retained
P-166	J-152	J-153	74	110	PVC	110	uPVC	Retained
P-167	J-153	J-154	42	110	PVC	110	uPVC	Retained
P-168	J-153	J-155	42.5	110	PVC	110	uPVC	Retained
P-169	J-155	J-156	17.5	110	PVC	110	uPVC	Retained
P-17	J-15	J-16	19	110	PVC	110	uPVC	Retained
P-170	J-156	J-157	41	110	PVC	110	uPVC	Retained
P-171	J-157	J-158	33.5	110	PVC	110	uPVC	Retained
P-172	J-158	J-159	60.5	110	PVC	110	uPVC	Retained
P-173	J-159	J-160	15.5	110	PVC	110	uPVC	Retained
P-174	J-160	J-155	18	110	PVC	110	uPVC	Retained
P-175	J-158	J-161	79.5	110	PVC	110	uPVC	Retained
P-176	J-161	J-162	36	110	PVC	110	uPVC	Retained
P-177	J-162	J-163	44	110	PVC	110	uPVC	Retained
P-178	J-161	J-164	57.5	110	PVC	110	uPVC	Retained
P-179	J-156	J-165	69	110	PVC	110	uPVC	Retained
P-18	J-16	J-17	20.5	110	PVC	110	uPVC	Retained
P-180	J-165	J-166	63	110	PVC	110	uPVC	Retained
P-181	J-166	J-167	97	110	PVC	110	uPVC	Retained
P-182	J-167	J-137	64	110	PVC	110	uPVC	Retained
P-183	J-167	J-168	68.5	110	PVC	110	uPVC	Retained
P-184	J-168	J-152	50	110	PVC	110	uPVC	Retained
P-185	J-168	J-169	56	110	PVC	110	uPVC	Retained
P-186	J-169	J-142	65	110	PVC	110	uPVC	Retained
P-187	J-169	J-170	71.5	110	PVC	110	uPVC	Retained
P-188	J-170	J-138	42.5	110	PVC	110	uPVC	Retained
P-189	J-170	J-141	79	110	PVC	110	uPVC	Retained
P-19	J-17	J-18	43	75	PVC	140	HDPE	Replacement
P-2	J-1	J-2	34	160	PVC	250	HDPE	Replacement
P-20	J-18	J-19	46.5	75	PVC	110	HDPE	Replacement
P-21	J-18	J-20	48	75	PVC	110	HDPE	Replacement
P-22	J-20	J-21	40	75	PVC	125	HDPE	Replacement
P-23	J-21	J-22	40.5	75	PVC	110	HDPE	Replacement
P-24	J-21	J-23	72	75	PVC	110	HDPE	Replacement
P-25	J-23	J-24	40	75	PVC	110	HDPE	Replacement
P-26	J-23	J-25	58.5	75	PVC	110	HDPE	Replacement
P-27	J-25	J-26	67.5	75	PVC	110	HDPE	Replacement
P-28	J-26	J-27	61	160	PVC	160	uPVC	Retained
P-29	J-27	J-28	27	110	PVC	110	uPVC	Retained
P-3	J-2	J-3	37	160	PVC	160	uPVC	Retained
P-30	J-27	J-29	14	160	PVC	160	uPVC	Retained
P-31	J-29	J-30	8.5	110	PVC	160	HDPE	Replacement
P-32	J-30	J-31	42	160	PVC	160	uPVC	Retained
P-33	J-31	J-32	9	160	PVC	180	HDPE	Replacement
P-34	J-32	J-15	57.5	160	PVC	180	HDPE	Replacement
P-35	J-15	J-33	28.5	160	PVC	160	uPVC	Retained

BOQ for Z8								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m	Diameter (mm	Material	Diameter (mm)	Material	Status
P-36	J-33	J-34	53.5	160	PVC	160	uPVC	Retained
P-37	J-34	J-35	17.5	110	PVC	110	uPVC	Retained
P-38	J-35	J-36	63.5	110	PVC	140	HDPE	Replacement
P-39	J-36	J-37	28.5	110	PVC	180	HDPE	Replacement
P-4	J-3	J-4	51	75	PVC	110	HDPE	Replacement
P-40	J-37	J-38	50.5	110	PVC	160	HDPE	Replacement
P-41	J-38	J-39	55	110	PVC	110	uPVC	Retained
P-42	J-39	J-40	53	110	PVC	140	HDPE	Replacement
P-43	J-40	J-41	34	110	PVC	110	uPVC	Retained
P-44	J-41	J-42	31	110	PVC	110	uPVC	Retained
P-45	J-42	J-43	75	110	PVC	110	uPVC	Retained
P-46	J-43	J-44	18	110	PVC	110	uPVC	Retained
P-47	J-44	J-37	53.5	110	PVC	110	uPVC	Retained
P-48	J-44	J-45	69	110	PVC	110	uPVC	Retained
P-49	J-45	J-40	37.5	110	PVC	110	uPVC	Retained
P-5	J-5	J-6	44	75	PVC	110	HDPE	Replacement
P-50	J-29	J-46	38.5	160	PVC	160	uPVC	Retained
P-51	J-46	J-47	31	160	PVC	160	uPVC	Retained
P-52	J-47	J-48	51	110	PVC	110	uPVC	Retained
P-53	J-49	J-50	13	110	PVC	125	HDPE	Replacement
P-54	J-50	J-26	42.5	110	PVC	110	uPVC	Retained
P-55	J-26	J-51	35	160	PVC	160	uPVC	Retained
P-56	J-51	J-52	102.5	75	PVC	110	HDPE	Replacement
P-57	J-53	J-54	22.5	110	PVC	125	HDPE	Replacement
P-58	J-54	J-55	29	110	PVC	110	uPVC	Retained
P-59	J-54	J-56	21.5	110	PVC	110	uPVC	Retained
P-6	J-6	J-1	39	160	PVC	200	HDPE	Replacement
P-60	J-56	J-57	21.5	110	PVC	110	uPVC	Retained
P-61	J-57	J-58	118	110	PVC	110	uPVC	Retained
P-62	J-58	J-59	57	110	PVC	110	uPVC	Retained
P-63	J-59	J-60	23	110	PVC	110	uPVC	Retained
P-64	J-34	J-47	110.5	110	PVC	125	HDPE	Replacement
P-65	J-39	J-61	89	110	PVC	140	HDPE	Replacement
P-66	J-38	J-62	46.5	110	PVC	140	HDPE	Replacement
P-67	J-62	J-63	79.5	110	PVC	125	HDPE	Replacement
P-68	J-63	J-64	101.5	75	PVC	180	HDPE	Replacement
P-69	J-64	J-65	45	75	PVC	125	HDPE	Replacement
P-7	J-1	J-7	81.5	160	PVC	180	HDPE	Replacement
P-70	J-64	J-66	175	160	PVC	200	HDPE	Replacement
P-71	J-66	J-67	95	160	PVC	180	HDPE	Replacement
P-72	J-67	J-68	39.5	160	PVC	160	uPVC	Retained
P-73	J-68	J-69	43	110	PVC	160	HDPE	Replacement
P-74	J-69	J-70	49.5	110	PVC	125	HDPE	Replacement
P-75	J-70	J-71	35	110	PVC	110	uPVC	Retained
P-76	J-71	J-72	90.5	110	PVC	110	uPVC	Retained
P-77	J-72	J-73	34	110	PVC	140	HDPE	Replacement
P-78	J-73	J-74	26	110	PVC	140	HDPE	Replacement
P-79	J-74	J-75	3.5	110	PVC	125	HDPE	Replacement
P-8	J-7	J-8	54	110	PVC	140	HDPE	Replacement
P-80	J-75	J-76	31.5	160	PVC	160	uPVC	Retained
P-81	J-76	J-77	41.5	160	PVC	160	uPVC	Retained
P-82	J-77	J-78	19.5	75	PVC	110	HDPE	Replacement
P-83	J-78	J-79	4	110	PVC	110	uPVC	Retained
P-84	J-79	J-80	44	75	PVC	110	HDPE	Replacement
P-85	J-80	J-81	15	75	PVC	110	HDPE	Replacement
P-86	J-82	J-83	11	75	PVC	110	HDPE	Replacement
P-87	J-83	J-84	21.5	75	PVC	110	HDPE	Replacement
P-88	J-84	J-80	32	75	PVC	110	HDPE	Replacement
P-89	J-84	J-85	28.5	75	PVC	110	HDPE	Replacement
P-9	J-8	J-9	63.5	110	PVC	110	uPVC	Retained

BOQ for Z8								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m	Diameter (mm	Material	Diameter (mm)	Material	Status
P-90	J-83	J-86	9.5	75	PVC	110	HDPE	Replacement
P-91	J-78	J-87	131	75	PVC	110	HDPE	Replacement
P-92	J-87	J-88	34	75	PVC	110	HDPE	Replacement
P-93	J-88	J-89	65.5	75	PVC	110	HDPE	Replacement
P-94	J-87	J-90	15	75	PVC	110	HDPE	Replacement
P-95	J-76	J-91	131.5	110	PVC	110	uPVC	Retained
P-96	J-91	J-92	44	110	PVC	110	uPVC	Retained
P-97	J-92	J-93	107.5	110	PVC	110	uPVC	Retained
P-98	J-92	J-94	19.5	110	PVC	110	uPVC	Retained
P-99	J-94	J-95	23	110	PVC	125	HDPE	Replacement
PP-190	J-135	J-53	120.5	#N/A	#N/A	125	HDPE	New
PP-191	PJ-171	J-136	386.5	#N/A	#N/A	110	HDPE	New
PP-192	J-160	PJ-172	27	#N/A	#N/A	110	HDPE	New
PP-193	J-150	PJ-173	19	#N/A	#N/A	110	HDPE	New
PP-194	J-165	PJ-174	53	#N/A	#N/A	110	HDPE	New
PP-195	J-166	PJ-175	51.5	#N/A	#N/A	110	HDPE	New
PP-196	J-147	PJ-176	42	#N/A	#N/A	110	HDPE	New
PP-197	J-147	PJ-177	10.5	#N/A	#N/A	160	HDPE	New
PP-198	PJ-177	PJ-178	38.5	#N/A	#N/A	140	HDPE	New
PP-199	PJ-178	J-125	28.5	#N/A	#N/A	110	HDPE	New
PP-200	J-125	PJ-179	21.5	#N/A	#N/A	110	HDPE	New
PP-201	PJ-179	J-19	72	#N/A	#N/A	110	HDPE	New
PP-202	PJ-179	PJ-180	32	#N/A	#N/A	110	HDPE	New
PP-203	PJ-178	J-126	21	#N/A	#N/A	140	HDPE	New
PP-204	J-126	PJ-181	48.5	#N/A	#N/A	110	HDPE	New
PP-205	PJ-181	PJ-182	42.5	#N/A	#N/A	110	HDPE	New
PP-206	PJ-181	PJ-183	111	#N/A	#N/A	110	HDPE	New
PP-207	PJ-183	PJ-184	74.5	#N/A	#N/A	110	HDPE	New
PP-208	PJ-184	PJ-185	50	#N/A	#N/A	110	HDPE	New
PP-209	PJ-185	J-127	39.5	#N/A	#N/A	110	HDPE	New
PP-210	PJ-183	PJ-185	96.5	#N/A	#N/A	110	HDPE	New
PP-211	J-124	J-6	35	#N/A	#N/A	140	HDPE	New
PP-212	J-6	J-3	34	#N/A	#N/A	160	HDPE	New
PP-213	J-3	J-17	44	#N/A	#N/A	160	HDPE	New
PP-214	J-7	J-14	36	#N/A	#N/A	125	HDPE	New
PP-215	J-8	J-128	32	#N/A	#N/A	110	HDPE	New
PP-216	J-129	J-9	31.5	#N/A	#N/A	110	HDPE	New
PP-217	J-9	J-12	40.5	#N/A	#N/A	110	HDPE	New
PP-218	J-12	J-36	52	#N/A	#N/A	125	HDPE	New
PP-219	J-35	J-13	50	#N/A	#N/A	140	HDPE	New
PP-220	J-43	PJ-186	14.5	#N/A	#N/A	110	HDPE	New
PP-221	J-130	J-10	32.5	#N/A	#N/A	110	HDPE	New
PP-222	J-11	J-132	98	#N/A	#N/A	125	HDPE	New
PP-223	J-131	PJ-187	22	#N/A	#N/A	110	HDPE	New
PP-224	J-33	PJ-188	73	#N/A	#N/A	110	HDPE	New
PP-225	PJ-188	J-47	49.5	#N/A	#N/A	125	HDPE	New
PP-226	J-47	J-42	23	#N/A	#N/A	140	HDPE	New
PP-227	J-31	PJ-188	52	#N/A	#N/A	110	HDPE	New
PP-228	J-20	J-16	80.5	#N/A	#N/A	110	HDPE	New
PP-229	J-21	J-32	76	#N/A	#N/A	110	HDPE	New
PP-230	J-30	PJ-189	58	#N/A	#N/A	110	HDPE	New
PP-231	PJ-189	J-28	10	#N/A	#N/A	110	HDPE	New
PP-232	J-23	PJ-189	34.5	#N/A	#N/A	110	HDPE	New
PP-233	J-22	J-58	69	#N/A	#N/A	110	HDPE	New
PP-234	J-58	PJ-190	18.5	#N/A	#N/A	110	HDPE	New
PP-235	J-60	PJ-191	45	#N/A	#N/A	110	HDPE	New
PP-236	PJ-191	J-22	56	#N/A	#N/A	110	HDPE	New
PP-237	J-19	PJ-191	45	#N/A	#N/A	110	HDPE	New
PP-238	J-56	PJ-192	46.5	#N/A	#N/A	110	HDPE	New
PP-239	PJ-192	J-52	22.5	#N/A	#N/A	110	HDPE	New

BOQ for Z8								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-240	J-52	J-55	16	#N/A	#N/A	110	HDPE	New
PP-241	J-57	PJ-193	48	#N/A	#N/A	110	HDPE	New
PP-242	PJ-193	PJ-192	21.5	#N/A	#N/A	110	HDPE	New
PP-243	PJ-193	J-24	46	#N/A	#N/A	110	HDPE	New
PP-244	J-24	J-22	74	#N/A	#N/A	110	HDPE	New
PP-245	J-46	J-50	73.5	#N/A	#N/A	160	HDPE	New
PP-246	J-48	PJ-194	22	#N/A	#N/A	110	HDPE	New
PP-247	PJ-194	J-49	12	#N/A	#N/A	125	HDPE	New
PP-248	J-51	PJ-195	82.5	#N/A	#N/A	110	HDPE	New
PP-249	PJ-195	PJ-194	48.5	#N/A	#N/A	140	HDPE	New
PP-250	PJ-195	PJ-196	127	#N/A	#N/A	160	HDPE	New
PP-251	PJ-196	J-61	23.5	#N/A	#N/A	140	HDPE	New
PP-252	PJ-196	PJ-197	31	#N/A	#N/A	200	HDPE	New
PP-253	PJ-197	J-65	14	#N/A	#N/A	125	HDPE	New
PP-254	PJ-197	PJ-198	194.5	#N/A	#N/A	180	HDPE	New
PP-255	PJ-198	PJ-199	74.5	#N/A	#N/A	160	HDPE	New
PP-256	PJ-199	PJ-200	79	#N/A	#N/A	160	HDPE	New
PP-257	PJ-200	PJ-201	79	#N/A	#N/A	140	HDPE	New
PP-258	PJ-201	PJ-202	134.5	#N/A	#N/A	110	HDPE	New
PP-259	PJ-202	PJ-203	145.5	#N/A	#N/A	110	HDPE	New
PP-260	PJ-203	PJ-204	113.5	#N/A	#N/A	110	HDPE	New
PP-261	PJ-204	PJ-205	119	#N/A	#N/A	110	HDPE	New
PP-262	PJ-205	J-122	118	#N/A	#N/A	110	HDPE	New
PP-263	J-122	PJ-206	151	#N/A	#N/A	110	HDPE	New
PP-264	PJ-206	PJ-207	217	#N/A	#N/A	110	HDPE	New
PP-265	PJ-206	PJ-208	61.5	#N/A	#N/A	110	HDPE	New
PP-266	PJ-208	PJ-209	39	#N/A	#N/A	110	HDPE	New
PP-267	PJ-208	PJ-210	27	#N/A	#N/A	110	HDPE	New
PP-268	PJ-210	J-121	148.5	#N/A	#N/A	110	HDPE	New
PP-270	PJ-211	J-112	9	#N/A	#N/A	110	HDPE	New
PP-271	J-119	PJ-211	44	#N/A	#N/A	110	HDPE	New
PP-272	PJ-210	PJ-212	56.5	#N/A	#N/A	110	HDPE	New
PP-273	PJ-212	PJ-211	38.5	#N/A	#N/A	110	HDPE	New
PP-274	PJ-212	J-118	85.5	#N/A	#N/A	110	HDPE	New
PP-275	J-118	PJ-213	16	#N/A	#N/A	110	HDPE	New
PP-276	J-116	PJ-214	28	#N/A	#N/A	110	HDPE	New
PP-277	J-105	PJ-215	33	#N/A	#N/A	110	HDPE	New
PP-278	J-114	PJ-216	49	#N/A	#N/A	110	HDPE	New
PP-279	J-77	PJ-217	21.5	#N/A	#N/A	110	HDPE	New
PP-280	J-79	PJ-218	22	#N/A	#N/A	110	HDPE	New
PP-281	J-85	PJ-219	10	#N/A	#N/A	110	HDPE	New
PP-282	J-81	PJ-220	25	#N/A	#N/A	110	HDPE	New
PP-283	J-74	J-81	26.5	#N/A	#N/A	110	HDPE	New
PP-284	J-73	PJ-221	36	#N/A	#N/A	110	HDPE	New
PP-285	J-75	J-93	46.5	#N/A	#N/A	110	HDPE	New
PP-286	J-95	PJ-222	55.5	#N/A	#N/A	110	HDPE	New
PP-287	PJ-223	J-68	57	#N/A	#N/A	110	HDPE	New
PP-288	J-66	PJ-224	101.5	#N/A	#N/A	125	HDPE	New
PP-289	PJ-224	PJ-225	40	#N/A	#N/A	140	HDPE	New
PP-290	PJ-225	J-67	42	#N/A	#N/A	110	HDPE	New
PP-291	PJ-225	J-97	65	#N/A	#N/A	160	HDPE	New
PP-292	PJ-224	PJ-198	102	#N/A	#N/A	110	HDPE	New
PP-293	PJ-199	PJ-226	116.5	#N/A	#N/A	110	HDPE	New
PP-294	J-101	PJ-200	23	#N/A	#N/A	110	HDPE	New
PP-295	PJ-201	PJ-227	103.5	#N/A	#N/A	110	HDPE	New
PP-296	PJ-227	PJ-228	107.5	#N/A	#N/A	110	HDPE	New
PP-297	PJ-228	J-95	28.5	#N/A	#N/A	110	HDPE	New
PP-298	J-120	PJ-229	55	#N/A	#N/A	110	HDPE	New
PP-299	PJ-229	PJ-230	59.5	#N/A	#N/A	110	HDPE	New
PP-300	PJ-230	PJ-205	40	#N/A	#N/A	110	HDPE	New

BOQ for Z8								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-301	PJ-230	PJ-231	46	#N/A	#N/A	110	HDPE	New
PP-302	PJ-229	PJ-232	22	#N/A	#N/A	110	HDPE	New
PP-303	J-120	J-109	130.5	#N/A	#N/A	110	HDPE	New
PP-304	J-109	PJ-233	55.5	#N/A	#N/A	110	HDPE	New
PP-305	PJ-233	J-104	8.5	#N/A	#N/A	110	HDPE	New
PP-306	PJ-233	PJ-234	57.5	#N/A	#N/A	110	HDPE	New
PP-307	PJ-234	PJ-235	23.5	#N/A	#N/A	110	HDPE	New
PP-308	PJ-235	J-102	6.5	#N/A	#N/A	110	HDPE	New
PP-309	J-94	PJ-236	42	#N/A	#N/A	110	HDPE	New
PP-310	PJ-236	PJ-235	21.5	#N/A	#N/A	110	HDPE	New
PP-311	PJ-228	PJ-236	25.5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-234	PJ-237	103.5	#N/A	#N/A	110	HDPE	New
PP-313	PJ-237	PJ-227	67.5	#N/A	#N/A	110	HDPE	New
PP-314	PJ-237	PJ-238	84.5	#N/A	#N/A	110	HDPE	New
PP-315	PJ-238	PJ-239	47.5	#N/A	#N/A	110	HDPE	New
PP-316	PJ-239	PJ-204	136	#N/A	#N/A	110	HDPE	New
PP-317	PJ-202	PJ-239	105.5	#N/A	#N/A	110	HDPE	New
PP-318	PJ-238	PJ-240	71.5	#N/A	#N/A	110	HDPE	New
PP-319	PJ-241	J-134	27	#N/A	#N/A	110	HDPE	New
PP-320	J-134	J-133	30	#N/A	#N/A	110	HDPE	New
PP-321	PJ-177	PJ-242	13	#N/A	#N/A	110	HDPE	New
PP-322	PJ-242	PJ-243	13	#N/A	#N/A	110	HDPE	New
PP-323	PJ-243	J-125	40.5	#N/A	#N/A	125	HDPE	New
PP-324	PJ-242	PJ-244	55	#N/A	#N/A	110	HDPE	New
PP-325	PJ-244	PJ-245	11	#N/A	#N/A	110	HDPE	New
PP-326	PJ-245	PJ-246	16	#N/A	#N/A	110	HDPE	New
PP-327	PJ-246	PJ-247	14.5	#N/A	#N/A	110	HDPE	New
PP-328	PJ-247	PJ-248	12.5	#N/A	#N/A	110	HDPE	New
PP-329	PJ-248	PJ-243	10.5	#N/A	#N/A	110	HDPE	New
PP-330	PJ-248	PJ-249	13.5	#N/A	#N/A	110	HDPE	New
PP-331	PJ-247	PJ-250	13	#N/A	#N/A	110	HDPE	New
PP-332	PJ-246	PJ-251	38.5	#N/A	#N/A	110	HDPE	New
PP-333	PJ-251	PJ-252	20	#N/A	#N/A	110	HDPE	New
PP-334	PJ-252	PJ-253	14	#N/A	#N/A	110	HDPE	New
PP-335	PJ-253	PJ-254	15.5	#N/A	#N/A	110	HDPE	New
PP-336	PJ-254	PJ-255	12	#N/A	#N/A	110	HDPE	New
PP-337	PJ-255	PJ-256	21.5	#N/A	#N/A	110	HDPE	New
PP-338	PJ-256	PJ-245	34	#N/A	#N/A	110	HDPE	New
PP-339	PJ-256	PJ-251	17.5	#N/A	#N/A	110	HDPE	New
PP-340	PJ-255	PJ-252	16.5	#N/A	#N/A	110	HDPE	New
PP-341	PJ-253	J-59	48	#N/A	#N/A	110	HDPE	New
			18611.50					

Zone -9

Distribution Network Design Output: Zone 9

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	51	26.162	25.641	10.25005	J-1	J-2	233.22	-10,114.21	7,912.10	110	1.08	10.24	10.25005	HDPE	145	0.52
P-10	22	24.972	24.94	-1.65962	J-11	J-12	233.42	-10,365.05	7,680.77	110	0.17	0.35	1.65962	uPVC	145	0.01
P-100	71	25.523	25.639	0.57671	J-84	J-88	232.6	-10,592.50	7,327.33	110	0.06	0.05	0.57671	HDPE	145	0
P-101	8.5	25.639	25.599	0.11938	J-88	J-89	232.48	-10,652.28	7,365.41	110	0.01	0	0.11938	HDPE	145	0
P-102	89.5	25.639	25.226	-1.18262	J-88	J-90	232.48	-10,652.28	7,365.41	110	0.12	0.19	1.18262	HDPE	145	0.02
P-103	67.5	25.226	24.424	0.61387	J-90	J-86	232.91	-10,598.65	7,437.07	110	0.06	0.06	0.61387	HDPE	145	0
P-104	111.5	25.639	25.867	0.83659	J-88	J-91	232.48	-10,652.28	7,365.41	110	0.09	0.1	0.83659	HDPE	145	0.01
P-105	76	25.867	25.88	-1.09308	J-91	J-83	232.24	-10,694.05	7,264.69	110	0.12	0.16	1.09308	HDPE	145	0.01
P-106	38.5	25.867	25.759	1.28238	J-91	J-92	232.24	-10,694.05	7,264.69	110	0.13	0.22	1.28238	HDPE	145	0.01
P-107	43.5	25.759	25.509	0.20177	J-92	J-93	232.34	-10,732.54	7,262.23	110	0.02	0.01	0.20177	HDPE	145	0
P-108	46.5	25.003	25.054	-3.05237	J-81	J-94	233.22	-10,371.81	7,310.95	110	0.32	1.09	3.05237	HDPE	145	0.05
P-109	44.5	25.054	25.147	-4.83615	J-94	J-95	233.22	-10,326.34	7,321.72	110	0.51	2.55	4.83615	HDPE	145	0.11
P-11	67.5	24.94	25.173	-1.64657	J-12	J-13	233.46	-10,343.30	7,682.08	110	0.17	0.35	1.64657	uPVC	145	0.02
P-110	39	25.147	25.15	1.8647	J-95	J-96	233.24	-10,282.94	7,331.55	110	0.2	0.44	1.8647	HDPE	145	0.02
P-111	25	25.15	25.147	0.89865	J-96	J-97	233.22	-10,285.39	7,370.44	110	0.09	0.11	0.89865	HDPE	145	0
P-112	5	25.147	25.146	1.07971	J-97	J-98	233.22	-10,288.67	7,395.01	110	0.11	0.16	1.07971	HDPE	145	0
P-113	67	25.147	25.15	-0.52774	J-97	J-96	233.22	-10,288.67	7,395.01	110	0.06	0.04	0.52774	HDPE	145	0
P-114	66.5	25.147	24.766	-7.13049	J-95	J-99	233.24	-10,282.94	7,331.55	110	0.75	5.23	7.13049	HDPE	145	0.35
P-115	6	24.766	24.65	-4.64539	J-99	J-100	233.97	-10,216.61	7,335.23	110	0.49	2.37	4.64539	HDPE	145	0.01
P-116	20.5	24.65	24.282	-4.80163	J-100	J-101	234.1	-10,210.46	7,335.64	110	0.51	2.51	4.80163	HDPE	145	0.05
P-117	37.5	24.282	23.561	-3.31789	J-101	J-102	234.52	-10,189.99	7,336.46	110	0.35	1.27	3.31789	HDPE	145	0.05
P-118	16.5	23.561	23.306	-2.67635	J-102	J-103	235.29	-10,152.73	7,339.33	110	0.28	0.85	2.67635	HDPE	145	0.01
P-119	9.5	23.306	23.133	-2.36631	J-103	J-104	235.56	-10,136.35	7,338.51	110	0.25	0.68	2.36631	HDPE	145	0.01
P-12	41	25.125	25.273	-3.18303	J-14	J-15	233.35	-10,263.90	7,673.43	110	0.33	1.17	3.18303	HDPE	145	0.05
P-120	87	23.133	21.451	-4.11485	J-104	J-105	235.74	-10,126.93	7,339.33	110	0.43	1.89	4.11485	HDPE	145	0.16
P-121	8	21.451	21.3	-4.67077	J-105	J-106	237.59	-10,042.59	7,357.34	110	0.49	2.39	4.67077	HDPE	145	0.02
P-122	16	21.3	21.012	-4.88857	J-106	J-107	237.76	-10,034.81	7,359.80	110	0.51	2.6	4.88857	HDPE	145	0.04
P-123	23.5	21.012	21.312	-8.95741	J-107	J-108	238.09	-10,019.66	7,364.30	125	0.73	4.28	8.95741	HDPE	145	0.1
P-124	17.5	21.312	21.48	-7.04401	J-108	J-109	237.89	-10,011.06	7,386.00	125	0.57	2.74	7.04401	HDPE	145	0.05

P-125	31.5	21.48	20.992	-8.35476	J-109	J-110	237.77	-9,997.96	7,397.88	110	0.88	7.01	8.35476	HDPE	145	0.22
P-126	24	20.992	20.162	-7.20122	J-110	J-111	238.48	-9,977.07	7,421.63	125	0.59	2.86	7.20122	HDPE	145	0.07
P-127	10.5	20.162	20.253	-7.37464	J-111	J-112	239.38	-9,967.25	7,443.33	125	0.6	2.99	7.37464	HDPE	145	0.03
P-128	37.5	20.253	19.09	2.83034	J-112	J-113	239.32	-9,961.52	7,451.93	110	0.3	0.95	2.83034	uPVC	145	0.04
P-129	35.5	19.09	17.027	2.54666	J-113	J-114	240.45	-9,991.82	7,471.17	110	0.27	0.78	2.54666	uPVC	145	0.03
P-13	111	25.273	25.058	-5.94459	J-15	J-16	233.25	-10,223.02	7,676.05	110	0.63	3.73	5.94459	HDPE	145	0.41
P-130	43	17.027	17.896	7.54065	J-114	J-115	242.49	-10,020.07	7,491.23	110	0.79	5.8	7.54065	HDPE	145	0.25
P-131	52.5	17.896	20.944	2.70283	J-115	J-116	241.37	-10,022.11	7,448.24	110	0.28	0.87	2.70283	HDPE	145	0.05
P-132	18.5	20.944	21.312	2.19277	J-116	J-108	238.27	-10,025.39	7,396.65	110	0.23	0.59	2.19277	HDPE	145	0.01
P-133	33.5	20.944	20.784	0.21073	J-116	J-117	238.27	-10,025.39	7,396.65	110	0.02	0.01	0.21073	HDPE	145	0
P-134	8.5	20.784	21.123	0.02442	J-117	J-118	238.43	-10,058.16	7,404.52	110	0	0	0.02442	HDPE	145	0
P-135	10.5	17.896	18.491	4.53418	J-115	J-119	241.37	-10,022.11	7,448.24	110	0.48	2.26	4.53418	HDPE	145	0.02
P-136	37.5	18.491	20.648	4.34214	J-119	J-120	240.75	-10,031.95	7,451.16	110	0.46	2.09	4.34214	HDPE	145	0.08
P-137	12	20.648	20.499	-0.86141	J-120	J-121	238.51	-10,067.33	7,463.48	110	0.09	0.1	0.86141	HDPE	145	0
P-138	18	20.648	20.898	5.01017	J-120	J-122	238.51	-10,067.33	7,463.48	110	0.53	2.72	5.01017	HDPE	145	0.05
P-139	16.5	20.898	21.067	4.78807	J-122	J-123	238.21	-10,073.88	7,446.45	110	0.5	2.5	4.78807	HDPE	145	0.04
P-14	68	25.058	25.368	-11.274	J-16	J-17	233.88	-10,112.96	7,667.41	110	1.19	12.22	11.27396	HDPE	145	0.83
P-140	11	21.067	21.202	4.55165	J-123	J-124	238	-10,078.86	7,430.46	110	0.48	2.28	4.55165	HDPE	145	0.03
P-141	22	21.202	22.509	4.04194	J-124	J-125	237.84	-10,082.53	7,419.98	110	0.43	1.83	4.04194	HDPE	145	0.04
P-142	39	21.202	21.88	0.30345	J-124	J-126	237.84	-10,082.53	7,419.98	110	0.03	0.02	0.30345	HDPE	145	0
P-143	58	21.88	21.451	-0.11768	J-126	J-105	237.16	-10,090.65	7,382.51	110	0.01	0	0.11768	HDPE	145	0
P-144	44.5	21.012	21.727	3.8282	J-107	J-127	238.09	-10,019.66	7,364.30	110	0.4	1.65	3.8282	HDPE	145	0.07
P-145	36	21.727	22.215	3.53737	J-127	J-128	237.3	-10,016.49	7,320.14	110	0.37	1.43	3.53737	HDPE	145	0.05
P-146	32.5	22.215	22.354	0.08635	J-128	J-129	236.76	-10,008.37	7,285.29	110	0.01	0	0.08635	HDPE	145	0
P-147	44.5	22.354	23.679	1.45923	J-129	J-130	236.62	-9,993.69	7,256.20	110	0.15	0.28	1.45923	HDPE	145	0.01
P-148	11	23.679	24.047	0.94487	J-130	J-131	235.28	-9,984.00	7,212.96	110	0.1	0.12	0.94487	HDPE	145	0
P-149	14.5	24.047	24.054	-1.8469	J-131	J-132	234.91	-9,985.05	7,202.22	110	0.19	0.43	1.8469	HDPE	145	0.01
P-15	37.5	25.368	23.348	-8.56997	J-17	J-18	234.4	-10,047.18	7,649.59	110	0.9	7.35	8.56997	HDPE	145	0.28
P-150	56.5	24.047	23.983	2.55686	J-131	J-133	234.91	-9,985.05	7,202.22	110	0.27	0.78	2.55686	uPVC	145	0.04
P-151	89.5	23.973	24.006	2.04695	J-134	J-135	234.93	-10,053.44	7,225.54	110	0.22	0.52	2.04695	uPVC	145	0.05
P-152	112	24.006	24.766	3.01354	J-135	J-99	234.85	-10,117.64	7,286.07	110	0.32	1.06	3.01354	uPVC	145	0.12
P-153	39.5	24.282	23.529	-1.76303	J-101	J-136	234.52	-10,189.99	7,336.46	110	0.19	0.39	1.76303	HDPE	145	0.02
P-154	5.5	23.529	23.413	-2.05243	J-136	J-137	235.29	-10,179.49	7,374.38	110	0.22	0.52	2.05243	HDPE	145	0
P-155	43.5	23.413	23.271	-2.31892	J-137	J-138	235.41	-10,177.13	7,379.10	110	0.24	0.65	2.31892	HDPE	145	0.03
P-156	10	23.271	23.244	-7.17233	J-138	J-139	235.58	-10,163.50	7,420.50	110	0.75	5.29	7.17233	HDPE	145	0.05
P-157	21.5	23.244	23.458	-3.75358	J-139	J-140	235.66	-10,153.81	7,421.55	110	0.39	1.59	3.75358	HDPE	145	0.03

P-158	10	23.458	23.575	-3.97282	J-140	J-141	235.48	-10,143.06	7,439.90	110	0.42	1.77	3.97282	HDPE	145	0.02
P-159	21.5	23.575	23.798	-4.22642	J-141	J-142	235.38	-10,138.87	7,448.81	110	0.44	1.99	4.22642	HDPE	145	0.04
P-16	21	23.348	21.98	-25.9143	J-18	J-19	236.7	-10,013.90	7,632.29	180	1.02	5.18	25.91425	HDPE	145	0.11
P-160	24	23.798	23.621	-4.47143	J-142	J-143	235.2	-10,128.13	7,467.67	110	0.47	2.2	4.47143	HDPE	145	0.05
P-161	19	23.621	24.29	0.05449	J-143	J-144	235.43	-10,115.28	7,487.85	110	0.01	0	0.05449	HDPE	145	0
P-162	91.5	24.789	25.032	0.69729	J-40	J-145	233.96	-10,161.76	7,633.19	110	0.07	0.07	0.69729	HDPE	145	0.01
P-163	194	25.368	25.505	-7.6903	J-17	J-146	234.4	-10,047.18	7,649.59	110	0.81	6.02	7.6903	HDPE	145	1.17
P-164	156.5	25.505	26.162	10.07176	J-146	J-1	235.43	-9,982.28	7,830.77	110	1.06	9.92	10.07176	HDPE	145	1.55
P-165	217.5	26.162	24.751	-1.39546	J-1	J-147	233.22	-10,114.21	7,912.10	110	0.15	0.26	1.39546	HDPE	145	0.06
P-166	67.5	24.751	24.052	-2.21171	J-147	J-148	234.69	-9,936.09	8,033.23	110	0.23	0.6	2.21171	HDPE	145	0.04
P-167	159.5	24.052	25.701	-9.3993	J-148	J-149	235.43	-9,880.12	8,003.05	110	0.99	8.72	9.3993	HDPE	145	1.39
P-168	27	25.701	25.724	-10.4349	J-149	J-150	235.17	-9,968.87	7,873.06	125	0.85	5.68	10.43487	HDPE	145	0.15
P-169	17.5	25.724	25.505	18.816	J-150	J-146	235.3	-9,976.92	7,847.23	160	0.94	5.09	18.816	HDPE	145	0.09
P-17	75	21.98	19.356	-19.5371	J-19	J-20	238.18	-9,995.30	7,622.86	180	0.77	3.07	19.53713	HDPE	145	0.23
P-170	97.5	25.724	25.483	-29.6576	J-150	J-151	235.3	-9,976.92	7,847.23	200	0.94	3.98	29.65759	HDPE	145	0.39
P-171	110.5	17.124	16.299	-1.52626	J-152	J-153	242.63	-10,010.58	7,550.77	110	0.16	0.3	1.52626	HDPE	145	0.03
P-172	9	16.299	16.9	8.81097	J-153	J-154	243.49	-9,919.91	7,495.89	125	0.72	4.15	8.81097	HDPE	145	0.04
P-173	51.5	16.9	20.253	10.49	J-154	J-112	242.85	-9,925.57	7,488.77	140	0.68	3.3	10.49	HDPE	145	0.17
P-174	77.5	16.9	15.091	-2.24335	J-154	J-155	242.85	-9,925.57	7,488.77	110	0.24	0.61	2.24335	HDPE	145	0.05
P-175	26	15.091	15.05	-3.60102	J-155	J-156	244.71	-9,863.72	7,449.98	110	0.38	1.48	3.60102	HDPE	145	0.04
P-176	18.5	15.05	14.249	-5.88087	J-156	J-157	244.79	-9,862.05	7,475.77	110	0.62	3.66	5.88087	HDPE	145	0.07
P-177	55	14.249	15.308	-6.33788	J-157	J-158	245.66	-9,864.98	7,494.01	110	0.67	4.21	6.33788	HDPE	145	0.23
P-178	57	15.308	16.299	10.84276	J-158	J-153	244.83	-9,877.77	7,534.26	125	0.88	6.1	10.84276	HDPE	145	0.35
P-179	7.5	15.308	15.441	-17.5229	J-158	J-159	244.83	-9,877.77	7,534.26	160	0.87	4.45	17.52294	HDPE	145	0.03
P-18	84	19.356	17.739	-26.9235	J-20	J-21	241.04	-9,920.35	7,618.40	200	0.86	3.33	26.92349	HDPE	145	0.28
P-180	22	15.441	15.882	-17.8539	J-159	J-160	244.73	-9,872.74	7,539.92	160	0.89	4.61	17.85386	HDPE	145	0.1
P-181	23	15.882	16.349	-21.984	J-160	J-161	244.39	-9,859.74	7,557.53	180	0.86	3.82	21.98395	HDPE	145	0.09
P-182	15.5	16.349	16.598	-23.5026	J-161	J-162	244.01	-9,847.37	7,577.02	160	1.17	7.68	23.5026	HDPE	145	0.12
P-183	30	16.598	17.739	-39.5197	J-162	J-21	243.88	-9,834.58	7,586.04	200	1.26	6.78	39.51974	HDPE	145	0.2
P-184	72.5	16.349	17.469	1.2007	J-161	J-163	244.01	-9,847.37	7,577.02	125	0.1	0.1	1.2007	HDPE	145	0.01
P-185	64.5	17.469	18.852	3.37088	J-163	J-164	242.88	-9,918.02	7,583.94	110	0.35	1.31	3.37088	HDPE	145	0.08
P-186	13	16.598	16.629	15.84952	J-162	J-165	243.88	-9,834.58	7,586.04	160	0.79	3.7	15.84952	HDPE	145	0.05
P-187	56	16.629	13.987	23.80687	J-165	J-166	243.8	-9,822.21	7,590.65	180	0.94	4.43	23.80687	HDPE	145	0.25
P-188	53.5	13.987	15.882	-3.84793	J-166	J-160	246.2	-9,814.46	7,536.35	110	0.4	1.67	3.84793	HDPE	145	0.09
P-189	6	13.987	13.307	27.32395	J-166	J-167	246.2	-9,814.46	7,536.35	200	0.87	3.42	27.32395	HDPE	145	0.02
P-19	165.5	17.739	14.889	-8.55449	J-21	J-22	242.94	-9,836.23	7,615.78	140	0.56	2.26	8.55449	HDPE	145	0.37

P-190	17	13.307	13.4	20.55008	J-167	J-168	246.86	-9,811.73	7,531.11	180	0.81	3.37	20.55008	HDPE	145	0.06
P-191	32.5	13.4	14.411	20.31366	J-168	J-169	246.71	-9,816.34	7,514.97	180	0.8	3.3	20.31366	HDPE	145	0.11
P-192	52	14.411	15.72	20.07159	J-169	J-170	245.59	-9,801.88	7,486.04	180	0.79	3.23	20.07159	HDPE	145	0.17
P-193	62	15.72	15.629	6.29857	J-170	J-171	244.11	-9,803.14	7,434.05	160	0.31	0.67	6.29857	HDPE	145	0.04
P-194	13.5	15.629	15.091	-2.69375	J-171	J-155	244.16	-9,863.72	7,436.57	110	0.28	0.86	2.69375	HDPE	145	0.01
P-195	35	15.629	16.733	8.6758	J-171	J-172	244.16	-9,863.72	7,436.57	110	0.91	7.52	8.6758	HDPE	145	0.26
P-196	121.5	16.733	20.992	1.6605	J-172	J-110	242.79	-9,863.30	7,401.56	110	0.17	0.35	1.6605	HDPE	145	0.04
P-197	26	16.733	17.118	6.49258	J-172	J-173	242.79	-9,863.30	7,401.56	110	0.68	4.4	6.49258	HDPE	145	0.11
P-198	5.5	17.118	17.205	6.34207	J-173	J-174	242.29	-9,862.05	7,375.77	110	0.67	4.21	6.34207	HDPE	145	0.02
P-199	33	17.205	17.621	6.18011	J-174	J-175	242.18	-9,861.84	7,370.11	110	0.65	4.01	6.18011	HDPE	145	0.13
P-2	27	25.641	25.53	6.27603	J-2	J-3	233.22	-10,152.00	7,877.57	110	0.66	4.13	6.27603	HDPE	145	0.11
P-20	36	14.889	12.989	-9.32929	J-22	J-23	246.17	-9,817.36	7,759.39	140	0.61	2.66	9.32929	HDPE	145	0.1
P-200	121.5	17.621	20.366	-0.13756	J-175	J-176	241.63	-9,860.79	7,336.99	110	0.01	0	0.13756	HDPE	145	0
P-201	27.5	17.621	18.006	5.69607	J-175	J-177	241.63	-9,860.79	7,336.99	110	0.6	3.45	5.69607	HDPE	145	0.09
P-202	14.5	18.006	18.104	5.18322	J-177	J-178	241.15	-9,858.69	7,309.73	110	0.55	2.9	5.18322	HDPE	145	0.04
P-203	59	18.104	19.165	3.35007	J-178	J-179	241.01	-9,855.97	7,295.48	110	0.35	1.29	3.35007	HDPE	145	0.08
P-204	25	22.215	22.535	3.18317	J-128	J-180	236.76	-10,008.37	7,285.29	110	0.33	1.17	3.18317	HDPE	145	0.03
P-205	15.5	22.003	21.099	2.89158	J-181	J-182	237.11	-9,816.98	7,252.74	110	0.3	0.98	2.89158	HDPE	145	0.02
P-206	16	21.099	19.882	-0.48234	J-182	J-183	238	-9,827.72	7,241.84	110	0.05	0.04	0.48234	HDPE	145	0
P-207	42.5	19.882	22.796	0.12179	J-183	J-184	239.22	-9,831.74	7,257.10	110	0.01	0	0.12179	HDPE	145	0
P-208	45	18.434	16.834	-5.05802	J-185	J-186	240.94	-9,761.68	7,367.06	125	0.41	1.49	5.05802	HDPE	145	0.07
P-209	43	16.834	15.72	-13.3233	J-186	J-170	242.61	-9,766.79	7,410.70	125	1.09	8.93	13.32334	HDPE	145	0.38
P-21	40	12.989	15.267	-9.66451	J-23	J-24	248.17	-9,828.89	7,793.71	140	0.63	2.84	9.66451	HDPE	145	0.11
P-210	7	16.834	16.53	7.99318	J-186	J-187	242.61	-9,766.79	7,410.70	125	0.65	3.47	7.99318	HDPE	145	0.02
P-211	50	16.53	14.853	0.14327	J-187	J-188	242.89	-9,761.96	7,415.80	110	0.02	0	0.14327	uPVC	145	0
P-212	29.5	16.53	16.462	7.60212	J-187	J-189	242.89	-9,761.96	7,415.80	160	0.38	0.95	7.60212	uPVC	145	0.03
P-213	28	16.462	15.213	4.98034	J-189	J-190	242.93	-9,732.98	7,420.63	160	0.25	0.43	4.98034	uPVC	145	0.01
P-214	44.5	15.213	13.34	4.50909	J-190	J-191	244.17	-9,713.65	7,441.02	160	0.22	0.36	4.50909	uPVC	145	0.02
P-215	15.5	13.34	13.349	2.03717	J-191	J-192	246.03	-9,681.45	7,471.34	160	0.1	0.08	2.03717	uPVC	145	0
P-216	19	13.349	12.834	10.97814	J-192	J-193	246.02	-9,669.11	7,480.87	160	0.55	1.88	10.97814	uPVC	145	0.04
P-217	29	12.834	13.439	7.04267	J-193	J-194	246.5	-9,657.44	7,495.36	160	0.35	0.82	7.04267	uPVC	145	0.02
P-218	45	13.439	18.455	6.6874	J-194	J-195	245.87	-9,646.70	7,522.06	160	0.33	0.75	6.6874	uPVC	145	0.03
P-219	24.5	18.455	19.787	6.14322	J-195	J-196	240.81	-9,606.86	7,538.96	160	0.31	0.64	6.14322	uPVC	145	0.02
P-22	81.5	15.267	15.155	-5.72004	J-24	J-25	246	-9,838.85	7,832.24	140	0.37	1.07	5.72004	HDPE	145	0.09
P-220	16	19.787	19.609	3.13758	J-196	J-197	239.46	-9,582.17	7,539.37	110	0.33	1.14	3.13758	HDPE	145	0.02
P-221	19.5	19.609	19.121	-0.4061	J-197	J-198	239.62	-9,582.03	7,555.47	110	0.04	0.03	0.4061	HDPE	145	0

P-222	12.5	19.121	18.376	2.03724	J-198	J-199	240.11	-9,581.09	7,575.19	110	0.21	0.51	2.03724	uPVC	145	0.01
P-223	14.5	18.376	17.531	1.87671	J-199	J-200	240.85	-9,583.27	7,587.35	110	0.2	0.44	1.87671	uPVC	145	0.01
P-224	21.5	16.902	17.531	-0.06165	J-201	J-200	242.32	-9,605.24	7,598.42	110	0.01	0	0.06165	uPVC	145	0
P-225	14.5	17.877	18.376	-0.0416	J-202	J-199	241.35	-9,597.70	7,586.01	110	0	0	0.0416	uPVC	145	0
P-226	29	19.121	19.762	9.84014	J-198	J-203	240.11	-9,581.09	7,575.19	125	0.8	5.1	9.84014	HDPE	145	0.15
P-227	37.5	19.762	19.109	4.78551	J-203	J-204	239.32	-9,552.58	7,581.31	110	0.5	2.5	4.78551	HDPE	145	0.09
P-228	87.5	19.109	19.539	4.03864	J-204	J-205	239.88	-9,540.34	7,616.70	110	0.42	1.83	4.03864	HDPE	145	0.16
P-229	85	19.539	15.326	-4.09649	J-205	J-206	239.29	-9,476.61	7,674.23	110	0.43	1.87	4.09649	HDPE	145	0.16
P-23	19	15.155	16.4	6.05426	J-25	J-26	246.2	-9,835.71	7,913.47	140	0.39	1.19	6.05426	HDPE	145	0.02
P-230	17	15.326	14.9	-6.37879	J-206	J-207	243.67	-9,558.79	7,684.62	110	0.67	4.25	6.37879	HDPE	145	0.07
P-231	41	14.9	15.392	-5.7296	J-207	J-208	244.17	-9,575.39	7,681.44	110	0.6	3.49	5.7296	HDPE	145	0.14
P-232	10	15.392	14.945	-4.53916	J-208	J-209	243.82	-9,595.52	7,647.06	110	0.48	2.27	4.53916	uPVC	145	0.02
P-233	68.5	14.945	14.116	-9.83484	J-209	J-210	244.29	-9,605.41	7,645.55	125	0.8	5.09	9.83484	HDPE	145	0.35
P-234	5	14.116	14.27	-12.9705	J-210	J-211	245.47	-9,672.83	7,645.21	140	0.84	4.89	12.97054	uPVC	145	0.02
P-235	61.5	14.27	16.031	-13.2872	J-211	J-212	245.34	-9,677.02	7,642.86	140	0.86	5.12	13.28715	HDPE	145	0.31
P-236	20	16.031	16.199	-13.7469	J-212	J-213	243.89	-9,737.40	7,631.96	140	0.89	5.45	13.74694	HDPE	145	0.11
P-237	29	16.199	15.443	9.10268	J-213	J-214	243.83	-9,756.69	7,634.65	125	0.74	4.41	9.10268	HDPE	145	0.13
P-238	56.5	15.443	15.166	8.67439	J-214	J-215	244.46	-9,742.26	7,659.97	125	0.71	4.03	8.67439	HDPE	145	0.23
P-239	13	15.166	15.407	3.49419	J-215	J-216	244.51	-9,718.28	7,711.29	110	0.37	1.4	3.49419	uPVC	145	0.02
P-24	13	16.4	16.705	1.61432	J-26	J-27	244.93	-9,816.58	7,914.26	110	0.17	0.33	1.61432	HDPE	145	0
P-240	45.5	15.407	16.359	16.73133	J-216	J-217	244.25	-9,714.59	7,723.53	160	0.83	4.09	16.73133	HDPE	145	0.19
P-241	25	16.359	20.47	16.61278	J-217	J-218	243.11	-9,705.87	7,768.31	160	0.83	4.04	16.61278	uPVC	145	0.1
P-242	25	20.47	20.942	16.27469	J-218	J-219	238.89	-9,708.72	7,793.30	160	0.81	3.89	16.27469	uPVC	145	0.1
P-243	24.5	20.942	21.109	15.98673	J-219	J-220	238.32	-9,711.41	7,818.12	160	0.8	3.76	15.98673	uPVC	145	0.09
P-244	70	21.109	18.564	15.55557	J-220	J-221	238.06	-9,712.75	7,842.44	160	0.77	3.58	15.55557	uPVC	145	0.25
P-245	37.5	18.564	19.346	7.6625	J-221	J-222	240.36	-9,715.93	7,912.21	160	0.38	0.96	7.6625	uPVC	145	0.04
P-246	36	18.564	18.002	7.48205	J-221	J-223	240.36	-9,715.93	7,912.21	160	0.37	0.92	7.48205	uPVC	145	0.03
P-247	67	18.002	18.447	1.67554	J-223	J-224	240.89	-9,684.74	7,894.60	160	0.08	0.06	1.67554	uPVC	145	0
P-248	35	18.447	18.815	1.18854	J-224	J-225	240.44	-9,639.46	7,845.63	160	0.06	0.03	1.18854	uPVC	145	0
P-249	45	18.815	18.815	0.55255	J-225	J-226	240.07	-9,614.97	7,820.64	160	0.03	0.01	0.55255	uPVC	145	0
P-25	41.5	16.705	15.117	1.45817	J-27	J-28	244.62	-9,811.86	7,923.69	110	0.15	0.28	1.45817	HDPE	145	0.01
P-250	30.5	18.815	18.756	6.03096	J-226	J-227	240.07	-9,585.12	7,787.26	160	0.3	0.62	6.03096	uPVC	145	0.02
P-251	9	18.756	18.762	10.75354	J-227	J-228	240.11	-9,561.14	7,768.82	125	0.88	6	10.75354	HDPE	145	0.05
P-252	65	18.762	19.583	10.26368	J-228	J-229	240.05	-9,552.75	7,765.97	160	0.51	1.66	10.26368	uPVC	145	0.11
P-253	29.5	19.583	20.148	9.63139	J-229	J-230	239.12	-9,490.03	7,750.03	160	0.48	1.47	9.63139	uPVC	145	0.04
P-254	50	20.148	20.68	9.18879	J-230	J-231	238.51	-9,460.51	7,746.68	160	0.46	1.35	9.18879	uPVC	145	0.07

P-255	3	20.68	20.692	4.97064	J-231	J-232	237.91	-9,410.70	7,741.31	110	0.52	2.68	4.97064	uPVC	145	0.01
P-256	36	20.692	20.954	4.42315	J-232	J-233	237.89	-9,407.68	7,740.98	110	0.47	2.16	4.42315	HDPE	145	0.08
P-257	15.5	20.954	20.926	7.44562	J-233	J-234	237.55	-9,371.62	7,744.33	110	0.78	5.67	7.44562	HDPE	145	0.09
P-258	30.5	20.926	21.242	3.94014	J-234	J-235	237.49	-9,356.53	7,747.01	110	0.41	1.74	3.94014	HDPE	145	0.05
P-259	72	21.303	21.16	6.32499	J-236	J-237	237.05	-9,320.97	7,751.04	140	0.41	1.29	6.32499	HDPE	145	0.09
P-26	34.5	16.4	15.201	4.24941	J-26	J-29	244.93	-9,816.58	7,914.26	140	0.28	0.62	4.24941	HDPE	145	0.02
P-260	23	21.16	20.868	-2.50659	J-237	J-238	237.1	-9,303.43	7,821.12	110	0.26	0.75	2.50659	HDPE	145	0.02
P-261	46.5	20.868	20.431	-2.75646	J-238	J-239	237.41	-9,326.36	7,823.98	110	0.29	0.9	2.75646	HDPE	145	0.04
P-262	22.5	20.868	20.828	-0.01368	J-238	J-240	237.41	-9,326.36	7,823.98	110	0	0	0.01368	HDPE	145	0
P-263	18	20.828	20.569	-0.2186	J-240	J-241	237.45	-9,322.27	7,846.09	110	0.02	0.01	0.2186	HDPE	145	0
P-264	44.5	20.569	20.319	0.23356	J-241	J-242	237.71	-9,339.88	7,850.60	110	0.02	0.01	0.23356	HDPE	145	0
P-265	51.5	20.569	20.423	-0.7787	J-241	J-243	237.71	-9,339.88	7,850.60	110	0.08	0.09	0.7787	HDPE	145	0
P-266	52	20.423	20.655	-1.32735	J-243	J-244	237.86	-9,330.46	7,901.37	110	0.14	0.23	1.32735	HDPE	145	0.01
P-267	31.5	20.655	20.557	-1.70696	J-244	J-245	237.64	-9,379.18	7,920.20	110	0.18	0.37	1.70696	HDPE	145	0.01
P-268	36	20.557	19.874	-1.07128	J-245	J-246	237.75	-9,406.62	7,935.35	110	0.11	0.16	1.07128	HDPE	145	0.01
P-269	11.5	19.874	19.957	-1.51405	J-246	J-247	238.44	-9,441.01	7,937.40	110	0.16	0.3	1.51405	HDPE	145	0
P-27	27.5	15.201	15.675	1.11349	J-29	J-30	246.11	-9,819.72	7,879.93	110	0.12	0.17	1.11349	HDPE	145	0
P-270	21.5	19.957	19.546	-1.67458	J-247	J-248	238.36	-9,441.83	7,948.87	110	0.18	0.36	1.67458	HDPE	145	0.01
P-271	25	19.546	19.605	0.22075	J-248	J-249	238.78	-9,463.12	7,950.91	110	0.02	0.01	0.22075	HDPE	145	0
P-272	8.5	19.546	19.63	-2.05292	J-248	J-250	238.78	-9,463.12	7,950.91	110	0.22	0.52	2.05292	HDPE	145	0
P-273	46.5	20.557	21.459	1.63473	J-245	J-251	237.75	-9,406.62	7,935.35	110	0.17	0.34	1.63473	HDPE	145	0.02
P-274	16	21.459	21.795	1.28089	J-251	J-252	236.83	-9,378.36	7,972.20	110	0.13	0.22	1.28089	HDPE	145	0
P-275	9.5	21.795	21.935	-0.46839	J-252	J-253	236.49	-9,366.90	7,983.67	110	0.05	0.03	0.46839	HDPE	145	0
P-276	60	21.795	21.508	1.50436	J-252	J-254	236.49	-9,366.90	7,983.67	110	0.16	0.29	1.50436	HDPE	145	0.02
P-277	53.5	21.935	22.298	3.7396	J-253	J-255	236.35	-9,361.99	7,991.86	140	0.24	0.49	3.7396	HDPE	145	0.03
P-278	52	22.298	22.63	4.52929	J-255	J-256	235.96	-9,309.99	8,004.55	110	0.48	2.26	4.52929	HDPE	145	0.12
P-279	14	22.63	22.5	0.5637	J-256	J-257	235.51	-9,259.62	8,017.24	110	0.06	0.05	0.5637	HDPE	145	0
P-28	38.5	15.675	12.702	1.95436	J-30	J-31	245.63	-9,792.21	7,878.36	125	0.16	0.26	1.95436	HDPE	145	0.01
P-280	29.5	22.5	22.132	-0.51361	J-257	J-258	235.64	-9,261.67	8,003.32	110	0.05	0.04	0.51361	HDPE	145	0
P-281	7	22.132	22.062	-0.81017	J-258	J-259	236.01	-9,269.45	7,975.07	110	0.09	0.09	0.81017	HDPE	145	0
P-282	52	22.062	21.452	-1.67012	J-259	J-260	236.08	-9,269.45	7,968.11	110	0.18	0.36	1.67012	HDPE	145	0.02
P-283	16.5	21.452	21.246	-2.56268	J-260	J-261	236.71	-9,280.91	7,917.34	140	0.17	0.24	2.56268	HDPE	145	0
P-284	26.5	21.246	21.011	-3.87617	J-261	J-262	236.92	-9,285.42	7,901.37	140	0.25	0.52	3.87617	HDPE	145	0.01
P-285	41	21.011	21.096	-5.83317	J-262	J-263	237.17	-9,291.56	7,875.57	140	0.38	1.11	5.83317	HDPE	145	0.05
P-286	15	21.096	21.16	-8.51649	J-263	J-237	237.13	-9,300.98	7,835.86	140	0.55	2.24	8.51649	HDPE	145	0.03
P-287	54	21.011	21.392	1.60897	J-262	J-264	237.17	-9,291.56	7,875.57	110	0.17	0.33	1.60897	HDPE	145	0.02

P-288	15	21.392	21.529	1.1592	J-264	J-265	236.77	-9,237.92	7,870.25	110	0.12	0.18	1.1592	HDPE	145	0
P-289	10	21.529	21.619	2.83989	J-265	J-266	236.63	-9,223.18	7,868.61	110	0.3	0.95	2.83989	HDPE	145	0.01
P-29	28.5	12.702	12.007	1.76241	J-31	J-32	248.6	-9,793.78	7,840.10	125	0.14	0.21	1.76241	HDPE	145	0.01
P-290	6	21.619	21.654	2.6679	J-266	J-267	236.53	-9,213.35	7,868.20	110	0.28	0.85	2.6679	HDPE	145	0.01
P-291	8.5	21.654	21.739	2.26825	J-267	J-268	236.49	-9,207.62	7,866.57	110	0.24	0.63	2.26825	HDPE	145	0.01
P-292	23.5	22.062	22.123	1.76832	J-259	J-269	236.08	-9,269.45	7,968.11	110	0.19	0.4	1.76832	HDPE	145	0.01
P-293	37.5	22.123	21.654	0.10747	J-269	J-270	236.01	-9,256.35	7,955.83	110	0.01	0	0.10747	HDPE	145	0
P-294	44	22.123	22.641	1.36008	J-269	J-271	236.01	-9,256.35	7,955.83	110	0.14	0.24	1.36008	HDPE	145	0.01
P-295	45.5	22.641	23.125	0.88	J-271	J-272	235.48	-9,212.94	7,949.68	110	0.09	0.11	0.88	HDPE	145	0
P-296	40	23.125	23.225	0.23697	J-272	J-273	234.99	-9,182.24	7,972.61	110	0.02	0.01	0.23697	HDPE	145	0
P-297	11.5	23.225	23.135	-0.45236	J-273	J-274	234.89	-9,161.76	7,938.22	110	0.05	0.03	0.45236	HDPE	145	0
P-298	21.5	23.125	23.215	0.33653	J-272	J-275	234.99	-9,182.24	7,972.61	110	0.04	0.02	0.33653	HDPE	145	0
P-299	55.5	23.215	23.468	0.91872	J-275	J-276	234.9	-9,183.05	7,993.91	110	0.1	0.12	0.91872	HDPE	145	0.01
P-3	39.5	25.53	25.448	4.31816	J-3	J-4	233.22	-10,171.92	7,859.49	110	0.45	2.07	4.31816	HDPE	145	0.08
P-30	40	12.007	15.201	-2.84375	J-32	J-29	249.29	-9,819.72	7,839.84	125	0.23	0.51	2.84375	HDPE	145	0.02
P-300	34.5	23.468	23.644	0.84566	J-276	J-277	234.64	-9,182.24	8,049.18	110	0.09	0.1	0.84566	HDPE	145	0
P-301	22.5	23.644	23.833	-0.01784	J-277	J-278	234.46	-9,182.65	8,083.58	110	0	0	0.01784	HDPE	145	0
P-302	69.5	23.644	23.601	0.50115	J-277	J-279	234.46	-9,182.65	8,083.58	110	0.05	0.04	0.50115	HDPE	145	0
P-303	30	23.601	23.16	-1.44184	J-279	J-280	234.5	-9,251.84	8,089.31	110	0.15	0.27	1.44184	HDPE	145	0.01
P-304	22.5	23.16	22.844	-2.21804	J-280	J-281	234.95	-9,253.48	8,059.42	110	0.23	0.6	2.21804	HDPE	145	0.01
P-305	20.5	22.844	22.63	-2.47944	J-281	J-256	235.28	-9,256.76	8,037.31	110	0.26	0.74	2.47944	HDPE	145	0.02
P-306	35	22.5	22.845	0.85243	J-257	J-282	235.64	-9,261.67	8,003.32	110	0.09	0.1	0.85243	HDPE	145	0
P-307	26.5	22.845	22.974	1.78286	J-282	J-283	235.29	-9,237.10	8,012.74	110	0.19	0.4	1.78286	HDPE	145	0.01
P-308	42.5	22.844	23.104	0.01647	J-281	J-284	235.28	-9,256.76	8,037.31	110	0	0	0.01647	HDPE	145	0
P-309	77	23.16	23.468	0.40527	J-280	J-276	234.95	-9,253.48	8,059.42	110	0.04	0.03	0.40527	HDPE	145	0
P-31	20.5	12.007	15.267	4.3512	J-32	J-24	249.29	-9,819.72	7,839.84	125	0.35	1.12	4.3512	HDPE	145	0.02
P-310	151.5	23.973	23.792	-0.60507	J-285	J-286	234.13	-9,144.42	8,082.53	110	0.06	0.05	0.60507	HDPE	145	0.01
P-311	60	23.792	23.387	-0.72341	J-286	J-287	234.32	-9,118.17	7,933.44	110	0.08	0.08	0.72341	HDPE	145	0
P-312	100	23.387	23.284	-1.69231	J-287	J-288	234.73	-9,106.97	7,874.26	110	0.18	0.36	1.69231	HDPE	145	0.04
P-313	233.5	23.284	21.303	-2.64745	J-288	J-236	234.87	-9,088.58	7,775.89	110	0.28	0.83	2.64745	HDPE	145	0.19
P-314	19.5	21.294	21.363	-6.22816	J-289	J-290	237.09	-9,320.94	7,725.33	110	0.66	4.07	6.22816	HDPE	145	0.08
P-316	94	22.694	22.225	-3.88636	J-291	J-292	235.91	-9,341.67	7,502.78	110	0.41	1.7	3.88636	HDPE	145	0.16
P-317	169	22.225	22.655	-4.71539	J-292	J-293	236.54	-9,429.70	7,470.02	110	0.5	2.43	4.71539	HDPE	145	0.41
P-318	60	22.655	22.77	-3.30419	J-293	J-294	236.52	-9,586.93	7,408.60	110	0.35	1.26	3.30419	HDPE	145	0.08
P-319	113	22.77	22.503	-0.28575	J-294	J-295	236.48	-9,641.80	7,384.45	110	0.03	0.01	0.28575	HDPE	145	0
P-32	113.5	25.345	25.073	-1.80999	J-6	J-33	233.14	-10,309.76	7,780.09	110	0.19	0.41	1.80999	HDPE	145	0.05

P-320	26	22.503	23.538	3.78117	J-295	J-296	236.75	-9,738.43	7,325.49	110	0.4	1.62	3.78117	HDPE	145	0.04
P-321	26	23.538	23.761	3.52614	J-296	J-297	235.67	-9,758.09	7,308.70	110	0.37	1.42	3.52614	HDPE	145	0.04
P-322	53	22.655	20.521	-2.21887	J-293	J-298	236.52	-9,586.93	7,408.60	110	0.23	0.6	2.21887	uPVC	145	0.03
P-323	41.5	20.521	20.431	0.39013	J-298	J-299	238.69	-9,595.53	7,461.01	110	0.04	0.02	0.39013	HDPE	145	0
P-324	38.5	20.431	19.787	-2.77931	J-299	J-196	238.78	-9,584.48	7,501.14	110	0.29	0.91	2.77931	HDPE	145	0.04
P-325	54.5	20.431	21.099	2.78419	J-299	J-300	238.78	-9,584.48	7,501.14	110	0.29	0.92	2.78419	HDPE	145	0.05
P-326	19	21.099	21.135	2.53631	J-300	J-301	238.06	-9,542.20	7,483.10	110	0.27	0.77	2.53631	HDPE	145	0.01
P-327	25.5	21.135	21.138	2.33712	J-301	J-302	238.01	-9,526.14	7,492.81	110	0.25	0.66	2.33712	HDPE	145	0.02
P-328	18	21.138	21.376	5.12446	J-302	J-303	237.99	-9,523.31	7,518.14	110	0.54	2.84	5.12446	HDPE	145	0.05
P-329	70.5	21.376	21.807	4.81645	J-303	J-304	237.7	-9,505.36	7,517.36	110	0.51	2.53	4.81645	HDPE	145	0.18
P-33	40.5	25.073	25.368	-3.46505	J-33	J-34	233.46	-10,210.07	7,733.10	110	0.36	1.37	3.46505	HDPE	145	0.06
P-330	14.5	21.807	21.775	0.889	J-304	J-305	237.09	-9,472.03	7,556.13	110	0.09	0.11	0.889	HDPE	145	0
P-331	17.5	21.775	21.48	-4.18667	J-305	J-306	237.12	-9,475.12	7,570.22	110	0.44	1.95	4.18667	HDPE	145	0.03
P-332	61.5	21.48	19.762	-4.68799	J-306	J-203	237.45	-9,491.22	7,576.66	110	0.49	2.41	4.68799	HDPE	145	0.15
P-333	73	19.609	20.988	3.23289	J-197	J-307	239.62	-9,582.03	7,555.47	110	0.34	1.21	3.23289	HDPE	145	0.09
P-334	58	19.121	17.913	-12.6244	J-198	J-308	240.11	-9,581.09	7,575.19	140	0.82	4.65	12.62435	HDPE	145	0.27
P-335	55	17.913	15.762	-13.1056	J-308	J-309	241.59	-9,637.00	7,559.07	140	0.85	4.99	13.10562	HDPE	145	0.27
P-336	16	15.762	15.488	-13.5955	J-309	J-310	244.02	-9,691.05	7,560.38	140	0.88	5.34	13.59548	HDPE	145	0.09
P-337	26.5	15.488	14.564	4.34769	J-310	J-311	244.38	-9,706.77	7,562.67	110	0.46	2.09	4.34769	HDPE	145	0.06
P-338	17.5	14.564	14.264	-5.61755	J-311	J-312	245.25	-9,723.48	7,545.97	110	0.59	3.36	5.61755	HDPE	145	0.06
P-339	10	14.264	14.08	-5.83965	J-312	J-313	245.61	-9,740.84	7,544.66	110	0.61	3.61	5.83965	HDPE	145	0.04
P-34	44	25.368	25.448	-4.05128	J-34	J-35	233.22	-10,184.69	7,764.63	110	0.43	1.84	4.05128	HDPE	145	0.08
P-340	42.5	15.488	15.281	-18.1867	J-310	J-314	244.38	-9,706.77	7,562.67	160	0.9	4.77	18.18667	HDPE	145	0.2
P-341	48.5	15.281	15.899	-18.5019	J-314	J-315	244.79	-9,745.42	7,577.09	160	0.92	4.93	18.50185	uPVC	145	0.24
P-342	37.5	15.899	16.199	23.09741	J-315	J-213	244.41	-9,782.11	7,606.90	160	1.15	7.43	23.09741	HDPE	145	0.28
P-343	28.5	15.899	16.402	-28.3657	J-315	J-316	244.41	-9,782.11	7,606.90	180	1.11	6.13	28.36573	HDPE	145	0.17
P-344	14.5	16.402	16.629	8.19655	J-316	J-165	244.08	-9,808.64	7,596.41	125	0.67	3.63	8.19655	HDPE	145	0.05
P-345	23	13.307	13.322	6.64206	J-167	J-318	246.86	-9,811.73	7,531.11	110	0.7	4.59	6.64206	HDPE	145	0.11
P-346	14.5	13.322	13.614	6.11911	J-318	J-317	246.74	-9,789.32	7,535.81	110	0.64	3.94	6.11911	HDPE	145	0.06
P-347	37.5	13.322	14.289	0.30809	J-318	J-319	246.74	-9,789.32	7,535.81	110	0.03	0.02	0.30809	HDPE	145	0
P-348	22.5	14.289	13.99	0.06451	J-319	J-320	245.77	-9,787.35	7,498.14	110	0.01	0	0.06451	uPVC	145	0
P-349	60.5	21.807	21.842	3.5107	J-304	J-321	237.09	-9,472.03	7,556.13	110	0.37	1.41	3.5107	HDPE	145	0.09
P-35	31	25.448	25.514	-4.36931	J-35	J-36	233.22	-10,158.07	7,799.43	110	0.46	2.11	4.36931	HDPE	145	0.07
P-350	57.5	22.37	22.374	2.89035	J-322	J-323	236.38	-9,421.08	7,485.13	110	0.3	0.98	2.89035	HDPE	145	0.06
P-351	14.5	22.374	22.382	2.60095	J-323	J-324	236.32	-9,399.95	7,528.57	110	0.27	0.81	2.60095	uPVC	145	0.01
P-352	7.5	22.382	22.414	7.02639	J-324	J-325	236.3	-9,393.24	7,541.65	110	0.74	5.09	7.02639	uPVC	145	0.04

P-353	12.5	22.414	22.503	4.70873	J-325	J-326	236.23	-9,385.86	7,539.30	110	0.5	2.43	4.70873	uPVC	145	0.03
P-354	10	22.503	22.55	1.65515	J-326	J-327	236.11	-9,374.29	7,534.10	110	0.17	0.35	1.65515	HDPE	145	0
P-355	8	22.55	22.627	1.46885	J-327	J-328	236.06	-9,366.07	7,528.07	110	0.15	0.28	1.46885	HDPE	145	0
P-356	28.5	22.627	22.694	0.84558	J-328	J-291	235.98	-9,360.03	7,522.70	110	0.09	0.1	0.84558	HDPE	145	0
P-357	27	22.503	21.598	2.91174	J-326	J-329	236.11	-9,374.29	7,534.10	110	0.31	1	2.91174	HDPE	145	0.03
P-358	26	21.598	20.648	2.65384	J-329	J-330	236.99	-9,368.75	7,560.78	110	0.28	0.84	2.65384	HDPE	145	0.02
P-359	38	20.648	20.596	2.20105	J-330	J-331	237.92	-9,370.43	7,586.56	110	0.23	0.59	2.20105	HDPE	145	0.02
P-36	40	25.514	25.548	-3.07742	J-36	J-37	233.22	-10,139.65	7,824.41	110	0.32	1.1	3.07742	HDPE	145	0.04
P-360	7.5	20.596	20.762	2.01618	J-331	J-332	237.95	-9,362.25	7,619.06	110	0.21	0.5	2.01618	HDPE	145	0
P-361	26.5	20.762	20.891	1.76687	J-332	J-333	237.78	-9,355.13	7,620.73	110	0.19	0.39	1.76687	HDPE	145	0.01
P-362	11.5	20.891	20.938	1.43149	J-333	J-334	237.64	-9,352.61	7,646.94	110	0.15	0.27	1.43149	HDPE	145	0
P-363	32.5	20.938	20.972	1.18219	J-334	J-335	237.59	-9,351.98	7,658.26	110	0.12	0.19	1.18219	HDPE	145	0.01
P-364	47.5	20.972	21.363	3.25623	J-335	J-290	237.55	-9,353.03	7,690.96	110	0.34	1.23	3.25623	HDPE	145	0.06
P-365	148	20.68	20.138	3.64245	J-231	J-336	237.91	-9,410.70	7,741.31	110	0.38	1.51	3.64245	HDPE	145	0.22
P-366	59.5	20.138	20.557	2.93924	J-336	J-245	238.23	-9,436.68	7,883.83	110	0.31	1.01	2.93924	HDPE	145	0.06
P-367	4.5	20.801	20.841	0.21135	J-337	J-338	237.74	-9,381.23	7,713.42	110	0.02	0.01	0.21135	HDPE	145	0
P-368	33.5	20.841	20.612	-3.23942	J-338	J-339	237.7	-9,381.49	7,718.14	110	0.34	1.21	3.23942	HDPE	145	0.04
P-369	55	20.612	20.096	-3.146	J-339	J-340	237.97	-9,413.73	7,726.79	110	0.33	1.15	3.146	HDPE	145	0.06
P-37	40.5	25.548	25.108	0.11606	J-37	J-38	233.23	-10,109.76	7,839.56	110	0.01	0	0.11606	HDPE	145	0
P-370	10	20.096	19.652	-7.37245	J-340	J-341	238.55	-9,461.16	7,698.75	110	0.78	5.56	7.37245	HDPE	145	0.06
P-371	50	19.652	18.195	-0.02644	J-341	J-342	239.05	-9,470.59	7,694.82	110	0	0	0.02644	HDPE	145	0
P-372	33.5	18.195	19.583	-0.26565	J-342	J-229	240.51	-9,510.95	7,723.90	110	0.03	0.01	0.26565	HDPE	145	0
P-373	21.5	19.539	19.652	7.57948	J-205	J-341	239.29	-9,476.61	7,674.23	110	0.8	5.86	7.57948	HDPE	145	0.13
P-374	9.5	20.096	20.049	4.01302	J-340	J-343	238.55	-9,461.16	7,698.75	110	0.42	1.8	4.01302	HDPE	145	0.02
P-375	19	20.049	20.158	2.13864	J-343	J-344	238.58	-9,459.06	7,689.31	110	0.23	0.56	2.13864	HDPE	145	0.01
P-376	5	20.158	20.145	2.06983	J-344	J-345	238.46	-9,445.17	7,676.21	110	0.22	0.53	2.06983	uPVC	145	0
P-377	35	20.085	20.386	3.07467	J-346	J-347	238.52	-9,426.57	7,656.03	110	0.32	1.1	3.07467	HDPE	145	0.04
P-378	22	18.967	19.656	-0.06308	J-348	J-349	239.65	-9,496.27	7,629.83	110	0.01	0	0.06308	HDPE	145	0
P-379	24.5	19.656	19.906	-0.40344	J-349	J-350	238.96	-9,480.03	7,641.88	110	0.04	0.03	0.40344	HDPE	145	0
P-38	57	25.548	25.641	-3.58733	J-37	J-2	233.23	-10,109.76	7,839.56	110	0.38	1.47	3.58733	HDPE	145	0.08
P-380	13.5	19.906	19.894	1.06842	J-350	J-351	238.71	-9,457.75	7,652.10	110	0.11	0.16	1.06842	HDPE	145	0
P-381	24.5	19.894	20.085	1.5908	J-351	J-346	238.72	-9,447.53	7,642.93	110	0.17	0.32	1.5908	HDPE	145	0.01
P-382	19	19.894	19.955	-0.68569	J-351	J-352	238.72	-9,447.53	7,642.93	110	0.07	0.07	0.68569	HDPE	145	0
P-383	46	19.955	20.557	-0.70487	J-352	J-353	238.66	-9,435.48	7,627.99	110	0.07	0.07	0.70487	HDPE	145	0
P-384	29.5	20.557	20.614	0.76631	J-353	J-354	238.06	-9,406.91	7,591.83	110	0.08	0.08	0.76631	HDPE	145	0
P-385	39	20.614	20.594	0.11177	J-354	J-355	238	-9,436.53	7,591.31	110	0.01	0	0.11177	HDPE	145	0

Distribution Network Design Output: Zone 9

P-386	86.5	21.775	22.382	4.73623	J-305	J-324	237.12	-9,475.12	7,570.22	110	0.5	2.45	4.73623	HDPE	145	0.21
P-387	56.5	20.557	22.414	-2.0985	J-353	J-325	238.06	-9,406.91	7,591.83	110	0.22	0.54	2.0985	HDPE	145	0.03
P-388	58	15.326	16.241	1.7976	J-206	J-356	243.67	-9,558.79	7,684.62	110	0.19	0.41	1.7976	HDPE	145	0.02
P-389	46	14.116	13.604	2.7934	J-210	J-357	245.47	-9,672.83	7,645.21	110	0.29	0.92	2.7934	uPVC	145	0.04
P-39	47.5	25.514	25.53	-1.63132	J-36	J-3	233.22	-10,139.65	7,824.41	110	0.17	0.34	1.63132	HDPE	145	0.02
P-390	23.5	13.604	14.753	7.27182	J-357	J-358	245.94	-9,670.78	7,690.79	125	0.59	2.91	7.27182	HDPE	145	0.07
P-391	78.5	14.753	16.359	0.30823	J-358	J-217	244.72	-9,668.49	7,714.37	110	0.03	0.02	0.30823	uPVC	145	0
P-392	223	24.052	20.229	5.89882	J-148	J-359	235.43	-9,880.12	8,003.05	110	0.62	3.68	5.89882	HDPE	145	0.82
P-393	94	20.229	21.099	12.32832	J-359	J-360	238.44	-9,664.80	7,963.88	160	0.61	2.32	12.32832	uPVC	145	0.22
P-394	38.5	21.099	20.479	11.09229	J-360	J-361	237.35	-9,591.10	7,989.76	180	0.44	1.08	11.09229	HDPE	145	0.04
P-395	59.5	20.479	19.406	10.52797	J-361	J-362	237.93	-9,553.43	7,982.55	200	0.34	0.59	10.52797	uPVC	145	0.03
P-396	26.5	19.406	19.278	14.46994	J-362	J-363	238.97	-9,515.11	7,958.64	200	0.46	1.05	14.46994	uPVC	145	0.03
P-397	6	19.278	19.275	2.23779	J-363	J-364	239.07	-9,491.20	7,969.12	110	0.24	0.61	2.23779	uPVC	145	0
P-398	54	19.278	19.657	11.98436	J-363	J-365	239.07	-9,491.20	7,969.12	200	0.38	0.74	11.98436	uPVC	145	0.04
P-399	28.5	19.657	19.967	6.33112	J-365	J-366	238.65	-9,463.68	8,015.63	110	0.67	4.2	6.33112	HDPE	145	0.12
P-4	48	25.448	25.348	3.86712	J-4	J-5	233.22	-10,200.22	7,831.97	110	0.41	1.68	3.86712	HDPE	145	0.08
P-40	53	25.448	25.448	-0.04861	J-35	J-4	233.22	-10,158.07	7,799.43	110	0.01	0	0.04861	HDPE	145	0
P-400	52	19.967	20.541	3.28183	J-366	J-367	238.22	-9,441.41	8,033.32	110	0.35	1.24	3.28183	HDPE	145	0.06
P-401	7.5	20.541	20.684	2.88218	J-367	J-368	237.58	-9,417.49	8,079.51	110	0.3	0.98	2.88218	HDPE	145	0.01
P-402	32.5	20.684	20.504	0.27659	J-368	J-369	237.43	-9,413.56	8,086.06	110	0.03	0.01	0.27659	HDPE	145	0
P-403	21	20.504	20.803	0.06022	J-369	J-370	237.61	-9,406.68	8,056.91	110	0.01	0	0.06022	uPVC	145	0
P-404	12	20.684	20.895	2.45659	J-368	J-371	237.43	-9,413.56	8,086.06	110	0.26	0.73	2.45659	HDPE	145	0.01
P-405	10.5	20.895	20.914	0.86605	J-371	J-372	237.21	-9,407.34	8,096.21	110	0.09	0.1	0.86605	HDPE	145	0
P-406	18.5	20.914	20.982	0.63679	J-372	J-373	237.19	-9,411.60	8,106.04	110	0.07	0.06	0.63679	HDPE	145	0
P-407	40	20.982	20.354	-0.47074	J-373	J-374	237.12	-9,418.48	8,123.07	140	0.03	0.01	0.47074	HDPE	145	0
P-408	45.5	20.354	19.706	-0.9365	J-374	J-375	237.75	-9,442.72	8,107.35	160	0.05	0.02	0.9365	uPVC	145	0
P-409	24	19.706	19.558	-2.00792	J-375	J-376	238.4	-9,484.64	8,113.57	110	0.21	0.5	2.00792	HDPE	145	0.01
P-41	60	25.348	25.368	-0.0577	J-5	J-34	233.24	-10,234.55	7,798.17	110	0.01	0	0.0577	HDPE	145	0
P-410	30	19.558	20.257	0.08599	J-376	J-377	238.56	-9,494.80	8,091.96	160	0	0	0.08599	uPVC	145	0
P-411	72	19.4	19.967	-2.61249	J-378	J-366	238.73	-9,499.77	8,075.61	110	0.27	0.81	2.61249	HDPE	145	0.06
P-412	35	19.657	20.33	5.31667	J-365	J-379	238.65	-9,463.68	8,015.63	200	0.17	0.16	5.31667	uPVC	145	0.01
P-413	52	20.33	21.481	4.88695	J-379	J-380	237.97	-9,436.55	7,993.39	200	0.16	0.14	4.88695	uPVC	145	0.01
P-414	18.5	20.895	21.059	1.47304	J-371	J-381	237.21	-9,407.34	8,096.21	110	0.16	0.28	1.47304	HDPE	145	0.01
P-415	21	21.059	21.274	1.24521	J-381	J-382	237.04	-9,392.22	8,085.71	110	0.13	0.21	1.24521	HDPE	145	0
P-416	61.5	21.274	21.443	0.33296	J-382	J-383	236.82	-9,374.20	8,075.23	110	0.04	0.02	0.33296	HDPE	145	0
P-417	23.5	21.274	21.543	0.60862	J-382	J-384	236.82	-9,374.20	8,075.23	110	0.06	0.05	0.60862	HDPE	145	0

P-418	46	21.543	22.82	-0.26101	J-384	J-385	236.55	-9,353.57	8,064.42	125	0.02	0.01	0.26101	HDPE	145	0
P-419	31.5	22.82	23.691	-0.69503	J-385	J-386	235.27	-9,312.29	8,084.73	110	0.07	0.07	0.69503	HDPE	145	0
P-42	20	25.368	25.368	0.05736	J-34	J-39	233.22	-10,184.69	7,764.63	110	0.01	0	0.05736	HDPE	145	0
P-420	33	23.691	23.601	-1.56347	J-386	J-279	234.4	-9,283.79	8,098.48	110	0.16	0.31	1.56347	HDPE	145	0.01
P-421	57	23.691	21.373	0.52041	J-386	J-387	234.4	-9,283.79	8,098.48	110	0.05	0.04	0.52041	HDPE	145	0
P-422	61	21.373	21.942	0.09845	J-387	J-388	236.72	-9,325.72	8,136.81	110	0.01	0	0.09845	HDPE	145	0
P-423	18	21.942	22.092	-0.34559	J-388	J-389	236.15	-9,367.65	8,181.03	110	0.04	0.02	0.34559	HDPE	145	0
P-43	59	25.073	25.273	1.045	J-33	J-15	233.46	-10,210.07	7,733.10	110	0.11	0.15	1.045	HDPE	145	0.01
P-44	82.5	25.058	24.789	4.58042	J-16	J-40	233.88	-10,112.96	7,667.41	110	0.48	2.3	4.58042	HDPE	145	0.19
P-45	34.5	24.789	25.025	3.28596	J-40	J-41	233.96	-10,161.76	7,633.19	110	0.35	1.25	3.28596	HDPE	145	0.04
P-46	92.5	25.025	25.086	2.85624	J-41	J-42	233.68	-10,194.11	7,644.66	110	0.3	0.96	2.85624	HDPE	145	0.09
P-47	32.5	25.086	25.058	-5.11499	J-42	J-43	233.53	-10,224.41	7,557.04	110	0.54	2.83	5.11499	HDPE	145	0.09
P-48	55	25.058	24.581	-0.42983	J-43	J-44	233.65	-10,194.52	7,544.34	110	0.05	0.03	0.42983	uPVC	145	0
P-49	32	24.581	24.27	2.36625	J-44	J-45	234.13	-10,211.71	7,491.93	110	0.25	0.68	2.36625	uPVC	145	0.02
P-5	77.5	25.348	25.345	3.39352	J-5	J-6	233.24	-10,234.55	7,798.17	110	0.36	1.32	3.39352	HDPE	145	0.1
P-50	82.5	24.27	24.999	5.74748	J-45	J-46	234.42	-10,221.95	7,461.63	110	0.6	3.51	5.74748	HDPE	145	0.29
P-51	24	24.999	25.174	3.56116	J-46	J-47	233.4	-10,297.29	7,440.75	110	0.37	1.45	3.56116	HDPE	145	0.03
P-52	30.5	25.174	25.11	4.35863	J-47	J-48	233.19	-10,294.83	7,417.00	110	0.46	2.1	4.35863	HDPE	145	0.06
P-53	66	25.11	25.059	1.57894	J-48	J-49	233.19	-10,325.13	7,418.64	110	0.17	0.32	1.57894	HDPE	145	0.02
P-54	49	25.059	25.071	2.15269	J-49	J-50	233.22	-10,389.01	7,435.02	110	0.23	0.57	2.15269	HDPE	145	0.03
P-55	7.5	25.071	25.071	-0.69522	J-50	J-51	233.18	-10,431.59	7,458.77	110	0.07	0.07	0.69522	HDPE	145	0
P-56	42.5	25.071	25.138	-2.29931	J-51	J-52	233.18	-10,435.68	7,464.91	110	0.24	0.64	2.29931	HDPE	145	0.03
P-57	36.5	25.138	25.059	-1.51312	J-52	J-53	233.14	-10,404.97	7,492.34	110	0.16	0.3	1.51312	HDPE	145	0.01
P-59	45	25.089	25.095	-0.96216	J-54	J-55	233.22	-10,323.08	7,495.21	110	0.1	0.13	0.96216	HDPE	145	0.01
P-6	27.5	25.345	25.282	4.5777	J-6	J-7	233.14	-10,309.76	7,780.09	110	0.48	2.3	4.5777	HDPE	145	0.06
P-60	42.5	25.095	25.077	1.87381	J-55	J-56	233.22	-10,307.11	7,537.38	110	0.2	0.44	1.87381	HDPE	145	0.02
P-61	26	25.059	24.966	-1.41708	J-53	J-57	233.23	-10,386.55	7,523.87	110	0.15	0.26	1.41708	HDPE	145	0.01
P-62	43.5	24.966	25.089	-1.53615	J-57	J-54	233.33	-10,363.21	7,512.40	110	0.16	0.3	1.53615	HDPE	145	0.01
P-63	43	25.077	24.966	0.20319	J-56	J-57	233.22	-10,346.83	7,552.12	110	0.02	0.01	0.20319	HDPE	145	0
P-631	19.5	21.099	20.799	0.80066	J-360	PJ-530	237.35	-9,591.10	7,989.76	140	0.05	0.03	0.80066	HDPE	145	0
P-633	63.5	20.799	20.589	0.18193	PJ-530	PJ-532	237.65	-9,583.41	8,007.81	160	0.01	0	0.18193	uPVC	145	0
P-64	30	25.07	24.971	-0.42124	J-58	J-59	233.22	-10,380.41	7,532.47	110	0.04	0.03	0.42124	HDPE	145	0
P-647	24	21.481	21.935	4.45722	J-380	J-253	236.81	-9,385.78	7,991.42	180	0.18	0.2	4.45722	HDPE	145	0
P-65	25.5	24.971	25.077	-1.35267	J-59	J-56	233.32	-10,370.58	7,560.72	110	0.14	0.24	1.35267	HDPE	145	0.01
P-66	40.5	24.971	24.828	0.65643	J-59	J-60	233.32	-10,370.58	7,560.72	110	0.07	0.06	0.65643	HDPE	145	0
P-67	24.5	24.828	24.844	-2.30817	J-60	J-61	233.46	-10,407.84	7,576.28	110	0.24	0.65	2.30817	HDPE	145	0.02

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P-68	13	24.844	24.875	-4.6352	J-61	J-62	233.46	-10,398.83	7,599.21	110	0.49	2.36	4.6352	uPVC	145	0.03
P-69	75	24.875	24.972	-2.53096	J-62	J-11	233.46	-10,394.33	7,611.49	110	0.27	0.77	2.53096	uPVC	145	0.06
P-695	25.5	21.303	21.294	-6.09921	J-236	J-289	237.05	-9,320.97	7,751.04	140	0.4	1.21	6.09921	HDPE	145	0.03
P-7	23.5	25.282	25.316	3.10075	J-7	J-8	233.14	-10,336.75	7,776.16	110	0.33	1.12	3.10075	HDPE	145	0.03
P-70	29.5	24.901	24.907	-1.25422	J-63	J-64	233.37	-10,483.59	7,609.45	110	0.13	0.21	1.25422	HDPE	145	0.01
P-71	15	24.907	24.881	-1.48491	J-64	J-65	233.37	-10,459.84	7,620.50	110	0.16	0.29	1.48491	HDPE	145	0
P-72	16	24.881	24.837	-1.77145	J-65	J-66	233.4	-10,445.51	7,616.41	110	0.19	0.4	1.77145	HDPE	145	0.01
P-73	16	24.837	24.834	-1.76693	J-66	J-67	233.45	-10,430.77	7,610.26	110	0.19	0.4	1.76693	HDPE	145	0.01
P-74	18	24.834	24.844	-2.16802	J-67	J-61	233.46	-10,416.03	7,604.53	110	0.23	0.58	2.16802	HDPE	145	0.01
P-75	64	24.837	24.828	-0.27951	J-66	J-60	233.45	-10,430.77	7,610.26	110	0.03	0.01	0.27951	HDPE	145	0
P-76	9	24.888	24.895	-2.49388	J-68	J-69	233.46	-10,375.90	7,605.76	110	0.26	0.75	2.49388	HDPE	145	0.01
P-764	124.5	21.363	22.315	-3.52042	J-290	J-625	237.1	-9,319.43	7,706.04	140	0.23	0.44	3.52042	HDPE	145	0.05
P-77	82.5	24.895	24.94	-2.10165	J-69	J-12	233.46	-10,367.30	7,602.89	110	0.22	0.54	2.10165	HDPE	145	0.04
P-78	79	24.895	25.063	-0.88058	J-69	J-70	233.46	-10,367.30	7,602.89	110	0.09	0.11	0.88058	HDPE	145	0.01
P-79	40.5	25.063	25.095	3.20261	J-70	J-55	233.3	-10,293.19	7,575.46	110	0.34	1.19	3.20261	HDPE	145	0.05
P-8	58	25.236	24.978	1.60184	J-9	J-10	233.18	-10,335.70	7,761.48	110	0.17	0.33	1.60184	uPVC	145	0.02
P-80	46	25.063	24.989	-4.55721	J-70	J-71	233.3	-10,293.19	7,575.46	110	0.48	2.28	4.55721	HDPE	145	0.1
P-81	108.5	24.989	24.72	2.46739	J-71	J-72	233.48	-10,248.97	7,563.18	110	0.26	0.73	2.46739	HDPE	145	0.08
P-82	28.5	25.03	24.886	-1.15721	J-73	J-74	233.25	-10,395.56	7,486.61	110	0.12	0.18	1.15721	HDPE	145	0.01
P-83	37	24.886	24.874	-2.51149	J-74	J-75	233.4	-10,368.94	7,476.37	110	0.26	0.76	2.51149	HDPE	145	0.03
P-84	33	24.874	25.089	0.92201	J-75	J-54	233.44	-10,334.14	7,464.09	110	0.1	0.12	0.92201	HDPE	145	0
P-85	85	25.194	25.071	-1.2174	J-76	J-51	233.04	-10,499.15	7,521.41	110	0.13	0.2	1.2174	uPVC	145	0.02
P-86	56	25.071	25.228	2.52567	J-50	J-77	233.18	-10,431.59	7,458.77	110	0.27	0.77	2.52567	HDPE	145	0.04
P-87	29	25.228	25.217	1.68965	J-77	J-78	232.98	-10,462.71	7,412.09	110	0.18	0.36	1.68965	HDPE	145	0.01
P-88	46	25.217	25.176	2.75655	J-78	J-79	232.98	-10,472.94	7,385.06	110	0.29	0.9	2.75655	HDPE	145	0.04
P-89	50	25.176	25.236	0.02047	J-79	J-80	232.98	-10,488.09	7,341.66	110	0	0	0.02047	HDPE	145	0
P-9	28	24.978	24.972	1.22939	J-10	J-11	233.42	-10,354.31	7,706.45	110	0.13	0.2	1.22939	uPVC	145	0.01
P-90	111.5	25.236	25.003	-2.22325	J-80	J-81	232.92	-10,481.95	7,292.53	110	0.23	0.6	2.22325	HDPE	145	0.07
P-91	64	25.003	25.243	0.19328	J-81	J-82	233.22	-10,371.81	7,310.95	110	0.02	0.01	0.19328	HDPE	145	0
P-92	85	25.243	25.217	1.52518	J-82	J-78	232.98	-10,389.82	7,372.37	110	0.16	0.3	1.52518	HDPE	145	0.03
P-93	83	25.228	25.243	-1.15934	J-77	J-82	232.98	-10,462.71	7,412.09	110	0.12	0.18	1.15934	HDPE	145	0.02
P-94	138	25.236	25.88	1.38595	J-80	J-83	232.92	-10,481.95	7,292.53	110	0.15	0.25	1.38595	HDPE	145	0.03
P-95	60	25.88	25.523	-0.49188	J-83	J-84	232.24	-10,618.71	7,274.51	110	0.05	0.04	0.49188	HDPE	145	0
P-96	10	25.523	25.396	-1.47245	J-84	J-85	232.6	-10,592.50	7,327.33	110	0.15	0.28	1.47245	HDPE	145	0
P-97	72.5	25.396	24.424	-0.80644	J-85	J-86	232.73	-10,587.18	7,335.52	110	0.08	0.09	0.80644	HDPE	145	0.01
P-98	68.5	24.424	25.149	-0.78974	J-86	J-87	233.71	-10,545.83	7,394.89	110	0.08	0.09	0.78974	HDPE	145	0.01

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P-99	75.5	25.149	25.396	1.11857	J-87	J-85	232.99	-10,512.66	7,343.71	110	0.12	0.17	1.11857	HDPE	145	0.01
PP-424	149	25.759	25.306	0.41901	J-92	PJ-390	232.34	-10,732.54	7,262.23	110	0.04	0.03	0.41901	HDPE	145	0
PP-425	141.5	25.306	25.509	-0.41299	PJ-390	J-93	232.79	-10,863.81	7,206.78	110	0.04	0.03	0.41299	HDPE	145	0
PP-426	122	25.509	25.599	-1.09048	J-93	J-89	232.59	-10,756.29	7,298.67	110	0.11	0.16	1.09048	HDPE	145	0.02
PP-427	159.5	25.599	25.454	-1.80166	J-89	PJ-391	232.52	-10,659.25	7,369.92	110	0.19	0.41	1.80166	HDPE	145	0.07
PP-428	138	25.454	24.901	-2.24701	PJ-391	J-63	232.73	-10,566.55	7,499.13	110	0.24	0.62	2.24701	HDPE	145	0.09
PP-429	227	24.901	25.316	-2.12262	J-63	J-8	233.37	-10,483.59	7,609.45	110	0.22	0.55	2.12262	HDPE	145	0.13
PP-430	45.5	25.316	25.266	0.13038	J-8	PJ-392	233.08	-10,356.40	7,789.00	110	0.01	0	0.13038	HDPE	145	0
PP-431	22	24.978	25.187	0.06308	J-10	PJ-393	233.42	-10,354.31	7,706.45	110	0.01	0	0.06308	HDPE	145	0
PP-432	18	24.907	24.957	0.05163	J-64	PJ-394	233.37	-10,459.84	7,620.50	110	0.01	0	0.05163	HDPE	145	0
PP-433	34.5	24.881	24.961	0.09888	J-65	PJ-395	233.4	-10,445.51	7,616.41	110	0.01	0	0.09888	HDPE	145	0
PP-434	53	24.834	24.933	0.15186	J-67	PJ-396	233.46	-10,416.03	7,604.53	110	0.02	0	0.15186	HDPE	145	0
PP-435	19.5	24.875	24.888	-2.41218	J-62	J-68	233.46	-10,394.33	7,611.49	110	0.25	0.7	2.41218	HDPE	145	0.01
PP-436	80	24.94	25.125	-2.83644	J-12	J-14	233.46	-10,343.30	7,682.08	110	0.3	0.95	2.83644	HDPE	145	0.08
PP-437	101	25.273	25.173	2.91298	J-15	J-13	233.25	-10,223.02	7,676.05	110	0.31	1	2.91298	HDPE	145	0.1
PP-438	42.5	25.173	25.26	0.66207	J-13	PJ-397	233.25	-10,304.25	7,736.06	110	0.07	0.06	0.66207	HDPE	145	0
PP-439	9	25.26	25.282	-1.30505	PJ-397	J-7	233.16	-10,331.11	7,768.96	110	0.14	0.23	1.30505	HDPE	145	0
PP-440	9	25.236	25.26	-1.79379	J-9	PJ-397	233.18	-10,335.70	7,761.48	110	0.19	0.41	1.79379	HDPE	145	0
PP-441	11.5	25.025	25.125	0.03301	J-41	PJ-398	233.68	-10,194.11	7,644.66	110	0	0	0.03301	HDPE	145	0
PP-442	25.5	24.989	25.086	-7.54015	J-71	J-42	233.48	-10,248.97	7,563.18	110	0.79	5.8	7.54015	HDPE	145	0.15
PP-443	106.5	24.828	25.194	2.01059	J-60	J-76	233.46	-10,407.84	7,576.28	110	0.21	0.5	2.01059	HDPE	145	0.05
PP-444	65.5	25.194	25.455	2.49193	J-76	PJ-399	233.04	-10,499.15	7,521.41	110	0.26	0.75	2.49193	HDPE	145	0.05
PP-445	68	25.455	25.226	2.44092	PJ-399	J-90	232.73	-10,557.03	7,490.84	110	0.26	0.72	2.44092	HDPE	145	0.05
PP-446	12.5	25.454	25.455	-0.4425	PJ-391	PJ-399	232.73	-10,566.55	7,499.13	110	0.05	0.03	0.4425	HDPE	145	0
PP-447	123	25.455	25.228	-1.16192	PJ-399	J-77	232.73	-10,557.03	7,490.84	110	0.12	0.18	1.16192	HDPE	145	0.02
PP-448	24.5	25.149	25.176	-2.39093	J-87	J-79	232.99	-10,512.66	7,343.71	110	0.25	0.69	2.39093	HDPE	145	0.02
PP-449	30	25.243	25.189	-3.24162	J-82	PJ-400	232.98	-10,389.82	7,372.37	110	0.34	1.21	3.24162	HDPE	145	0.04
PP-450	60.5	25.189	25.054	-1.34985	PJ-400	J-94	233.07	-10,359.98	7,368.00	110	0.14	0.24	1.34985	HDPE	145	0.01
PP-451	14	24.65	24.46	0.04017	J-100	PJ-401	234.1	-10,210.46	7,335.64	110	0	0	0.04017	HDPE	145	0
PP-452	11	25.15	25.15	0.03158	J-96	PJ-402	233.22	-10,285.39	7,370.44	110	0	0	0.03158	HDPE	145	0
PP-453	12	25.167	25.147	-0.03445	PJ-403	J-97	233.2	-10,300.61	7,395.13	110	0	0	0.03445	HDPE	145	0
PP-454	19.5	25.146	25.174	1.00947	J-98	J-47	233.22	-10,289.08	7,399.92	110	0.11	0.14	1.00947	HDPE	145	0
PP-455	61.5	25.189	25.11	-2.32714	PJ-400	J-48	233.07	-10,359.98	7,368.00	110	0.24	0.66	2.32714	HDPE	145	0.04
PP-456	23.5	24.999	24.72	1.81395	J-46	J-72	233.4	-10,297.29	7,440.75	110	0.19	0.41	1.81395	HDPE	145	0.01
PP-457	47	24.72	24.874	3.76864	J-72	J-75	233.67	-10,287.05	7,461.63	110	0.4	1.61	3.76864	HDPE	145	0.08
PP-458	46	25.059	24.886	-1.0349	J-49	J-74	233.22	-10,389.01	7,435.02	110	0.11	0.15	1.0349	HDPE	145	0.01

PP-459	11	25.03	25.138	1.04401	J-73	J-52	233.25	-10,395.56	7,486.61	110	0.11	0.15	1.04401	HDPE	145	0
PP-460	10.5	25.059	25.07	-0.30518	J-53	J-58	233.23	-10,386.55	7,523.87	110	0.03	0.01	0.30518	HDPE	145	0
PP-461	12.5	25.058	25.032	-4.97162	J-43	J-145	233.65	-10,194.52	7,544.34	110	0.52	2.68	4.97162	HDPE	145	0.03
PP-462	30.5	25.032	24.855	-4.65958	J-145	PJ-404	233.71	-10,182.26	7,544.06	110	0.49	2.38	4.65958	HDPE	145	0.07
PP-463	48.5	24.855	24.113	3.06689	PJ-404	PJ-405	233.96	-10,157.53	7,526.00	110	0.32	1.1	3.06689	HDPE	145	0.05
PP-464	44	24.113	24.581	3.17131	PJ-405	J-44	234.65	-10,169.81	7,479.32	110	0.33	1.17	3.17131	HDPE	145	0.05
PP-465	44.5	24.27	23.824	-3.83664	J-45	PJ-406	234.42	-10,221.95	7,461.63	110	0.4	1.66	3.83664	HDPE	145	0.07
PP-466	27	23.824	24.113	0.44672	PJ-406	PJ-405	234.94	-10,178.00	7,453.53	110	0.05	0.03	0.44672	HDPE	145	0
PP-467	37	23.824	23.271	-4.59416	PJ-406	J-138	234.94	-10,178.00	7,453.53	110	0.48	2.32	4.59416	HDPE	145	0.09
PP-468	22	23.812	23.413	-0.06308	PJ-407	J-137	235.01	-10,198.89	7,381.46	110	0.01	0	0.06308	HDPE	145	0
PP-469	28	23.529	23.04	0.08027	J-136	PJ-408	235.29	-10,179.49	7,374.38	110	0.01	0	0.08027	HDPE	145	0
PP-470	118	23.561	23.133	-1.13419	J-102	J-104	235.29	-10,152.73	7,339.33	110	0.12	0.17	1.13419	HDPE	145	0.02
PP-471	22.5	23.458	23.777	0.06451	J-140	PJ-409	235.48	-10,143.06	7,439.90	110	0.01	0	0.06451	HDPE	145	0
PP-472	21	23.244	23.115	-3.56918	J-139	PJ-410	235.66	-10,153.81	7,421.55	110	0.38	1.45	3.56918	HDPE	145	0.03
PP-473	37	23.115	22.509	-3.87289	PJ-410	J-125	235.82	-10,135.22	7,423.23	110	0.41	1.69	3.87289	HDPE	145	0.06
PP-474	24	23.115	22.776	0.06881	PJ-410	PJ-411	235.82	-10,135.22	7,423.23	110	0.01	0	0.06881	HDPE	145	0
PP-475	28.5	23.575	22.997	0.0817	J-141	PJ-412	235.38	-10,138.87	7,448.81	110	0.01	0	0.0817	HDPE	145	0
PP-476	20	23.798	23.329	0.05736	J-142	PJ-413	235.2	-10,128.13	7,467.67	110	0.01	0	0.05736	HDPE	145	0
PP-477	9.5	23.621	23.065	-4.67635	J-143	PJ-414	235.43	-10,115.28	7,487.85	110	0.49	2.39	4.67635	HDPE	145	0.02
PP-478	7.5	23.065	22.606	0.02156	PJ-414	PJ-415	236.01	-10,106.08	7,485.70	110	0	0	0.02156	HDPE	145	0
PP-479	34.5	23.065	22.185	-4.84547	PJ-414	PJ-416	236.01	-10,106.08	7,485.70	110	0.51	2.56	4.84547	HDPE	145	0.09
PP-480	46.5	22.185	20.499	1.18661	PJ-416	J-121	236.98	-10,089.94	7,510.65	110	0.12	0.19	1.18661	HDPE	145	0.01
PP-481	27.5	20.499	19.072	0.07883	J-121	PJ-417	238.66	-10,065.76	7,475.27	110	0.01	0	0.07883	HDPE	145	0
PP-482	21.5	20.898	22.136	0.06165	J-122	PJ-418	238.21	-10,073.88	7,446.45	110	0.01	0	0.06165	HDPE	145	0
PP-483	27.5	21.067	19.63	0.07883	J-123	PJ-419	238	-10,078.86	7,430.46	110	0.01	0	0.07883	HDPE	145	0
PP-484	9.5	18.491	18.391	0.02729	J-119	PJ-420	240.75	-10,031.95	7,451.16	110	0	0	0.02729	HDPE	145	0
PP-485	11.5	20.784	20.285	0.03301	J-117	PJ-421	238.43	-10,058.16	7,404.52	110	0	0	0.03301	HDPE	145	0
PP-486	19	21.312	20.614	0.05449	J-108	PJ-422	237.89	-10,011.06	7,386.00	110	0.01	0	0.05449	HDPE	145	0
PP-487	29	21.48	20.807	1.08729	J-109	PJ-423	237.77	-9,997.96	7,397.88	110	0.11	0.16	1.08729	HDPE	145	0
PP-488	30.5	20.807	19.14	0.08742	PJ-423	PJ-424	238.44	-9,975.89	7,379.20	110	0.01	0	0.08742	HDPE	145	0
PP-489	12.5	20.807	20.366	0.7936	PJ-423	J-176	238.44	-9,975.89	7,379.20	110	0.08	0.09	0.7936	HDPE	145	0
PP-490	13.5	20.366	20.686	0.03874	J-176	PJ-425	238.88	-9,975.67	7,366.76	110	0	0	0.03874	HDPE	145	0
PP-491	34	20.366	20.706	0.09745	J-176	PJ-426	238.88	-9,975.67	7,366.76	110	0.01	0	0.09745	HDPE	145	0
PP-492	26	21.3	21.659	0.07454	J-106	PJ-427	237.76	-10,034.81	7,359.80	110	0.01	0	0.07454	HDPE	145	0
PP-493	25	21.88	22.448	0.07167	J-126	PJ-428	237.16	-10,090.65	7,382.51	110	0.01	0	0.07167	HDPE	145	0
PP-494	10.5	21.727	21.887	0.03015	J-127	PJ-429	237.3	-10,016.49	7,320.14	110	0	0	0.03015	HDPE	145	0

PP-495	6.5	22.535	22.714	0.19641	J-180	PJ-430	236.41	-10,033.32	7,288.56	110	0.02	0.01	0.19641	HDPE	145	0
PP-496	14	22.714	22.854	0.04017	PJ-430	PJ-431	236.23	-10,037.53	7,283.61	110	0	0	0.04017	HDPE	145	0
PP-497	17	23.074	22.714	-0.04876	PJ-432	PJ-430	235.87	-10,053.67	7,281.30	110	0.01	0	0.04876	HDPE	145	0
PP-498	91.5	22.535	23.377	2.63444	J-180	PJ-433	236.41	-10,033.32	7,288.56	110	0.28	0.83	2.63444	HDPE	145	0.08
PP-499	29.5	23.377	24.006	1.6282	PJ-433	J-135	235.49	-10,114.26	7,315.47	110	0.17	0.34	1.6282	HDPE	145	0.01
PP-500	4.5	23.377	23.417	0.64676	PJ-433	PJ-434	235.49	-10,114.26	7,315.47	110	0.07	0.06	0.64676	HDPE	145	0
PP-501	34.5	23.417	23.306	0.48337	PJ-434	J-103	235.45	-10,118.45	7,316.94	110	0.05	0.04	0.48337	HDPE	145	0
PP-502	9	23.417	23.217	0.02585	PJ-434	PJ-435	235.45	-10,118.45	7,316.94	110	0	0	0.02585	HDPE	145	0
PP-503	12.5	22.354	21.979	-1.62927	J-129	PJ-436	236.62	-9,993.69	7,256.20	110	0.17	0.34	1.62927	HDPE	145	0
PP-504	49	21.979	21.241	0.1404	PJ-436	PJ-437	237	-9,982.08	7,260.29	110	0.01	0	0.1404	HDPE	145	0
PP-505	67	21.979	19.732	-2.13774	PJ-436	PJ-438	237	-9,982.08	7,260.29	110	0.22	0.56	2.13774	HDPE	145	0.04
PP-506	6.5	19.732	19.399	-2.9532	PJ-438	PJ-439	239.29	-9,916.50	7,263.81	110	0.31	1.02	2.9532	HDPE	145	0.01
PP-507	5	19.399	19.165	-3.16671	PJ-439	J-179	239.63	-9,910.30	7,264.98	110	0.33	1.16	3.16671	HDPE	145	0.01
PP-508	31.5	19.399	20.237	0.09029	PJ-439	PJ-440	239.63	-9,910.30	7,264.98	110	0.01	0	0.09029	HDPE	145	0
PP-509	21	19.732	18.593	0.54475	PJ-438	PJ-441	239.29	-9,916.50	7,263.81	110	0.06	0.05	0.54475	HDPE	145	0
PP-510	11.5	18.593	17.954	0.42002	PJ-441	PJ-442	240.43	-9,921.37	7,284.44	110	0.04	0.03	0.42002	HDPE	145	0
PP-511	12.5	17.954	18.563	0.25368	PJ-442	PJ-443	241.07	-9,923.55	7,295.84	110	0.03	0.01	0.25368	HDPE	145	0
PP-512	27.5	18.563	19.79	0.07883	PJ-443	PJ-444	240.46	-9,936.13	7,294.50	110	0.01	0	0.07883	HDPE	145	0
PP-513	10.5	18.563	17.874	0.03015	PJ-443	PJ-445	240.46	-9,936.13	7,294.50	110	0	0	0.03015	HDPE	145	0
PP-514	9.5	17.345	17.954	-0.02729	PJ-446	PJ-442	241.68	-9,923.88	7,305.40	110	0	0	0.02729	HDPE	145	0
PP-515	7.5	17.954	17.565	0.02156	PJ-442	PJ-447	241.07	-9,923.55	7,295.84	110	0	0	0.02156	HDPE	145	0
PP-516	5.5	18.872	18.593	-0.01583	PJ-448	PJ-441	240.15	-9,927.07	7,283.93	110	0	0	0.01583	HDPE	145	0
PP-517	59	18.006	16.309	0.22353	J-177	PJ-449	241.15	-9,858.69	7,309.73	110	0.02	0.01	0.22353	HDPE	145	0
PP-518	9.5	16.309	16.508	0.02729	PJ-449	PJ-450	242.85	-9,914.16	7,320.33	110	0	0	0.02729	HDPE	145	0
PP-519	17.5	17.621	18.37	0.0502	J-175	PJ-451	241.63	-9,860.79	7,336.99	110	0.01	0	0.0502	HDPE	145	0
PP-520	26.5	23.679	22.721	0.27946	J-130	PJ-452	235.28	-9,984.00	7,212.96	110	0.03	0.01	0.27946	HDPE	145	0
PP-521	11.5	22.721	22.601	0.03301	PJ-452	PJ-453	236.24	-9,958.18	7,219.41	110	0	0	0.03301	HDPE	145	0
PP-522	24	22.721	21.903	0.06881	PJ-452	PJ-454	236.24	-9,958.18	7,219.41	110	0.01	0	0.06881	HDPE	145	0
PP-523	16	23.973	23.983	-2.34916	J-134	J-133	234.93	-10,053.44	7,225.54	110	0.25	0.67	2.34916	HDPE	145	0.01
PP-524	90.5	24.054	23.107	-2.14767	J-132	PJ-455	234.91	-9,972.47	7,195.14	110	0.23	0.57	2.14767	HDPE	145	0.05
PP-525	34.5	23.107	20.861	0.09888	PJ-455	PJ-456	235.91	-9,882.95	7,190.74	110	0.01	0	0.09888	HDPE	145	0
PP-526	25.5	23.107	21.841	-2.67762	PJ-455	PJ-457	235.91	-9,882.95	7,190.74	110	0.28	0.85	2.67762	HDPE	145	0.02
PP-527	23	21.841	20.743	0.06595	PJ-457	PJ-458	237.2	-9,863.54	7,205.61	110	0.01	0	0.06595	HDPE	145	0
PP-528	21.5	21.841	21.344	-2.94411	PJ-457	PJ-459	237.2	-9,863.54	7,205.61	110	0.31	1.02	2.94411	HDPE	145	0.02
PP-529	29.5	21.344	21.099	-3.19915	PJ-459	J-182	237.72	-9,848.51	7,221.04	110	0.34	1.19	3.19915	HDPE	145	0.03
PP-530	19	20.486	21.344	-0.05449	PJ-460	PJ-459	238.58	-9,859.64	7,236.34	110	0.01	0	0.05449	HDPE	145	0

PP-531	49.5	19.882	18.022	-0.91349	J-183	PJ-461	239.22	-9,831.74	7,257.10	110	0.1	0.12	0.91349	HDPE	145	0.01
PP-532	5.5	18.022	18.104	-1.60684	PJ-461	J-178	241.09	-9,852.29	7,299.24	110	0.17	0.33	1.60684	HDPE	145	0
PP-533	46.5	18.022	20.087	0.4026	PJ-461	PJ-462	241.09	-9,852.29	7,299.24	110	0.04	0.03	0.4026	HDPE	145	0
PP-534	11.5	20.087	20.256	0.03301	PJ-462	PJ-463	239.02	-9,815.86	7,328.07	110	0	0	0.03301	HDPE	145	0
PP-535	35.5	20.087	17.641	0.10174	PJ-462	PJ-464	239.02	-9,815.86	7,328.07	110	0.01	0	0.10174	HDPE	145	0
PP-536	10.5	17.088	17.118	-0.03015	PJ-465	J-173	242.32	-9,872.46	7,375.76	110	0	0	0.03015	HDPE	145	0
PP-537	9	17.205	17.255	0.02585	J-174	PJ-466	242.18	-9,861.84	7,370.11	110	0	0	0.02585	HDPE	145	0
PP-538	55.5	22.003	23.761	-3.09499	J-181	J-297	237.11	-9,816.98	7,252.74	110	0.33	1.11	3.09499	HDPE	145	0.06
PP-539	34.5	23.761	21.366	0.09888	J-297	PJ-467	235.41	-9,778.56	7,292.73	110	0.01	0	0.09888	HDPE	145	0
PP-540	18.5	23.538	22.131	0.05306	J-296	PJ-468	235.67	-9,758.09	7,308.70	110	0.01	0	0.05306	HDPE	145	0
PP-541	48.5	22.503	18.434	-4.60395	J-295	J-185	236.75	-9,738.43	7,325.49	110	0.48	2.33	4.60395	HDPE	145	0.11
PP-542	32.5	18.434	18.314	0.09315	J-185	PJ-469	240.94	-9,761.68	7,367.06	110	0.01	0	0.09315	HDPE	145	0
PP-543	49.5	16.462	19.933	2.31528	J-189	PJ-470	242.93	-9,732.98	7,420.63	110	0.24	0.65	2.31528	HDPE	145	0.03
PP-544	9	19.933	19.144	0.02585	PJ-470	PJ-471	239.42	-9,702.65	7,392.27	110	0	0	0.02585	HDPE	145	0
PP-545	57	19.933	18.429	1.95859	PJ-470	PJ-472	239.42	-9,702.65	7,392.27	110	0.21	0.48	1.95859	HDPE	145	0.03
PP-546	46	18.429	22.77	3.64568	PJ-472	J-294	240.9	-9,665.71	7,421.88	110	0.38	1.51	3.64568	HDPE	145	0.07
PP-547	55.5	18.429	13.34	-2.14108	PJ-472	J-191	240.9	-9,665.71	7,421.88	110	0.23	0.56	2.14108	HDPE	145	0.03
PP-548	46	15.213	14.344	0.13181	J-190	PJ-473	244.17	-9,713.65	7,441.02	110	0.01	0	0.13181	HDPE	145	0
PP-549	12.5	14.289	14.659	0.03588	J-319	PJ-474	245.77	-9,787.35	7,498.14	110	0	0	0.03588	HDPE	145	0
PP-550	25	13.614	14.08	5.93996	J-317	J-313	246.39	-9,775.56	7,539.74	110	0.63	3.73	5.93996	HDPE	145	0.09
PP-551	11.5	13.614	13.405	0.03301	J-317	PJ-475	246.39	-9,775.56	7,539.74	110	0	0	0.03301	HDPE	145	0
PP-552	25	14.264	13.715	0.07167	J-312	PJ-476	245.61	-9,740.84	7,544.66	110	0.01	0	0.07167	HDPE	145	0
PP-553	21	14.564	14.119	9.77902	J-311	PJ-477	245.25	-9,723.48	7,545.97	125	0.8	5.04	9.77902	HDPE	145	0.11
PP-554	32	14.119	13.301	0.09172	PJ-477	PJ-478	245.59	-9,719.43	7,526.70	110	0.01	0	0.09172	HDPE	145	0
PP-555	11	14.119	14.147	9.50394	PJ-477	PJ-479	245.59	-9,719.43	7,526.70	125	0.77	4.78	9.50394	HDPE	145	0.05
PP-556	11.5	14.147	14.446	0.03301	PJ-479	PJ-480	245.51	-9,709.73	7,521.46	110	0	0	0.03301	HDPE	145	0
PP-557	64	14.147	13.349	9.22313	PJ-479	J-192	245.51	-9,709.73	7,521.46	125	0.75	4.52	9.22313	HDPE	145	0.29
PP-558	25	13.439	14.108	0.07167	J-194	PJ-481	245.87	-9,646.70	7,522.06	110	0.01	0	0.07167	HDPE	145	0
PP-559	27.5	17.913	17.673	0.07883	J-308	PJ-482	241.59	-9,637.00	7,559.07	110	0.01	0	0.07883	HDPE	145	0
PP-560	50	15.762	15.033	0.14327	J-309	PJ-483	244.02	-9,691.05	7,560.38	110	0.02	0	0.14327	HDPE	145	0
PP-561	9.5	15.281	15.421	0.02729	J-314	PJ-484	244.79	-9,745.42	7,577.09	110	0	0	0.02729	HDPE	145	0
PP-562	39.5	16.031	16.021	0.1132	J-212	PJ-485	243.89	-9,737.40	7,631.96	110	0.01	0	0.1132	HDPE	145	0
PP-563	26.5	15.899	15.891	-13.6374	J-315	PJ-486	244.41	-9,782.11	7,606.90	140	0.89	5.37	13.6374	HDPE	145	0.14
PP-564	38.5	15.891	17.739	-28.056	PJ-486	J-21	244.56	-9,799.35	7,627.07	180	1.1	6	28.05599	HDPE	145	0.23
PP-565	33.5	17.739	16.402	36.78144	J-21	J-316	242.94	-9,836.23	7,615.78	200	1.17	5.94	36.78144	HDPE	145	0.2
PP-567	75.5	21.466	23.477	42.81119	PJ-487	PJ-488	240.18	-9,877.70	7,823.87	315	0.55	0.86	42.81119	HDPE	145	0.06

PP-568	23.5	23.477	25.483	30.00419	PJ-488	J-151	238.1	-9,875.08	7,898.81	180	1.18	6.8	30.00419	HDPE	145	0.16
PP-569	17	23.477	23.509	12.47473	PJ-488	PJ-489	238.1	-9,875.08	7,898.81	140	0.81	4.55	12.47473	HDPE	145	0.08
PP-570	26.5	23.509	23.569	0.07597	PJ-489	PJ-490	237.99	-9,872.73	7,915.58	110	0.01	0	0.07597	HDPE	145	0
PP-571	37	23.509	15.155	12.16815	PJ-489	J-25	237.99	-9,872.73	7,915.58	140	0.79	4.35	12.16815	HDPE	145	0.16
PP-572	54	15.117	15.675	1.1846	J-28	J-30	246.2	-9,794.04	7,924.22	110	0.12	0.19	1.1846	HDPE	145	0.01
PP-573	20.5	12.989	15.454	0.05879	J-23	PJ-491	248.17	-9,828.89	7,793.71	125	0	0	0.05879	HDPE	145	0
PP-574	34.5	14.889	13.412	0.09888	J-22	PJ-492	246.17	-9,817.36	7,759.39	125	0.01	0	0.09888	HDPE	145	0
PP-575	15.5	25.701	25.94	0.45701	J-149	PJ-493	235.17	-9,968.87	7,873.06	110	0.05	0.03	0.45701	HDPE	145	0
PP-576	15	25.94	25.89	0.04304	PJ-493	PJ-494	234.93	-9,982.56	7,880.18	110	0	0	0.04304	HDPE	145	0
PP-577	57	25.94	26.828	0.16331	PJ-493	PJ-495	234.93	-9,982.56	7,880.18	110	0.02	0	0.16331	HDPE	145	0
PP-578	15.5	19.356	18.546	6.88656	J-20	PJ-496	241.04	-9,920.35	7,618.40	125	0.56	2.63	6.88656	HDPE	145	0.04
PP-579	20	18.546	17.469	2.71159	PJ-496	J-163	241.81	-9,922.33	7,603.23	125	0.22	0.47	2.71159	HDPE	145	0.01
PP-580	16	17.469	16.721	0.0459	J-163	PJ-497	242.88	-9,918.02	7,583.94	110	0	0	0.0459	HDPE	145	0
PP-581	21	18.852	20.695	3.12595	J-164	PJ-498	241.41	-9,981.75	7,589.60	110	0.33	1.14	3.12595	HDPE	145	0.02
PP-582	15.5	20.695	21.98	6.69651	PJ-498	J-19	239.54	-9,991.11	7,608.14	110	0.7	4.66	6.69651	HDPE	145	0.07
PP-583	69.5	20.695	18.546	-3.8742	PJ-498	PJ-496	239.54	-9,991.11	7,608.14	110	0.41	1.69	3.8742	HDPE	145	0.12
PP-584	43	15.441	16.21	0.12322	J-159	PJ-499	244.73	-9,872.74	7,539.92	110	0.01	0	0.12322	HDPE	145	0
PP-585	33	23.348	20.763	17.08217	J-18	PJ-500	236.7	-10,013.90	7,632.29	160	0.85	4.25	17.08217	HDPE	145	0.14
PP-586	62.5	20.763	25.479	6.22767	PJ-500	PJ-501	239.15	-10,019.37	7,599.54	110	0.66	4.07	6.22767	HDPE	145	0.25
PP-587	68.5	25.479	25.368	-3.93237	PJ-501	J-17	234.17	-10,070.96	7,586.85	110	0.41	1.74	3.93237	HDPE	145	0.12
PP-588	51	25.479	22.056	9.63876	PJ-501	PJ-502	234.17	-10,070.96	7,586.85	125	0.79	4.9	9.63876	HDPE	145	0.25
PP-589	51	22.056	18.886	-5.46607	PJ-502	PJ-503	237.35	-10,070.96	7,536.08	110	0.58	3.2	5.46607	HDPE	145	0.16
PP-590	26	18.886	17.124	-11.4241	PJ-503	J-152	240.69	-10,020.59	7,526.66	125	0.93	6.72	11.42411	HDPE	145	0.17
PP-591	51	17.124	20.763	-10.4349	J-152	PJ-500	242.63	-10,010.58	7,550.77	140	0.68	3.27	10.43488	HDPE	145	0.17
PP-592	29.5	22.056	23.091	14.72817	PJ-502	PJ-504	237.35	-10,070.96	7,536.08	140	0.96	6.19	14.72817	HDPE	145	0.18
PP-593	14	23.091	22.185	6.30422	PJ-504	PJ-416	236.13	-10,097.16	7,522.16	110	0.66	4.16	6.30422	HDPE	145	0.06
PP-594	60.5	24.855	23.091	-8.12605	PJ-404	PJ-504	233.96	-10,157.53	7,526.00	110	0.86	6.66	8.12605	HDPE	145	0.4
PP-595	18.5	17.027	17.966	-5.41225	J-114	PJ-505	242.49	-10,020.07	7,491.23	125	0.44	1.68	5.41225	HDPE	145	0.03
PP-596	17	17.966	18.886	-5.68876	PJ-505	PJ-503	241.58	-10,021.00	7,509.87	125	0.46	1.85	5.68876	HDPE	145	0.03
PP-597	24.5	18.893	17.027	-0.07024	PJ-506	J-114	240.62	-10,043.11	7,500.05	110	0.01	0	0.07024	HDPE	145	0
PP-598	30.5	17.966	18.425	0.08742	PJ-505	PJ-507	241.58	-10,021.00	7,509.87	110	0.01	0	0.08742	HDPE	145	0
PP-599	13	19.09	19.31	0.03731	J-113	PJ-508	240.45	-9,991.82	7,471.17	110	0	0	0.03731	HDPE	145	0
PP-600	13	20.162	20.252	0.03731	J-111	PJ-509	239.38	-9,967.25	7,443.33	110	0	0	0.03731	HDPE	145	0
PP-601	29.5	16.9	17.11	0.08456	J-154	PJ-510	242.85	-9,925.57	7,488.77	110	0.01	0	0.08456	HDPE	145	0
PP-602	9	14.678	14.249	-0.02585	PJ-511	J-157	245.23	-9,874.01	7,493.09	110	0	0	0.02585	HDPE	145	0
PP-603	34	14.249	13.85	0.09745	J-157	PJ-512	245.66	-9,864.98	7,494.01	110	0.01	0	0.09745	HDPE	145	0

PP-604	16.5	13.4	14.418	0.04733	J-168	PJ-513	246.71	-9,816.34	7,514.97	110	0	0	0.04733	HDPE	145	0
PP-605	84	15.091	15.05	-1.91177	J-155	J-156	244.71	-9,863.72	7,449.98	110	0.2	0.46	1.91177	HDPE	145	0.04
PP-606	144.5	15.891	15.407	13.81856	PJ-486	J-216	244.56	-9,799.35	7,627.07	140	0.9	5.5	13.81856	HDPE	145	0.8
PP-607	32	15.443	15.333	0.09172	J-214	PJ-514	244.46	-9,742.26	7,659.97	110	0.01	0	0.09172	HDPE	145	0
PP-608	53	15.166	13.604	4.82931	J-215	J-357	244.51	-9,718.28	7,711.29	110	0.51	2.54	4.82931	HDPE	145	0.13
PP-609	22	14.27	14.669	0.06308	J-211	PJ-515	245.34	-9,677.02	7,642.86	110	0.01	0	0.06308	HDPE	145	0
PP-610	108	14.753	17.81	6.36212	J-358	PJ-516	244.72	-9,668.49	7,714.37	110	0.67	4.23	6.36212	HDPE	145	0.46
PP-611	28	17.81	17.92	0.08027	PJ-516	PJ-517	241.2	-9,614.42	7,771.51	110	0.01	0	0.08027	HDPE	145	0
PP-612	34.5	17.81	18.815	5.79351	PJ-516	J-226	241.2	-9,614.42	7,771.51	110	0.61	3.56	5.79351	HDPE	145	0.12
PP-613	19.5	18.107	18.815	-0.05592	PJ-518	J-225	240.78	-9,631.20	7,809.59	110	0.01	0	0.05592	HDPE	145	0
PP-614	51.5	18.815	20.043	0.14756	J-225	PJ-519	240.07	-9,614.97	7,820.64	110	0.02	0	0.14756	HDPE	145	0
PP-615	34	18.447	17.369	0.09745	J-224	PJ-520	240.44	-9,639.46	7,845.63	110	0.01	0	0.09745	HDPE	145	0
PP-616	28	21.109	17.367	0.08027	J-220	PJ-521	238.06	-9,712.75	7,842.44	110	0.01	0	0.08027	HDPE	145	0
PP-617	25.5	20.942	17.538	0.07311	J-219	PJ-522	238.32	-9,711.41	7,818.12	110	0.01	0	0.07311	HDPE	145	0
PP-618	34	20.47	17.835	0.09745	J-218	PJ-523	238.89	-9,708.72	7,793.30	110	0.01	0	0.09745	HDPE	145	0
PP-619	37.5	18.756	16.241	-4.94317	J-227	J-356	240.11	-9,561.14	7,768.82	110	0.52	2.65	4.94317	HDPE	145	0.1
PP-620	66	16.241	14.303	-3.60814	J-356	PJ-524	242.73	-9,572.84	7,733.70	110	0.38	1.48	3.60814	HDPE	145	0.1
PP-621	17	14.303	14.9	0.86406	PJ-524	J-207	244.77	-9,591.49	7,686.35	110	0.09	0.11	0.86406	HDPE	145	0
PP-622	63	14.945	14.303	4.89039	J-209	PJ-524	244.29	-9,605.41	7,645.55	110	0.51	2.6	4.89039	HDPE	145	0.16
PP-623	31	15.392	16.837	-1.42535	J-208	PJ-525	243.82	-9,595.52	7,647.06	110	0.15	0.27	1.42535	HDPE	145	0.01
PP-624	15.5	16.837	17.531	-1.6675	PJ-525	J-200	242.38	-9,586.98	7,617.15	110	0.18	0.35	1.6675	HDPE	145	0.01
PP-625	19	16.837	17.785	0.05449	PJ-525	PJ-526	242.38	-9,586.98	7,617.15	110	0.01	0	0.05449	HDPE	145	0
PP-626	72.5	19.109	15.326	0.18121	J-204	J-206	239.88	-9,540.34	7,616.70	110	0.02	0.01	0.18121	HDPE	145	0
PP-627	48.5	18.762	19.64	0.13897	J-228	PJ-527	240.05	-9,552.75	7,765.97	110	0.01	0	0.13897	HDPE	145	0
PP-628	37.5	20.148	19.959	0.10747	J-230	PJ-528	238.51	-9,460.51	7,746.68	110	0.01	0	0.10747	HDPE	145	0
PP-629	192	18.002	19.406	4.96163	J-223	J-362	240.89	-9,684.74	7,894.60	110	0.52	2.67	4.96163	HDPE	145	0.51
PP-630	39	19.406	19.276	0.11177	J-362	PJ-529	238.97	-9,515.11	7,958.64	110	0.01	0	0.11177	HDPE	145	0
PP-632	66.5	20.799	19.621	0.19052	PJ-530	PJ-531	237.65	-9,583.41	8,007.81	110	0.02	0.01	0.19052	HDPE	145	0
PP-634	49.5	20.479	19.6	0.14184	J-361	PJ-533	237.93	-9,553.43	7,982.55	110	0.01	0	0.14184	HDPE	145	0
PP-635	17	19.558	19.4	-2.29731	J-376	J-378	238.56	-9,494.80	8,091.96	110	0.24	0.64	2.29731	HDPE	145	0.01
PP-636	10.5	19.4	19.35	0.03015	J-378	PJ-534	238.73	-9,499.77	8,075.61	110	0	0	0.03015	HDPE	145	0
PP-637	25	19.275	19.63	2.14894	J-364	J-250	239.07	-9,487.92	7,963.88	110	0.23	0.57	2.14894	HDPE	145	0.01
PP-638	15	19.515	19.605	-0.04304	PJ-535	J-249	238.81	-9,480.42	7,925.52	110	0	0	0.04304	HDPE	145	0
PP-639	11	19.605	19.725	0.03158	J-249	PJ-536	238.72	-9,465.58	7,925.94	110	0	0	0.03158	HDPE	145	0
PP-640	11.5	19.957	20.107	0.03301	J-247	PJ-537	238.36	-9,441.83	7,948.87	110	0	0	0.03301	HDPE	145	0
PP-641	23	19.874	19.884	0.2408	J-246	PJ-538	238.44	-9,441.01	7,937.40	110	0.03	0.01	0.2408	HDPE	145	0

PP-642	21.5	19.884	19.754	0.06165	PJ-538	PJ-539	238.43	-9,443.73	7,914.78	110	0.01	0	0.06165	HDPE	145	0
PP-643	9	19.774	19.884	-0.02585	PJ-540	PJ-538	238.54	-9,452.90	7,915.30	110	0	0	0.02585	HDPE	145	0
PP-644	19	20.138	19.908	0.05449	J-336	PJ-541	238.23	-9,436.68	7,883.83	110	0.01	0	0.05449	HDPE	145	0
PP-645	30	20.497	20.557	-0.08599	PJ-542	J-245	237.81	-9,418.31	7,955.14	110	0.01	0	0.08599	HDPE	145	0
PP-646	31.5	20.33	20.749	0.09029	J-379	PJ-543	237.97	-9,436.55	7,993.39	110	0.01	0	0.09029	HDPE	145	0
PP-648	37	21.481	20.752	0.10604	J-380	PJ-544	236.81	-9,385.78	7,991.42	110	0.01	0	0.10604	HDPE	145	0
PP-649	30.5	21.459	21.289	0.08742	J-251	PJ-545	236.83	-9,378.36	7,972.20	110	0.01	0	0.08742	HDPE	145	0
PP-650	42	22.298	21.508	-1.21217	J-255	J-254	235.96	-9,309.99	8,004.55	110	0.13	0.2	1.21217	HDPE	145	0.01
PP-651	24.5	20.655	21.014	0.07024	J-244	PJ-546	237.64	-9,379.18	7,920.20	110	0.01	0	0.07024	HDPE	145	0
PP-652	24.5	20.423	20.713	0.07024	J-243	PJ-547	237.86	-9,330.46	7,901.37	110	0.01	0	0.07024	HDPE	145	0
PP-653	19.5	20.423	20.753	0.05592	J-243	PJ-548	237.86	-9,330.46	7,901.37	110	0.01	0	0.05592	HDPE	145	0
PP-654	18.5	20.319	20.319	0.05306	J-242	PJ-549	237.96	-9,383.69	7,855.10	110	0.01	0	0.05306	HDPE	145	0
PP-655	15.5	20.828	20.788	0.04447	J-240	PJ-550	237.45	-9,322.27	7,846.09	110	0	0	0.04447	HDPE	145	0
PP-656	84.5	20.431	20.926	-3.13169	J-239	J-234	237.89	-9,372.63	7,830.12	110	0.33	1.14	3.13169	HDPE	145	0.1
PP-657	6.5	20.521	19.899	-2.89831	J-298	PJ-551	238.69	-9,595.53	7,461.01	110	0.3	0.99	2.89831	HDPE	145	0.01
PP-658	6.5	19.899	19.56	0.49424	PJ-551	PJ-552	239.32	-9,601.86	7,462.58	110	0.05	0.04	0.49424	HDPE	145	0
PP-659	46	19.56	20.887	0.13181	PJ-552	PJ-553	239.66	-9,606.84	7,458.13	110	0.01	0	0.13181	HDPE	145	0
PP-660	37	19.56	16.086	0.10604	PJ-552	PJ-554	239.66	-9,606.84	7,458.13	110	0.01	0	0.10604	HDPE	145	0
PP-661	30.5	19.899	17.557	-3.5172	PJ-551	PJ-555	239.32	-9,601.86	7,462.58	110	0.37	1.41	3.5172	HDPE	145	0.04
PP-662	37.5	17.557	12.834	-3.69054	PJ-555	J-193	241.71	-9,620.99	7,486.17	110	0.39	1.54	3.69054	HDPE	145	0.06
PP-663	56.5	17.557	18.455	-0.18328	PJ-555	J-195	241.71	-9,620.99	7,486.17	110	0.02	0.01	0.18328	HDPE	145	0
PP-664	6.5	21.099	21.239	0.01869	J-300	PJ-556	238.06	-9,542.20	7,483.10	110	0	0	0.01869	HDPE	145	0
PP-665	12.5	21.135	21.354	0.03588	J-301	PJ-557	238.01	-9,526.14	7,492.81	110	0	0	0.03588	HDPE	145	0
PP-666	9.5	20.808	20.988	-0.02729	PJ-558	J-307	238.33	-9,537.96	7,521.98	110	0	0	0.02729	HDPE	145	0
PP-667	10	20.988	21.138	2.94063	J-307	J-302	238.15	-9,529.59	7,526.21	110	0.31	1.01	2.94063	HDPE	145	0.01
PP-668	9.5	21.376	21.386	0.02729	J-303	PJ-559	237.7	-9,505.36	7,517.36	110	0	0	0.02729	HDPE	145	0
PP-669	48	21.48	21.45	0.13754	J-306	PJ-560	237.45	-9,491.22	7,576.66	110	0.01	0	0.13754	HDPE	145	0
PP-670	38	21.842	22.185	3.22854	J-321	PJ-561	236.97	-9,458.82	7,499.55	110	0.34	1.21	3.22854	HDPE	145	0.05
PP-671	13	22.185	22.37	3.09232	PJ-561	J-322	236.58	-9,433.14	7,480.84	110	0.33	1.11	3.09232	HDPE	145	0.01
PP-672	11.5	22.225	22.185	0.04285	J-292	PJ-561	236.54	-9,429.70	7,470.02	110	0	0	0.04285	HDPE	145	0
PP-673	14.5	22.374	22.244	0.0416	J-323	PJ-562	236.32	-9,399.95	7,528.57	110	0	0	0.0416	HDPE	145	0
PP-674	23.5	22.55	22.43	0.06738	J-327	PJ-563	236.06	-9,366.07	7,528.07	110	0.01	0	0.06738	HDPE	145	0
PP-675	41	22.508	22.627	-0.11749	PJ-564	J-328	236.1	-9,386.23	7,498.13	110	0.01	0	0.11749	HDPE	145	0
PP-676	12.5	22.627	22.547	0.24795	J-328	PJ-565	235.98	-9,360.03	7,522.70	110	0.03	0.01	0.24795	HDPE	145	0
PP-677	26	22.547	22.488	0.07454	PJ-565	PJ-566	236.06	-9,355.57	7,534.56	110	0.01	0	0.07454	HDPE	145	0
PP-678	18.5	21.598	21.748	0.05306	J-329	PJ-567	236.99	-9,368.75	7,560.78	110	0.01	0	0.05306	HDPE	145	0

PP-679	11	22.547	22.587	0.03158	PJ-565	PJ-568	236.06	-9,355.57	7,534.56	110	0	0	0.03158	HDPE	145	0
PP-680	17	20.648	21.117	0.22075	J-330	PJ-569	237.92	-9,370.43	7,586.56	110	0.02	0.01	0.22075	HDPE	145	0
PP-681	18	21.117	21.776	0.05163	PJ-569	PJ-570	237.45	-9,354.00	7,581.73	110	0.01	0	0.05163	HDPE	145	0
PP-682	12	20.918	21.117	-0.03445	PJ-571	PJ-569	237.65	-9,351.38	7,593.26	110	0	0	0.03445	HDPE	145	0
PP-683	9.5	20.596	20.626	0.02729	J-331	PJ-572	237.95	-9,362.25	7,619.06	110	0	0	0.02729	HDPE	145	0
PP-684	26.5	20.762	21.371	0.07597	J-332	PJ-573	237.78	-9,355.13	7,620.73	110	0.01	0	0.07597	HDPE	145	0
PP-685	11.5	20.891	21.161	0.19354	J-333	PJ-574	237.64	-9,352.61	7,646.94	110	0.02	0.01	0.19354	HDPE	145	0
PP-686	9.5	21.161	21.2	0.02729	PJ-574	PJ-575	237.37	-9,341.16	7,646.45	110	0	0	0.02729	HDPE	145	0
PP-687	18.5	21.161	21.141	0.05306	PJ-574	PJ-576	237.37	-9,341.16	7,646.45	110	0.01	0	0.05306	HDPE	145	0
PP-688	21.5	20.439	20.938	-0.06165	PJ-577	J-334	238.09	-9,373.39	7,658.51	110	0.01	0	0.06165	HDPE	145	0
PP-689	24.5	20.386	20.542	2.9042	J-347	PJ-578	238.18	-9,401.67	7,680.93	110	0.31	0.99	2.9042	HDPE	145	0.02
PP-690	27.5	20.542	20.972	2.38197	PJ-578	J-335	238	-9,380.20	7,687.60	110	0.25	0.69	2.38197	HDPE	145	0.02
PP-691	26	20.542	20.801	0.29877	PJ-578	J-337	238	-9,380.20	7,687.60	110	0.03	0.01	0.29877	HDPE	145	0
PP-692	15.5	20.612	20.692	-0.39133	J-339	J-232	237.97	-9,413.73	7,726.79	110	0.04	0.02	0.39133	HDPE	145	0
PP-693	30	20.954	20.841	-3.25595	J-233	J-338	237.55	-9,371.62	7,744.33	110	0.34	1.22	3.25595	HDPE	145	0.04
PP-694	5.5	21.242	21.303	3.83696	J-235	J-236	237.12	-9,326.00	7,748.86	110	0.4	1.66	3.83696	HDPE	145	0.01
PP-696	23.5	20.145	20.345	0.06738	J-345	PJ-579	238.47	-9,441.50	7,672.80	110	0.01	0	0.06738	HDPE	145	0
PP-697	23.5	20.145	20.085	1.85346	J-345	J-346	238.47	-9,441.50	7,672.80	110	0.2	0.43	1.85346	HDPE	145	0.01
PP-698	23	20.085	20.225	0.06595	J-346	PJ-580	238.52	-9,426.57	7,656.03	110	0.01	0	0.06595	HDPE	145	0
PP-699	37	19.906	20.049	-1.68673	J-350	J-343	238.71	-9,457.75	7,652.10	110	0.18	0.36	1.68673	HDPE	145	0.01
PP-700	37	19.656	19.835	0.10116	J-349	PJ-581	238.96	-9,480.03	7,641.88	110	0.01	0	0.10116	HDPE	145	0
PP-701	13.5	19.835	19.955	0.2057	PJ-581	J-352	238.78	-9,448.60	7,624.18	110	0.02	0.01	0.2057	HDPE	145	0
PP-702	36.5	19.835	20.614	-0.35377	PJ-581	J-354	238.78	-9,448.60	7,624.18	110	0.04	0.02	0.35377	HDPE	145	0
PP-703	43.5	20.557	20.337	0.12465	J-353	PJ-582	238.06	-9,406.91	7,591.83	110	0.01	0	0.12465	HDPE	145	0
PP-704	70	21.096	20.831	2.32241	J-263	PJ-583	237.13	-9,300.98	7,835.86	110	0.24	0.66	2.32241	HDPE	145	0.05
PP-705	46	20.831	21.529	1.88409	PJ-583	J-265	237.35	-9,232.16	7,823.52	110	0.2	0.44	1.88409	HDPE	145	0.02
PP-706	44	21.392	22.071	0.12609	J-264	PJ-584	236.77	-9,237.92	7,870.25	110	0.01	0	0.12609	HDPE	145	0
PP-707	22	21.619	21.939	0.06308	J-266	PJ-585	236.53	-9,213.35	7,868.20	110	0.01	0	0.06308	HDPE	145	0
PP-708	62.5	21.654	21.424	0.17906	J-267	PJ-586	236.49	-9,207.62	7,866.57	110	0.02	0.01	0.17906	HDPE	145	0
PP-709	18.5	20.831	20.961	0.05306	PJ-583	PJ-587	237.35	-9,232.16	7,823.52	110	0.01	0	0.05306	HDPE	145	0
PP-710	26	21.739	22.093	2.16937	J-268	PJ-588	236.4	-9,199.02	7,866.57	110	0.23	0.58	2.16937	HDPE	145	0.02
PP-711	50	22.093	23.026	0.8336	PJ-588	PJ-589	236.03	-9,186.14	7,883.14	110	0.09	0.1	0.8336	HDPE	145	0
PP-712	6.5	23.026	23.135	0.95391	PJ-589	J-274	235.09	-9,163.50	7,926.12	110	0.1	0.13	0.95391	HDPE	145	0
PP-713	39.5	23.135	23.792	0.60054	J-274	J-286	234.98	-9,157.26	7,927.57	110	0.06	0.05	0.60054	HDPE	145	0
PP-714	24.5	22.093	22.389	1.04788	PJ-588	PJ-590	236.03	-9,186.14	7,883.14	110	0.11	0.15	1.04788	HDPE	145	0
PP-715	46	22.389	23.026	0.41393	PJ-590	PJ-589	235.73	-9,161.82	7,880.21	110	0.04	0.03	0.41393	HDPE	145	0

PP-716	55.5	23.135	22.708	-0.42267	J-274	PJ-591	234.98	-9,157.26	7,927.57	110	0.04	0.03	0.42267	HDPE	145	0
PP-717	31.5	22.708	23.387	-0.42042	PJ-591	J-287	235.41	-9,138.13	7,877.48	110	0.04	0.03	0.42042	HDPE	145	0
PP-718	24	22.389	22.708	0.36325	PJ-590	PJ-591	235.73	-9,161.82	7,880.21	110	0.04	0.02	0.36325	HDPE	145	0
PP-719	7.5	22.708	22.578	0.02156	PJ-591	PJ-592	235.41	-9,138.13	7,877.48	110	0	0	0.02156	HDPE	145	0
PP-720	40	22.446	23.225	-0.11463	PJ-593	J-273	235.67	-9,191.59	7,912.28	110	0.01	0	0.11463	HDPE	145	0
PP-721	60.5	23.225	23.344	0.13933	J-273	PJ-594	234.89	-9,161.76	7,938.22	110	0.01	0	0.13933	HDPE	145	0
PP-722	17	23.344	23.215	-0.26319	PJ-594	J-275	234.77	-9,166.22	7,991.74	110	0.03	0.01	0.26319	HDPE	145	0
PP-723	45	23.215	22.974	-1.24352	J-275	J-283	234.9	-9,183.05	7,993.91	110	0.13	0.21	1.24352	HDPE	145	0.01
PP-724	22.5	22.974	23.104	0.27007	J-283	J-284	235.15	-9,218.27	8,009.06	110	0.03	0.01	0.27007	HDPE	145	0
PP-725	17.5	23.104	23.234	0.0502	J-284	PJ-595	235.02	-9,214.58	8,031.17	110	0.01	0	0.0502	HDPE	145	0
PP-726	23	22.63	22.845	1.17249	J-256	J-282	235.51	-9,259.62	8,017.24	110	0.12	0.18	1.17249	HDPE	145	0
PP-727	31.5	23.344	23.484	0.09029	PJ-594	PJ-596	234.77	-9,166.22	7,991.74	110	0.01	0	0.09029	HDPE	145	0
PP-728	33.5	22.132	22.531	0.09602	J-258	PJ-597	236.01	-9,269.45	7,975.07	110	0.01	0	0.09602	HDPE	145	0
PP-729	22	21.643	22.062	-0.06308	PJ-598	J-259	236.5	-9,291.17	7,972.87	110	0.01	0	0.06308	HDPE	145	0
PP-730	12.5	22.641	22.791	0.1879	J-271	PJ-599	235.48	-9,212.94	7,949.68	110	0.02	0.01	0.1879	HDPE	145	0
PP-731	8	22.791	22.881	0.02299	PJ-599	PJ-600	235.33	-9,200.60	7,948.13	110	0	0	0.02299	HDPE	145	0
PP-732	9	22.701	22.791	-0.02585	PJ-601	PJ-599	235.42	-9,201.23	7,939.33	110	0	0	0.02585	HDPE	145	0
PP-733	9.5	22.791	22.921	0.02729	PJ-599	PJ-602	235.33	-9,200.60	7,948.13	110	0	0	0.02729	HDPE	145	0
PP-734	29.5	21.246	21.212	1.10579	J-261	PJ-603	236.92	-9,285.42	7,901.37	110	0.12	0.17	1.10579	HDPE	145	0
PP-735	14	21.212	21.452	-0.65622	PJ-603	J-260	236.95	-9,294.52	7,920.88	110	0.07	0.06	0.65622	HDPE	145	0
PP-736	64	21.212	22.062	1.45408	PJ-603	J-259	236.95	-9,294.52	7,920.88	110	0.15	0.28	1.45408	HDPE	145	0.02
PP-737	15.5	23.973	23.833	0.12674	J-285	J-278	234.13	-9,144.42	8,082.53	110	0.01	0	0.12674	HDPE	145	0
PP-738	42.5	19.706	20.232	0.7506	J-375	PJ-604	238.4	-9,484.64	8,113.57	110	0.08	0.08	0.7506	HDPE	145	0
PP-739	39.5	20.232	21.078	0.51569	PJ-604	PJ-605	237.87	-9,479.96	8,152.81	110	0.05	0.04	0.51569	HDPE	145	0
PP-740	79	21.078	22.092	0.62345	PJ-605	J-389	237.02	-9,444.85	8,170.37	110	0.07	0.06	0.62345	HDPE	145	0
PP-741	38	21.952	21.942	-0.1089	PJ-606	J-388	236.14	-9,403.18	8,170.89	110	0.01	0	0.1089	HDPE	145	0
PP-742	39	21.078	21.1	-0.55888	PJ-605	PJ-607	237.02	-9,444.85	8,170.37	110	0.06	0.05	0.55888	HDPE	145	0
PP-743	30	21.1	21.719	0.08599	PJ-607	PJ-608	237	-9,423.62	8,139.19	110	0.01	0	0.08599	HDPE	145	0
PP-744	17	21.1	20.982	-0.89124	PJ-607	J-373	237	-9,423.62	8,139.19	110	0.09	0.11	0.89124	HDPE	145	0
PP-745	25.5	20.914	21.522	0.07311	J-372	PJ-609	237.19	-9,411.60	8,106.04	110	0.01	0	0.07311	HDPE	145	0
PP-746	20	21.059	21.448	0.05736	J-381	PJ-610	237.04	-9,392.22	8,085.71	110	0.01	0	0.05736	HDPE	145	0
PP-747	12.5	20.354	20.114	0.18503	J-374	PJ-611	237.75	-9,442.72	8,107.35	110	0.02	0.01	0.18503	HDPE	145	0
PP-748	8.5	20.114	19.955	0.02442	PJ-611	PJ-612	237.99	-9,449.83	8,097.00	110	0	0	0.02442	HDPE	145	0
PP-749	11.5	19.955	20.114	-0.03301	PJ-613	PJ-611	238.15	-9,460.57	8,100.67	110	0	0	0.03301	HDPE	145	0
PP-750	6	20.114	20.164	0.01726	PJ-611	PJ-614	237.99	-9,449.83	8,097.00	110	0	0	0.01726	HDPE	145	0
PP-751	40	20.541	19.943	0.11463	J-367	PJ-615	237.58	-9,417.49	8,079.51	110	0.01	0	0.11463	HDPE	145	0

Distribution Network Design Output: Zone 9

PP-752	11	20.504	20.424	0.03158	J-369	PJ-616	237.61	-9,406.68	8,056.91	110	0	0	0.03158	HDPE	145	0
PP-753	27.5	21.543	21.591	0.59176	J-384	PJ-617	236.55	-9,353.57	8,064.42	110	0.06	0.05	0.59176	HDPE	145	0
PP-754	24	21.591	21.322	0.06881	PJ-617	PJ-618	236.5	-9,360.99	8,037.77	110	0.01	0	0.06881	HDPE	145	0
PP-755	14.5	21.591	21.78	0.33387	PJ-617	PJ-619	236.5	-9,360.99	8,037.77	110	0.04	0.02	0.33387	HDPE	145	0
PP-756	33	21.78	22.05	0.09458	PJ-619	PJ-620	236.31	-9,352.61	8,027.29	110	0.01	0	0.09458	HDPE	145	0
PP-757	18	21.78	21.631	0.05163	PJ-619	PJ-621	236.31	-9,352.61	8,027.29	110	0.01	0	0.05163	HDPE	145	0
PP-759	37	22.82	22.411	0.10604	J-385	PJ-622	235.27	-9,312.29	8,084.73	110	0.01	0	0.10604	HDPE	145	0
PP-760	19	21.443	21.413	0.10235	J-383	PJ-623	236.65	-9,334.89	8,113.55	110	0.01	0	0.10235	HDPE	145	0
PP-761	7.5	21.413	21.473	0.02156	PJ-623	PJ-624	236.68	-9,331.30	8,124.05	110	0	0	0.02156	HDPE	145	0
PP-762	15.5	21.413	21.373	-0.03957	PJ-623	J-387	236.68	-9,331.30	8,124.05	110	0	0	0.03957	HDPE	145	0
PP-763	38	19.346	20.229	7.4462	J-222	J-359	239.54	-9,688.09	7,937.70	110	0.78	5.67	7.4462	HDPE	145	0.22
PP-765	88	22.315	22.694	-4.12905	J-625	J-291	236.2	-9,311.98	7,582.48	125	0.34	1.02	4.12905	HDPE	145	0.09
PP-766	166.5	17.739	21.65	-124.21	J-21	PJ-626	242.94	-9,836.23	7,615.78	315	1.59	6.18	124.20968	HDPE	145	1.03
PP-767	63	21.65	21.466	43.2079	PJ-626	PJ-487	240.05	-9,888.38	7,761.72	315	0.55	0.87	43.2079	HDPE	145	0.06
PP-768	**17.5**	**1.796**	**21.65**	**168.125**	**T-1**	**PJ-626**	**240.05**	**-9,872.40**	**7,768.37**	**355**	**1.7**	**6.05**	**168.12502**	HDPE	**145**	**0.11**
	29354															

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	J-1	J-2	51	160	PVC	110	HDPE	Replacement
P-10	J-11	J-12	22	110	PVC	110	uPVC	Retained
P-100	J-84	J-88	71	75	PVC	110	HDPE	Replacement
P-101	J-88	J-89	8.5	75	PVC	110	HDPE	Replacement
P-102	J-88	J-90	89.5	75	PVC	110	HDPE	Replacement
P-103	J-90	J-86	67.5	75	PVC	110	HDPE	Replacement
P-104	J-88	J-91	111.5	75	PVC	110	HDPE	Replacement
P-105	J-91	J-83	76	160	PVC	110	HDPE	Replacement
P-106	J-91	J-92	38.5	75	PVC	110	HDPE	Replacement
P-107	J-92	J-93	43.5	110	PVC	110	uPVC	Retained
P-108	J-81	J-94	46.5	160	PVC	110	HDPE	Replacement
P-109	J-94	J-95	44.5	160	PVC	110	HDPE	Replacement
P-11	J-12	J-13	67.5	110	PVC	110	uPVC	Retained
P-110	J-95	J-96	39	75	PVC	110	HDPE	Replacement
P-111	J-96	J-97	25	75	PVC	110	HDPE	Replacement
P-112	J-97	J-98	5	110	PVC	110	uPVC	Retained
P-113	J-97	J-96	67	75	PVC	110	HDPE	Replacement
P-114	J-95	J-99	66.5	160	PVC	110	HDPE	Replacement
P-115	J-99	J-100	6	160	PVC	110	HDPE	Replacement
P-116	J-100	J-101	20.5	160	PVC	110	HDPE	Replacement
P-117	J-101	J-102	37.5	160	PVC	110	HDPE	Replacement
P-118	J-102	J-103	16.5	160	PVC	110	HDPE	Replacement
P-119	J-103	J-104	9.5	160	PVC	110	HDPE	Replacement
P-12	J-14	J-15	41	75	PVC	110	HDPE	Replacement
P-120	J-104	J-105	87	160	PVC	110	HDPE	Replacement
P-121	J-105	J-106	8	160	PVC	110	HDPE	Replacement
P-122	J-106	J-107	16	160	PVC	110	HDPE	Replacement
P-123	J-107	J-108	23.5	160	PVC	125	HDPE	Replacement
P-124	J-108	J-109	17.5	160	PVC	125	HDPE	Replacement
P-125	J-109	J-110	31.5	160	PVC	110	HDPE	Replacement
P-126	J-110	J-111	24	160	PVC	125	HDPE	Replacement
P-127	J-111	J-112	10.5	160	PVC	125	HDPE	Replacement
P-128	J-112	J-113	37.5	110	PVC	110	uPVC	Retained
P-129	J-113	J-114	35.5	110	PVC	110	uPVC	Retained
P-13	J-15	J-16	111	75	PVC	110	HDPE	Replacement
P-130	J-114	J-115	43	75	PVC	110	HDPE	Replacement
P-131	J-115	J-116	52.5	75	PVC	110	HDPE	Replacement
P-132	J-116	J-108	18.5	75	PVC	110	HDPE	Replacement
P-133	J-116	J-117	33.5	75	PVC	110	HDPE	Replacement
P-134	J-117	J-118	8.5	110	PVC	110	uPVC	Retained
P-135	J-115	J-119	10.5	110	PVC	110	uPVC	Retained
P-136	J-119	J-120	37.5	75	PVC	110	HDPE	Replacement
P-137	J-120	J-121	12	75	PVC	110	HDPE	Replacement
P-138	J-120	J-122	18	75	PVC	110	HDPE	Replacement
P-139	J-122	J-123	16.5	75	PVC	110	HDPE	Replacement
P-14	J-16	J-17	68	75	PVC	110	HDPE	Replacement
P-140	J-123	J-124	11	75	PVC	110	HDPE	Replacement
P-141	J-124	J-125	22	75	PVC	110	HDPE	Replacement
P-142	J-124	J-126	39	75	PVC	110	HDPE	Replacement
P-143	J-126	J-105	58	75	PVC	110	HDPE	Replacement
P-144	J-107	J-127	44.5	160	PVC	110	HDPE	Replacement
P-145	J-127	J-128	36	160	PVC	110	HDPE	Replacement
P-146	J-128	J-129	32.5	160	PVC	110	HDPE	Replacement
P-147	J-129	J-130	44.5	160	PVC	110	HDPE	Replacement
P-148	J-130	J-131	11	160	PVC	110	HDPE	Replacement
P-149	J-131	J-132	14.5	160	PVC	110	HDPE	Replacement
P-15	J-17	J-18	37.5	75	PVC	110	HDPE	Replacement
P-150	J-131	J-133	56.5	110	PVC	110	uPVC	Retained
P-151	J-134	J-135	89.5	110	PVC	110	uPVC	Retained

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-135	J-99	112	110	PVC	110	uPVC	Retained
P-153	J-101	J-136	39.5	160	PVC	110	HDPE	Replacement
P-154	J-136	J-137	5.5	75	PVC	110	HDPE	Replacement
P-155	J-137	J-138	43.5	75	PVC	110	HDPE	Replacement
P-156	J-138	J-139	10	75	PVC	110	HDPE	Replacement
P-157	J-139	J-140	21.5	75	PVC	110	HDPE	Replacement
P-158	J-140	J-141	10	75	PVC	110	HDPE	Replacement
P-159	J-141	J-142	21.5	75	PVC	110	HDPE	Replacement
P-16	J-18	J-19	21	250	PVC	180	HDPE	Replacement
P-160	J-142	J-143	24	75	PVC	110	HDPE	Replacement
P-161	J-143	J-144	19	75	PVC	110	HDPE	Replacement
P-162	J-40	J-145	91.5	75	PVC	110	HDPE	Replacement
P-163	J-17	J-146	194	75	PVC	110	HDPE	Replacement
P-164	J-146	J-1	156.5	75	PVC	110	HDPE	Replacement
P-165	J-1	J-147	217.5	160	PVC	110	HDPE	Replacement
P-166	J-147	J-148	67.5	200	PVC	110	HDPE	Replacement
P-167	J-148	J-149	159.5	75	PVC	110	HDPE	Replacement
P-168	J-149	J-150	27	75	PVC	125	HDPE	Replacement
P-169	J-150	J-146	17.5	75	PVC	160	HDPE	Replacement
P-17	J-19	J-20	75	250	PVC	180	HDPE	Replacement
P-170	J-150	J-151	97.5	75	PVC	200	HDPE	Replacement
P-171	J-152	J-153	110.5	75	PVC	110	HDPE	Replacement
P-172	J-153	J-154	9	75	PVC	125	HDPE	Replacement
P-173	J-154	J-112	51.5	160	PVC	140	HDPE	Replacement
P-174	J-154	J-155	77.5	75	PVC	110	HDPE	Replacement
P-175	J-155	J-156	26	75	PVC	110	HDPE	Replacement
P-176	J-156	J-157	18.5	75	PVC	110	HDPE	Replacement
P-177	J-157	J-158	55	75	PVC	110	HDPE	Replacement
P-178	J-158	J-153	57	75	PVC	125	HDPE	Replacement
P-179	J-158	J-159	7.5	75	PVC	160	HDPE	Replacement
P-18	J-20	J-21	84	250	PVC	200	HDPE	Replacement
P-180	J-159	J-160	22	75	PVC	160	HDPE	Replacement
P-181	J-160	J-161	23	75	PVC	180	HDPE	Replacement
P-182	J-161	J-162	15.5	75	PVC	160	HDPE	Replacement
P-183	J-162	J-21	30	75	PVC	200	HDPE	Replacement
P-184	J-161	J-163	72.5	75	PVC	125	HDPE	Replacement
P-185	J-163	J-164	64.5	110	PVC	110	uPVC	Retained
P-186	J-162	J-165	13	75	PVC	160	HDPE	Replacement
P-187	J-165	J-166	56	160	PVC	180	HDPE	Replacement
P-188	J-166	J-160	53.5	75	PVC	110	HDPE	Replacement
P-189	J-166	J-167	6	160	PVC	200	HDPE	Replacement
P-19	J-21	J-22	165.5	75	PVC	140	HDPE	Replacement
P-190	J-167	J-168	17	160	PVC	180	HDPE	Replacement
P-191	J-168	J-169	32.5	160	PVC	180	HDPE	Replacement
P-192	J-169	J-170	52	160	PVC	180	HDPE	Replacement
P-193	J-170	J-171	62	160	PVC	160	uPVC	Retained
P-194	J-171	J-155	13.5	75	PVC	110	HDPE	Replacement
P-195	J-171	J-172	35	75	PVC	110	HDPE	Replacement
P-196	J-172	J-110	121.5	75	PVC	110	HDPE	Replacement
P-197	J-172	J-173	26	75	PVC	110	HDPE	Replacement
P-198	J-173	J-174	5.5	75	PVC	110	HDPE	Replacement
P-199	J-174	J-175	33	75	PVC	110	HDPE	Replacement
P-2	J-2	J-3	27	160	PVC	110	HDPE	Replacement
P-20	J-22	J-23	36	75	PVC	140	HDPE	Replacement
P-200	J-175	J-176	121.5	75	PVC	110	HDPE	Replacement
P-201	J-175	J-177	27.5	75	PVC	110	HDPE	Replacement
P-202	J-177	J-178	14.5	75	PVC	110	HDPE	Replacement
P-203	J-178	J-179	59	75	PVC	110	HDPE	Replacement
P-204	J-128	J-180	25	50	PVC	110	HDPE	Replacement
P-205	J-181	J-182	15.5	110	PVC	110	uPVC	Retained

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-206	J-182	J-183	16	75	PVC	110	HDPE	Replacement
P-207	J-183	J-184	42.5	75	PVC	110	HDPE	Replacement
P-208	J-185	J-186	45	160	PVC	125	HDPE	Replacement
P-209	J-186	J-170	43	160	PVC	125	HDPE	Replacement
P-21	J-23	J-24	40	75	PVC	140	HDPE	Replacement
P-210	J-186	J-187	7	160	PVC	125	HDPE	Replacement
P-211	J-187	J-188	50	110	PVC	110	uPVC	Retained
P-212	J-187	J-189	29.5	160	PVC	160	uPVC	Retained
P-213	J-189	J-190	28	160	PVC	160	uPVC	Retained
P-214	J-190	J-191	44.5	160	PVC	160	uPVC	Retained
P-215	J-191	J-192	15.5	160	PVC	160	uPVC	Retained
P-216	J-192	J-193	19	160	PVC	160	uPVC	Retained
P-217	J-193	J-194	29	160	PVC	160	uPVC	Retained
P-218	J-194	J-195	45	160	PVC	160	uPVC	Retained
P-219	J-195	J-196	24.5	160	PVC	160	uPVC	Retained
P-22	J-24	J-25	81.5	75	PVC	140	HDPE	Replacement
P-220	J-196	J-197	16	75	PVC	110	HDPE	Replacement
P-221	J-197	J-198	19.5	75	PVC	110	HDPE	Replacement
P-222	J-198	J-199	12.5	110	PVC	110	uPVC	Retained
P-223	J-199	J-200	14.5	110	PVC	110	uPVC	Retained
P-224	J-201	J-200	21.5	110	PVC	110	uPVC	Retained
P-225	J-202	J-199	14.5	110	PVC	110	uPVC	Retained
P-226	J-198	J-203	29	75	PVC	125	HDPE	Replacement
P-227	J-203	J-204	37.5	75	PVC	110	HDPE	Replacement
P-228	J-204	J-205	87.5	75	PVC	110	HDPE	Replacement
P-229	J-205	J-206	85	75	PVC	110	HDPE	Replacement
P-23	J-25	J-26	19	75	PVC	140	HDPE	Replacement
P-230	J-206	J-207	17	75	PVC	110	HDPE	Replacement
P-231	J-207	J-208	41	75	PVC	110	HDPE	Replacement
P-232	J-208	J-209	10	110	PVC	110	uPVC	Retained
P-233	J-209	J-210	68.5	110	PVC	125	HDPE	Replacement
P-234	J-210	J-211	5	110	PVC	140	HDPE	Replacement
P-235	J-211	J-212	61.5	110	PVC	140	HDPE	Replacement
P-236	J-212	J-213	20	110	PVC	140	HDPE	Replacement
P-237	J-213	J-214	29	110	PVC	125	HDPE	Replacement
P-238	J-214	J-215	56.5	110	PVC	125	HDPE	Replacement
P-239	J-215	J-216	13	110	PVC	110	uPVC	Retained
P-24	J-26	J-27	13	75	PVC	110	HDPE	Replacement
P-240	J-216	J-217	45.5	110	PVC	160	HDPE	Replacement
P-241	J-217	J-218	25	160	PVC	160	uPVC	Retained
P-242	J-218	J-219	25	160	PVC	160	uPVC	Retained
P-243	J-219	J-220	24.5	160	PVC	160	uPVC	Retained
P-244	J-220	J-221	70	160	PVC	160	uPVC	Retained
P-245	J-221	J-222	37.5	160	PVC	160	uPVC	Retained
P-246	J-221	J-223	36	160	PVC	160	uPVC	Retained
P-247	J-223	J-224	67	160	PVC	160	uPVC	Retained
P-248	J-224	J-225	35	160	PVC	160	uPVC	Retained
P-249	J-225	J-226	45	160	PVC	160	uPVC	Retained
P-25	J-27	J-28	41.5	75	PVC	110	HDPE	Replacement
P-250	J-226	J-227	30.5	160	PVC	160	uPVC	Retained
P-251	J-227	J-228	9	75	PVC	125	HDPE	Replacement
P-252	J-228	J-229	65	160	PVC	160	uPVC	Retained
P-253	J-229	J-230	29.5	160	PVC	160	uPVC	Retained
P-254	J-230	J-231	50	160	PVC	160	uPVC	Retained
P-255	J-231	J-232	3	110	PVC	110	uPVC	Retained
P-256	J-232	J-233	36	75	PVC	110	HDPE	Replacement
P-257	J-233	J-234	15.5	75	PVC	110	HDPE	Replacement
P-258	J-234	J-235	30.5	75	PVC	110	HDPE	Replacement
P-259	J-236	J-237	72	160	PVC	140	HDPE	Replacement
P-26	J-26	J-29	34.5	75	PVC	140	HDPE	Replacement

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-260	J-237	J-238	23	75	PVC	110	HDPE	Replacement
P-261	J-238	J-239	46.5	75	PVC	110	HDPE	Replacement
P-262	J-238	J-240	22.5	75	PVC	110	HDPE	Replacement
P-263	J-240	J-241	18	75	PVC	110	HDPE	Replacement
P-264	J-241	J-242	44.5	75	PVC	110	HDPE	Replacement
P-265	J-241	J-243	51.5	75	PVC	110	HDPE	Replacement
P-266	J-243	J-244	52	75	PVC	110	HDPE	Replacement
P-267	J-244	J-245	31.5	75	PVC	110	HDPE	Replacement
P-268	J-245	J-246	36	75	PVC	110	HDPE	Replacement
P-269	J-246	J-247	11.5	75	PVC	110	HDPE	Replacement
P-27	J-29	J-30	27.5	75	PVC	110	HDPE	Replacement
P-270	J-247	J-248	21.5	75	PVC	110	HDPE	Replacement
P-271	J-248	J-249	25	75	PVC	110	HDPE	Replacement
P-272	J-248	J-250	8.5	75	PVC	110	HDPE	Replacement
P-273	J-245	J-251	46.5	75	PVC	110	HDPE	Replacement
P-274	J-251	J-252	16	75	PVC	110	HDPE	Replacement
P-275	J-252	J-253	9.5	75	PVC	110	HDPE	Replacement
P-276	J-252	J-254	60	75	PVC	110	HDPE	Replacement
P-277	J-253	J-255	53.5	200	PVC	140	HDPE	Replacement
P-278	J-255	J-256	52	200	PVC	110	HDPE	Replacement
P-279	J-256	J-257	14	75	PVC	110	HDPE	Replacement
P-28	J-30	J-31	38.5	75	PVC	125	HDPE	Replacement
P-280	J-257	J-258	29.5	75	PVC	110	HDPE	Replacement
P-281	J-258	J-259	7	160	PVC	110	HDPE	Replacement
P-282	J-259	J-260	52	160	PVC	110	HDPE	Replacement
P-283	J-260	J-261	16.5	160	PVC	140	HDPE	Replacement
P-284	J-261	J-262	26.5	160	PVC	140	HDPE	Replacement
P-285	J-262	J-263	41	160	PVC	140	HDPE	Replacement
P-286	J-263	J-237	15	160	PVC	140	HDPE	Replacement
P-287	J-262	J-264	54	75	PVC	110	HDPE	Replacement
P-288	J-264	J-265	15	75	PVC	110	HDPE	Replacement
P-289	J-265	J-266	10	75	PVC	110	HDPE	Replacement
P-29	J-31	J-32	28.5	75	PVC	125	HDPE	Replacement
P-290	J-266	J-267	6	75	PVC	110	HDPE	Replacement
P-291	J-267	J-268	8.5	75	PVC	110	HDPE	Replacement
P-292	J-259	J-269	23.5	75	PVC	110	HDPE	Replacement
P-293	J-269	J-270	37.5	75	PVC	110	HDPE	Replacement
P-294	J-269	J-271	44	75	PVC	110	HDPE	Replacement
P-295	J-271	J-272	45.5	75	PVC	110	HDPE	Replacement
P-296	J-272	J-273	40	75	PVC	110	HDPE	Replacement
P-297	J-273	J-274	11.5	110	PVC	110	uPVC	Retained
P-298	J-272	J-275	21.5	75	PVC	110	HDPE	Replacement
P-299	J-275	J-276	55.5	75	PVC	110	HDPE	Replacement
P-3	J-3	J-4	39.5	160	PVC	110	HDPE	Replacement
P-30	J-32	J-29	40	75	PVC	125	HDPE	Replacement
P-300	J-276	J-277	34.5	75	PVC	110	HDPE	Replacement
P-301	J-277	J-278	22.5	160	PVC	110	HDPE	Replacement
P-302	J-277	J-279	69.5	160	PVC	110	HDPE	Replacement
P-303	J-279	J-280	30	200	PVC	110	HDPE	Replacement
P-304	J-280	J-281	22.5	200	PVC	110	HDPE	Replacement
P-305	J-281	J-256	20.5	200	PVC	110	HDPE	Replacement
P-306	J-257	J-282	35	75	PVC	110	HDPE	Replacement
P-307	J-282	J-283	26.5	75	PVC	110	HDPE	Replacement
P-308	J-281	J-284	42.5	75	PVC	110	HDPE	Replacement
P-309	J-280	J-276	77	75	PVC	110	HDPE	Replacement
P-31	J-32	J-24	20.5	75	PVC	125	HDPE	Replacement
P-310	J-285	J-286	151.5	160	PVC	110	HDPE	Replacement
P-311	J-286	J-287	60	160	PVC	110	HDPE	Replacement
P-312	J-287	J-288	100	160	PVC	110	HDPE	Replacement
P-313	J-288	J-236	233.5	160	PVC	110	HDPE	Replacement

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-314	J-289	J-290	19.5	75	PVC	110	HDPE	Replacement
P-316	J-291	J-292	94	160	PVC	110	HDPE	Replacement
P-317	J-292	J-293	169	160	PVC	110	HDPE	Replacement
P-318	J-293	J-294	60	160	PVC	110	HDPE	Replacement
P-319	J-294	J-295	113	160	PVC	110	HDPE	Replacement
P-32	J-6	J-33	113.5	75	PVC	110	HDPE	Replacement
P-320	J-295	J-296	26	160	PVC	110	HDPE	Replacement
P-321	J-296	J-297	26	160	PVC	110	HDPE	Replacement
P-322	J-293	J-298	53	110	PVC	110	uPVC	Retained
P-323	J-298	J-299	41.5	75	PVC	110	HDPE	Replacement
P-324	J-299	J-196	38.5	75	PVC	110	HDPE	Replacement
P-325	J-299	J-300	54.5	75	PVC	110	HDPE	Replacement
P-326	J-300	J-301	19	75	PVC	110	HDPE	Replacement
P-327	J-301	J-302	25.5	75	PVC	110	HDPE	Replacement
P-328	J-302	J-303	18	75	PVC	110	HDPE	Replacement
P-329	J-303	J-304	70.5	75	PVC	110	HDPE	Replacement
P-33	J-33	J-34	40.5	75	PVC	110	HDPE	Replacement
P-330	J-304	J-305	14.5	75	PVC	110	HDPE	Replacement
P-331	J-305	J-306	17.5	75	PVC	110	HDPE	Replacement
P-332	J-306	J-203	61.5	75	PVC	110	HDPE	Replacement
P-333	J-197	J-307	73	75	PVC	110	HDPE	Replacement
P-334	J-198	J-308	58	110	PVC	140	HDPE	Replacement
P-335	J-308	J-309	55	110	PVC	140	HDPE	Replacement
P-336	J-309	J-310	16	110	PVC	140	HDPE	Replacement
P-337	J-310	J-311	26.5	75	PVC	110	HDPE	Replacement
P-338	J-311	J-312	17.5	75	PVC	110	HDPE	Replacement
P-339	J-312	J-313	10	75	PVC	110	HDPE	Replacement
P-34	J-34	J-35	44	75	PVC	110	HDPE	Replacement
P-340	J-310	J-314	42.5	75	PVC	160	HDPE	Replacement
P-341	J-314	J-315	48.5	160	PVC	160	uPVC	Retained
P-342	J-315	J-213	37.5	110	PVC	160	HDPE	Replacement
P-343	J-315	J-316	28.5	160	PVC	180	HDPE	Replacement
P-344	J-316	J-165	14.5	160	PVC	125	HDPE	Replacement
P-345	J-167	J-318	23	75	PVC	110	HDPE	Replacement
P-346	J-318	J-317	14.5	75	PVC	110	HDPE	Replacement
P-347	J-318	J-319	37.5	75	PVC	110	HDPE	Replacement
P-348	J-319	J-320	22.5	110	PVC	110	uPVC	Retained
P-349	J-304	J-321	60.5	75	PVC	110	HDPE	Replacement
P-35	J-35	J-36	31	75	PVC	110	HDPE	Replacement
P-350	J-322	J-323	57.5	75	PVC	110	HDPE	Replacement
P-351	J-323	J-324	14.5	110	PVC	110	uPVC	Retained
P-352	J-324	J-325	7.5	110	PVC	110	uPVC	Retained
P-353	J-325	J-326	12.5	110	PVC	110	uPVC	Retained
P-354	J-326	J-327	10	200	PVC	110	HDPE	Replacement
P-355	J-327	J-328	8	200	PVC	110	HDPE	Replacement
P-356	J-328	J-291	28.5	200	PVC	110	HDPE	Replacement
P-357	J-326	J-329	27	200	PVC	110	HDPE	Replacement
P-358	J-329	J-330	26	75	PVC	110	HDPE	Replacement
P-359	J-330	J-331	38	75	PVC	110	HDPE	Replacement
P-36	J-36	J-37	40	75	PVC	110	HDPE	Replacement
P-360	J-331	J-332	7.5	75	PVC	110	HDPE	Replacement
P-361	J-332	J-333	26.5	75	PVC	110	HDPE	Replacement
P-362	J-333	J-334	11.5	75	PVC	110	HDPE	Replacement
P-363	J-334	J-335	32.5	75	PVC	110	HDPE	Replacement
P-364	J-335	J-290	47.5	75	PVC	110	HDPE	Replacement
P-365	J-231	J-336	148	75	PVC	110	HDPE	Replacement
P-366	J-336	J-245	59.5	75	PVC	110	HDPE	Replacement
P-367	J-337	J-338	4.5	110	PVC	110	uPVC	Retained
P-368	J-338	J-339	33.5	75	PVC	110	HDPE	Replacement
P-369	J-339	J-340	55	75	PVC	110	HDPE	Replacement

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-37	J-37	J-38	40.5	75	PVC	110	HDPE	Replacement
P-370	J-340	J-341	10	75	PVC	110	HDPE	Replacement
P-371	J-341	J-342	50	75	PVC	110	HDPE	Replacement
P-372	J-342	J-229	33.5	75	PVC	110	HDPE	Replacement
P-373	J-205	J-341	21.5	75	PVC	110	HDPE	Replacement
P-374	J-340	J-343	9.5	75	PVC	110	HDPE	Replacement
P-375	J-343	J-344	19	75	PVC	110	HDPE	Replacement
P-376	J-344	J-345	5	110	PVC	110	uPVC	Retained
P-377	J-346	J-347	35	75	PVC	110	HDPE	Replacement
P-378	J-348	J-349	22	75	PVC	110	HDPE	Replacement
P-379	J-349	J-350	24.5	75	PVC	110	HDPE	Replacement
P-38	J-37	J-2	57	75	PVC	110	HDPE	Replacement
P-380	J-350	J-351	13.5	75	PVC	110	HDPE	Replacement
P-381	J-351	J-346	24.5	75	PVC	110	HDPE	Replacement
P-382	J-351	J-352	19	75	PVC	110	HDPE	Replacement
P-383	J-352	J-353	46	75	PVC	110	HDPE	Replacement
P-384	J-353	J-354	29.5	75	PVC	110	HDPE	Replacement
P-385	J-354	J-355	39	75	PVC	110	HDPE	Replacement
P-386	J-305	J-324	86.5	75	PVC	110	HDPE	Replacement
P-387	J-353	J-325	56.5	75	PVC	110	HDPE	Replacement
P-388	J-206	J-356	58	75	PVC	110	HDPE	Replacement
P-389	J-210	J-357	46	110	PVC	110	uPVC	Retained
P-39	J-36	J-3	47.5	75	PVC	110	HDPE	Replacement
P-390	J-357	J-358	23.5	110	PVC	125	HDPE	Replacement
P-391	J-358	J-217	78.5	110	PVC	110	uPVC	Retained
P-392	J-148	J-359	223	200	PVC	110	HDPE	Replacement
P-393	J-359	J-360	94	160	PVC	160	uPVC	Retained
P-394	J-360	J-361	38.5	200	PVC	180	HDPE	Replacement
P-395	J-361	J-362	59.5	200	PVC	200	uPVC	Retained
P-396	J-362	J-363	26.5	200	PVC	200	uPVC	Retained
P-397	J-363	J-364	6	110	PVC	110	uPVC	Retained
P-398	J-363	J-365	54	200	PVC	200	uPVC	Retained
P-399	J-365	J-366	28.5	75	PVC	110	HDPE	Replacement
P-4	J-4	J-5	48	160	PVC	110	HDPE	Replacement
P-40	J-35	J-4	53	75	PVC	110	HDPE	Replacement
P-400	J-366	J-367	52	75	PVC	110	HDPE	Replacement
P-401	J-367	J-368	7.5	75	PVC	110	HDPE	Replacement
P-402	J-368	J-369	32.5	75	PVC	110	HDPE	Replacement
P-403	J-369	J-370	21	110	PVC	110	uPVC	Retained
P-404	J-368	J-371	12	75	PVC	110	HDPE	Replacement
P-405	J-371	J-372	10.5	75	PVC	110	HDPE	Replacement
P-406	J-372	J-373	18.5	75	PVC	110	HDPE	Replacement
P-407	J-373	J-374	40	160	PVC	140	HDPE	Replacement
P-408	J-374	J-375	45.5	160	PVC	160	uPVC	Retained
P-409	J-375	J-376	24	75	PVC	110	HDPE	Replacement
P-41	J-5	J-34	60	75	PVC	110	HDPE	Replacement
P-410	J-376	J-377	30	160	PVC	160	uPVC	Retained
P-411	J-378	J-366	72	75	PVC	110	HDPE	Replacement
P-412	J-365	J-379	35	200	PVC	200	uPVC	Retained
P-413	J-379	J-380	52	200	PVC	200	uPVC	Retained
P-414	J-371	J-381	18.5	75	PVC	110	HDPE	Replacement
P-415	J-381	J-382	21	75	PVC	110	HDPE	Replacement
P-416	J-382	J-383	61.5	75	PVC	110	HDPE	Replacement
P-417	J-382	J-384	23.5	75	PVC	110	HDPE	Replacement
P-418	J-384	J-385	46	160	PVC	125	HDPE	Replacement
P-419	J-385	J-386	31.5	160	PVC	110	HDPE	Replacement
P-42	J-34	J-39	20	75	PVC	110	HDPE	Replacement
P-420	J-386	J-279	33	160	PVC	110	HDPE	Replacement
P-421	J-386	J-387	57	75	PVC	110	HDPE	Replacement
P-422	J-387	J-388	61	75	PVC	110	HDPE	Replacement

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-423	J-388	J-389	18	75	PVC	110	HDPE	Replacement
P-43	J-33	J-15	59	75	PVC	110	HDPE	Replacement
P-44	J-16	J-40	82.5	75	PVC	110	HDPE	Replacement
P-45	J-40	J-41	34.5	75	PVC	110	HDPE	Replacement
P-46	J-41	J-42	92.5	75	PVC	110	HDPE	Replacement
P-47	J-42	J-43	32.5	75	PVC	110	HDPE	Replacement
P-48	J-43	J-44	55	110	PVC	110	uPVC	Retained
P-49	J-44	J-45	32	110	PVC	110	uPVC	Retained
P-5	J-5	J-6	77.5	160	PVC	110	HDPE	Replacement
P-50	J-45	J-46	82.5	160	PVC	110	HDPE	Replacement
P-51	J-46	J-47	24	160	PVC	110	HDPE	Replacement
P-52	J-47	J-48	30.5	160	PVC	110	HDPE	Replacement
P-53	J-48	J-49	66	160	PVC	110	HDPE	Replacement
P-54	J-49	J-50	49	160	PVC	110	HDPE	Replacement
P-55	J-50	J-51	7.5	160	PVC	110	HDPE	Replacement
P-56	J-51	J-52	42.5	160	PVC	110	HDPE	Replacement
P-57	J-52	J-53	36.5	160	PVC	110	HDPE	Replacement
P-59	J-54	J-55	45	75	PVC	110	HDPE	Replacement
P-6	J-6	J-7	27.5	160	PVC	110	HDPE	Replacement
P-60	J-55	J-56	42.5	75	PVC	110	HDPE	Replacement
P-61	J-53	J-57	26	75	PVC	110	HDPE	Replacement
P-62	J-57	J-54	43.5	75	PVC	110	HDPE	Replacement
P-63	J-56	J-57	43	75	PVC	110	HDPE	Replacement
P-631	J-360	PJ-530	19.5	160	PVC	140	HDPE	Replacement
P-633	PJ-530	PJ-532	63.5	160	PVC	160	uPVC	Retained
P-64	J-58	J-59	30	75	PVC	110	HDPE	Replacement
P-647	J-380	J-253	24	200	PVC	180	HDPE	Replacement
P-65	J-59	J-56	25.5	75	PVC	110	HDPE	Replacement
P-66	J-59	J-60	40.5	75	PVC	110	HDPE	Replacement
P-67	J-60	J-61	24.5	75	PVC	110	HDPE	Replacement
P-68	J-61	J-62	13	110	PVC	110	uPVC	Retained
P-69	J-62	J-11	75	110	PVC	110	uPVC	Retained
P-695	J-236	J-289	25.5	160	PVC	140	HDPE	Replacement
P-7	J-7	J-8	23.5	160	PVC	110	HDPE	Replacement
P-70	J-63	J-64	29.5	75	PVC	110	HDPE	Replacement
P-71	J-64	J-65	15	75	PVC	110	HDPE	Replacement
P-72	J-65	J-66	16	75	PVC	110	HDPE	Replacement
P-73	J-66	J-67	16	75	PVC	110	HDPE	Replacement
P-74	J-67	J-61	18	75	PVC	110	HDPE	Replacement
P-75	J-66	J-60	64	75	PVC	110	HDPE	Replacement
P-76	J-68	J-69	9	75	PVC	110	HDPE	Replacement
P-764	J-290	J-625	124.5	160	PVC	140	HDPE	Replacement
P-77	J-69	J-12	82.5	75	PVC	110	HDPE	Replacement
P-78	J-69	J-70	79	75	PVC	110	HDPE	Replacement
P-79	J-70	J-55	40.5	75	PVC	110	HDPE	Replacement
P-8	J-9	J-10	58	110	PVC	110	uPVC	Retained
P-80	J-70	J-71	46	75	PVC	110	HDPE	Replacement
P-81	J-71	J-72	108.5	75	PVC	110	HDPE	Replacement
P-82	J-73	J-74	28.5	75	PVC	110	HDPE	Replacement
P-83	J-74	J-75	37	75	PVC	110	HDPE	Replacement
P-84	J-75	J-54	33	75	PVC	110	HDPE	Replacement
P-85	J-76	J-51	85	110	PVC	110	uPVC	Retained
P-86	J-50	J-77	56	160	PVC	110	HDPE	Replacement
P-87	J-77	J-78	29	160	PVC	110	HDPE	Replacement
P-88	J-78	J-79	46	160	PVC	110	HDPE	Replacement
P-89	J-79	J-80	50	160	PVC	110	HDPE	Replacement
P-9	J-10	J-11	28	110	PVC	110	uPVC	Retained
P-90	J-80	J-81	111.5	160	PVC	110	HDPE	Replacement
P-91	J-81	J-82	64	160	PVC	110	HDPE	Replacement
P-92	J-82	J-78	85	75	PVC	110	HDPE	Replacement

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-93	J-77	J-82	83	75	PVC	110	HDPE	Replacement
P-94	J-80	J-83	138	160	PVC	110	HDPE	Replacement
P-95	J-83	J-84	60	160	PVC	110	HDPE	Replacement
P-96	J-84	J-85	10	160	PVC	110	HDPE	Replacement
P-97	J-85	J-86	72.5	160	PVC	110	HDPE	Replacement
P-98	J-86	J-87	68.5	160	PVC	110	HDPE	Replacement
P-99	J-87	J-85	75.5	160	PVC	110	HDPE	Replacement
PP-424	J-92	PJ-390	149	#N/A	#N/A	110	HDPE	New
PP-425	PJ-390	J-93	141.5	#N/A	#N/A	110	HDPE	New
PP-426	J-93	J-89	122	#N/A	#N/A	110	HDPE	New
PP-427	J-89	PJ-391	159.5	#N/A	#N/A	110	HDPE	New
PP-428	PJ-391	J-63	138	#N/A	#N/A	110	HDPE	New
PP-429	J-63	J-8	227	#N/A	#N/A	110	HDPE	New
PP-430	J-8	PJ-392	45.5	#N/A	#N/A	110	HDPE	New
PP-431	J-10	PJ-393	22	#N/A	#N/A	110	HDPE	New
PP-432	J-64	PJ-394	18	#N/A	#N/A	110	HDPE	New
PP-433	J-65	PJ-395	34.5	#N/A	#N/A	110	HDPE	New
PP-434	J-67	PJ-396	53	#N/A	#N/A	110	HDPE	New
PP-435	J-62	J-68	19.5	#N/A	#N/A	110	HDPE	New
PP-436	J-12	J-14	80	#N/A	#N/A	110	HDPE	New
PP-437	J-15	J-13	101	#N/A	#N/A	110	HDPE	New
PP-438	J-13	PJ-397	42.5	#N/A	#N/A	110	HDPE	New
PP-439	PJ-397	J-7	9	#N/A	#N/A	110	HDPE	New
PP-440	J-9	PJ-397	9	#N/A	#N/A	110	HDPE	New
PP-441	J-41	PJ-398	11.5	#N/A	#N/A	110	HDPE	New
PP-442	J-71	J-42	25.5	#N/A	#N/A	110	HDPE	New
PP-443	J-60	J-76	106.5	#N/A	#N/A	110	HDPE	New
PP-444	J-76	PJ-399	65.5	#N/A	#N/A	110	HDPE	New
PP-445	PJ-399	J-90	68	#N/A	#N/A	110	HDPE	New
PP-446	PJ-391	PJ-399	12.5	#N/A	#N/A	110	HDPE	New
PP-447	PJ-399	J-77	123	#N/A	#N/A	110	HDPE	New
PP-448	J-87	J-79	24.5	#N/A	#N/A	110	HDPE	New
PP-449	J-82	PJ-400	30	#N/A	#N/A	110	HDPE	New
PP-450	PJ-400	J-94	60.5	#N/A	#N/A	110	HDPE	New
PP-451	J-100	PJ-401	14	#N/A	#N/A	110	HDPE	New
PP-452	J-96	PJ-402	11	#N/A	#N/A	110	HDPE	New
PP-453	PJ-403	J-97	12	#N/A	#N/A	110	HDPE	New
PP-454	J-98	J-47	19.5	#N/A	#N/A	110	HDPE	New
PP-455	PJ-400	J-48	61.5	#N/A	#N/A	110	HDPE	New
PP-456	J-46	J-72	23.5	#N/A	#N/A	110	HDPE	New
PP-457	J-72	J-75	47	#N/A	#N/A	110	HDPE	New
PP-458	J-49	J-74	46	#N/A	#N/A	110	HDPE	New
PP-459	J-73	J-52	11	#N/A	#N/A	110	HDPE	New
PP-460	J-53	J-58	10.5	#N/A	#N/A	110	HDPE	New
PP-461	J-43	J-145	12.5	#N/A	#N/A	110	HDPE	New
PP-462	J-145	PJ-404	30.5	#N/A	#N/A	110	HDPE	New
PP-463	PJ-404	PJ-405	48.5	#N/A	#N/A	110	HDPE	New
PP-464	PJ-405	J-44	44	#N/A	#N/A	110	HDPE	New
PP-465	J-45	PJ-406	44.5	#N/A	#N/A	110	HDPE	New
PP-466	PJ-406	PJ-405	27	#N/A	#N/A	110	HDPE	New
PP-467	PJ-406	J-138	37	#N/A	#N/A	110	HDPE	New
PP-468	PJ-407	J-137	22	#N/A	#N/A	110	HDPE	New
PP-469	J-136	PJ-408	28	#N/A	#N/A	110	HDPE	New
PP-470	J-102	J-104	118	#N/A	#N/A	110	HDPE	New
PP-471	J-140	PJ-409	22.5	#N/A	#N/A	110	HDPE	New
PP-472	J-139	PJ-410	21	#N/A	#N/A	110	HDPE	New
PP-473	PJ-410	J-125	37	#N/A	#N/A	110	HDPE	New
PP-474	PJ-410	PJ-411	24	#N/A	#N/A	110	HDPE	New
PP-475	J-141	PJ-412	28.5	#N/A	#N/A	110	HDPE	New
PP-476	J-142	PJ-413	20	#N/A	#N/A	110	HDPE	New

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-477	J-143	PJ-414	9.5	#N/A	#N/A	110	HDPE	New
PP-478	PJ-414	PJ-415	7.5	#N/A	#N/A	110	HDPE	New
PP-479	PJ-414	PJ-416	34.5	#N/A	#N/A	110	HDPE	New
PP-480	PJ-416	J-121	46.5	#N/A	#N/A	110	HDPE	New
PP-481	J-121	PJ-417	27.5	#N/A	#N/A	110	HDPE	New
PP-482	J-122	PJ-418	21.5	#N/A	#N/A	110	HDPE	New
PP-483	J-123	PJ-419	27.5	#N/A	#N/A	110	HDPE	New
PP-484	J-119	PJ-420	9.5	#N/A	#N/A	110	HDPE	New
PP-485	J-117	PJ-421	11.5	#N/A	#N/A	110	HDPE	New
PP-486	J-108	PJ-422	19	#N/A	#N/A	110	HDPE	New
PP-487	J-109	PJ-423	29	#N/A	#N/A	110	HDPE	New
PP-488	PJ-423	PJ-424	30.5	#N/A	#N/A	110	HDPE	New
PP-489	PJ-423	J-176	12.5	#N/A	#N/A	110	HDPE	New
PP-490	J-176	PJ-425	13.5	#N/A	#N/A	110	HDPE	New
PP-491	J-176	PJ-426	34	#N/A	#N/A	110	HDPE	New
PP-492	J-106	PJ-427	26	#N/A	#N/A	110	HDPE	New
PP-493	J-126	PJ-428	25	#N/A	#N/A	110	HDPE	New
PP-494	J-127	PJ-429	10.5	#N/A	#N/A	110	HDPE	New
PP-495	J-180	PJ-430	6.5	#N/A	#N/A	110	HDPE	New
PP-496	PJ-430	PJ-431	14	#N/A	#N/A	110	HDPE	New
PP-497	PJ-432	PJ-430	17	#N/A	#N/A	110	HDPE	New
PP-498	J-180	PJ-433	91.5	#N/A	#N/A	110	HDPE	New
PP-499	PJ-433	J-135	29.5	#N/A	#N/A	110	HDPE	New
PP-500	PJ-433	PJ-434	4.5	#N/A	#N/A	110	HDPE	New
PP-501	PJ-434	J-103	34.5	#N/A	#N/A	110	HDPE	New
PP-502	PJ-434	PJ-435	9	#N/A	#N/A	110	HDPE	New
PP-503	J-129	PJ-436	12.5	#N/A	#N/A	110	HDPE	New
PP-504	PJ-436	PJ-437	49	#N/A	#N/A	110	HDPE	New
PP-505	PJ-436	PJ-438	67	#N/A	#N/A	110	HDPE	New
PP-506	PJ-438	PJ-439	6.5	#N/A	#N/A	110	HDPE	New
PP-507	PJ-439	J-179	5	#N/A	#N/A	110	HDPE	New
PP-508	PJ-439	PJ-440	31.5	#N/A	#N/A	110	HDPE	New
PP-509	PJ-438	PJ-441	21	#N/A	#N/A	110	HDPE	New
PP-510	PJ-441	PJ-442	11.5	#N/A	#N/A	110	HDPE	New
PP-511	PJ-442	PJ-443	12.5	#N/A	#N/A	110	HDPE	New
PP-512	PJ-443	PJ-444	27.5	#N/A	#N/A	110	HDPE	New
PP-513	PJ-443	PJ-445	10.5	#N/A	#N/A	110	HDPE	New
PP-514	PJ-446	PJ-442	9.5	#N/A	#N/A	110	HDPE	New
PP-515	PJ-442	PJ-447	7.5	#N/A	#N/A	110	HDPE	New
PP-516	PJ-448	PJ-441	5.5	#N/A	#N/A	110	HDPE	New
PP-517	J-177	PJ-449	59	#N/A	#N/A	110	HDPE	New
PP-518	PJ-449	PJ-450	9.5	#N/A	#N/A	110	HDPE	New
PP-519	J-175	PJ-451	17.5	#N/A	#N/A	110	HDPE	New
PP-520	J-130	PJ-452	26.5	#N/A	#N/A	110	HDPE	New
PP-521	PJ-452	PJ-453	11.5	#N/A	#N/A	110	HDPE	New
PP-522	PJ-452	PJ-454	24	#N/A	#N/A	110	HDPE	New
PP-523	J-134	J-133	16	#N/A	#N/A	110	HDPE	New
PP-524	J-132	PJ-455	90.5	#N/A	#N/A	110	HDPE	New
PP-525	PJ-455	PJ-456	34.5	#N/A	#N/A	110	HDPE	New
PP-526	PJ-455	PJ-457	25.5	#N/A	#N/A	110	HDPE	New
PP-527	PJ-457	PJ-458	23	#N/A	#N/A	110	HDPE	New
PP-528	PJ-457	PJ-459	21.5	#N/A	#N/A	110	HDPE	New
PP-529	PJ-459	J-182	29.5	#N/A	#N/A	110	HDPE	New
PP-530	PJ-460	PJ-459	19	#N/A	#N/A	110	HDPE	New
PP-531	J-183	PJ-461	49.5	#N/A	#N/A	110	HDPE	New
PP-532	PJ-461	J-178	5.5	#N/A	#N/A	110	HDPE	New
PP-533	PJ-461	PJ-462	46.5	#N/A	#N/A	110	HDPE	New
PP-534	PJ-462	PJ-463	11.5	#N/A	#N/A	110	HDPE	New
PP-535	PJ-462	PJ-464	35.5	#N/A	#N/A	110	HDPE	New
PP-536	PJ-465	J-173	10.5	#N/A	#N/A	110	HDPE	New

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-537	J-174	PJ-466	9	#N/A	#N/A	110	HDPE	New
PP-538	J-181	J-297	55.5	#N/A	#N/A	110	HDPE	New
PP-539	J-297	PJ-467	34.5	#N/A	#N/A	110	HDPE	New
PP-540	J-296	PJ-468	18.5	#N/A	#N/A	110	HDPE	New
PP-541	J-295	J-185	48.5	#N/A	#N/A	110	HDPE	New
PP-542	J-185	PJ-469	32.5	#N/A	#N/A	110	HDPE	New
PP-543	J-189	PJ-470	49.5	#N/A	#N/A	110	HDPE	New
PP-544	PJ-470	PJ-471	9	#N/A	#N/A	110	HDPE	New
PP-545	PJ-470	PJ-472	57	#N/A	#N/A	110	HDPE	New
PP-546	PJ-472	J-294	46	#N/A	#N/A	110	HDPE	New
PP-547	PJ-472	J-191	55.5	#N/A	#N/A	110	HDPE	New
PP-548	J-190	PJ-473	46	#N/A	#N/A	110	HDPE	New
PP-549	J-319	PJ-474	12.5	#N/A	#N/A	110	HDPE	New
PP-550	J-317	J-313	25	#N/A	#N/A	110	HDPE	New
PP-551	J-317	PJ-475	11.5	#N/A	#N/A	110	HDPE	New
PP-552	J-312	PJ-476	25	#N/A	#N/A	110	HDPE	New
PP-553	J-311	PJ-477	21	#N/A	#N/A	125	HDPE	New
PP-554	PJ-477	PJ-478	32	#N/A	#N/A	110	HDPE	New
PP-555	PJ-477	PJ-479	11	#N/A	#N/A	125	HDPE	New
PP-556	PJ-479	PJ-480	11.5	#N/A	#N/A	110	HDPE	New
PP-557	PJ-479	J-192	64	#N/A	#N/A	125	HDPE	New
PP-558	J-194	PJ-481	25	#N/A	#N/A	110	HDPE	New
PP-559	J-308	PJ-482	27.5	#N/A	#N/A	110	HDPE	New
PP-560	J-309	PJ-483	50	#N/A	#N/A	110	HDPE	New
PP-561	J-314	PJ-484	9.5	#N/A	#N/A	110	HDPE	New
PP-562	J-212	PJ-485	39.5	#N/A	#N/A	110	HDPE	New
PP-563	J-315	PJ-486	26.5	#N/A	#N/A	140	HDPE	New
PP-564	PJ-486	J-21	38.5	#N/A	#N/A	180	HDPE	New
PP-565	J-21	J-316	33.5	#N/A	#N/A	200	HDPE	New
PP-567	PJ-487	PJ-488	75.5	#N/A	#N/A	315	HDPE	New
PP-568	PJ-488	J-151	23.5	#N/A	#N/A	180	HDPE	New
PP-569	PJ-488	PJ-489	17	#N/A	#N/A	140	HDPE	New
PP-570	PJ-489	PJ-490	26.5	#N/A	#N/A	110	HDPE	New
PP-571	PJ-489	J-25	37	#N/A	#N/A	140	HDPE	New
PP-572	J-28	J-30	54	#N/A	#N/A	110	HDPE	New
PP-573	J-23	PJ-491	20.5	#N/A	#N/A	125	HDPE	New
PP-574	J-22	PJ-492	34.5	#N/A	#N/A	125	HDPE	New
PP-575	J-149	PJ-493	15.5	#N/A	#N/A	110	HDPE	New
PP-576	PJ-493	PJ-494	15	#N/A	#N/A	110	HDPE	New
PP-577	PJ-493	PJ-495	57	#N/A	#N/A	110	HDPE	New
PP-578	J-20	PJ-496	15.5	#N/A	#N/A	125	HDPE	New
PP-579	PJ-496	J-163	20	#N/A	#N/A	125	HDPE	New
PP-580	J-163	PJ-497	16	#N/A	#N/A	110	HDPE	New
PP-581	J-164	PJ-498	21	#N/A	#N/A	110	HDPE	New
PP-582	PJ-498	J-19	15.5	#N/A	#N/A	110	HDPE	New
PP-583	PJ-498	PJ-496	69.5	#N/A	#N/A	110	HDPE	New
PP-584	J-159	PJ-499	43	#N/A	#N/A	110	HDPE	New
PP-585	J-18	PJ-500	33	#N/A	#N/A	160	HDPE	New
PP-586	PJ-500	PJ-501	62.5	#N/A	#N/A	110	HDPE	New
PP-587	PJ-501	J-17	68.5	#N/A	#N/A	110	HDPE	New
PP-588	PJ-501	PJ-502	51	#N/A	#N/A	125	HDPE	New
PP-589	PJ-502	PJ-503	51	#N/A	#N/A	110	HDPE	New
PP-590	PJ-503	J-152	26	#N/A	#N/A	125	HDPE	New
PP-591	J-152	PJ-500	51	#N/A	#N/A	140	HDPE	New
PP-592	PJ-502	PJ-504	29.5	#N/A	#N/A	140	HDPE	New
PP-593	PJ-504	PJ-416	14	#N/A	#N/A	110	HDPE	New
PP-594	PJ-404	PJ-504	60.5	#N/A	#N/A	110	HDPE	New
PP-595	J-114	PJ-505	18.5	#N/A	#N/A	125	HDPE	New
PP-596	PJ-505	PJ-503	17	#N/A	#N/A	125	HDPE	New
PP-597	PJ-506	J-114	24.5	#N/A	#N/A	110	HDPE	New

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-598	PJ-505	PJ-507	30.5	#N/A	#N/A	110	HDPE	New
PP-599	J-113	PJ-508	13	#N/A	#N/A	110	HDPE	New
PP-600	J-111	PJ-509	13	#N/A	#N/A	110	HDPE	New
PP-601	J-154	PJ-510	29.5	#N/A	#N/A	110	HDPE	New
PP-602	PJ-511	J-157	9	#N/A	#N/A	110	HDPE	New
PP-603	J-157	PJ-512	34	#N/A	#N/A	110	HDPE	New
PP-604	J-168	PJ-513	16.5	#N/A	#N/A	110	HDPE	New
PP-605	J-155	J-156	84	#N/A	#N/A	110	HDPE	New
PP-606	PJ-486	J-216	144.5	#N/A	#N/A	140	HDPE	New
PP-607	J-214	PJ-514	32	#N/A	#N/A	110	HDPE	New
PP-608	J-215	J-357	53	#N/A	#N/A	110	HDPE	New
PP-609	J-211	PJ-515	22	#N/A	#N/A	110	HDPE	New
PP-610	J-358	PJ-516	108	#N/A	#N/A	110	HDPE	New
PP-611	PJ-516	PJ-517	28	#N/A	#N/A	110	HDPE	New
PP-612	PJ-516	J-226	34.5	#N/A	#N/A	110	HDPE	New
PP-613	PJ-518	J-225	19.5	#N/A	#N/A	110	HDPE	New
PP-614	J-225	PJ-519	51.5	#N/A	#N/A	110	HDPE	New
PP-615	J-224	PJ-520	34	#N/A	#N/A	110	HDPE	New
PP-616	J-220	PJ-521	28	#N/A	#N/A	110	HDPE	New
PP-617	J-219	PJ-522	25.5	#N/A	#N/A	110	HDPE	New
PP-618	J-218	PJ-523	34	#N/A	#N/A	110	HDPE	New
PP-619	J-227	J-356	37.5	#N/A	#N/A	110	HDPE	New
PP-620	J-356	PJ-524	66	#N/A	#N/A	110	HDPE	New
PP-621	PJ-524	J-207	17	#N/A	#N/A	110	HDPE	New
PP-622	J-209	PJ-524	63	#N/A	#N/A	110	HDPE	New
PP-623	J-208	PJ-525	31	#N/A	#N/A	110	HDPE	New
PP-624	PJ-525	J-200	15.5	#N/A	#N/A	110	HDPE	New
PP-625	PJ-525	PJ-526	19	#N/A	#N/A	110	HDPE	New
PP-626	J-204	J-206	72.5	#N/A	#N/A	110	HDPE	New
PP-627	J-228	PJ-527	48.5	#N/A	#N/A	110	HDPE	New
PP-628	J-230	PJ-528	37.5	#N/A	#N/A	110	HDPE	New
PP-629	J-223	J-362	192	#N/A	#N/A	110	HDPE	New
PP-630	J-362	PJ-529	39	#N/A	#N/A	110	HDPE	New
PP-632	PJ-530	PJ-531	66.5	#N/A	#N/A	110	HDPE	New
PP-634	J-361	PJ-533	49.5	#N/A	#N/A	110	HDPE	New
PP-635	J-376	J-378	17	#N/A	#N/A	110	HDPE	New
PP-636	J-378	PJ-534	10.5	#N/A	#N/A	110	HDPE	New
PP-637	J-364	J-250	25	#N/A	#N/A	110	HDPE	New
PP-638	PJ-535	J-249	15	#N/A	#N/A	110	HDPE	New
PP-639	J-249	PJ-536	11	#N/A	#N/A	110	HDPE	New
PP-640	J-247	PJ-537	11.5	#N/A	#N/A	110	HDPE	New
PP-641	J-246	PJ-538	23	#N/A	#N/A	110	HDPE	New
PP-642	PJ-538	PJ-539	21.5	#N/A	#N/A	110	HDPE	New
PP-643	PJ-540	PJ-538	9	#N/A	#N/A	110	HDPE	New
PP-644	J-336	PJ-541	19	#N/A	#N/A	110	HDPE	New
PP-645	PJ-542	J-245	30	#N/A	#N/A	110	HDPE	New
PP-646	J-379	PJ-543	31.5	#N/A	#N/A	110	HDPE	New
PP-648	J-380	PJ-544	37	#N/A	#N/A	110	HDPE	New
PP-649	J-251	PJ-545	30.5	#N/A	#N/A	110	HDPE	New
PP-650	J-255	J-254	42	#N/A	#N/A	110	HDPE	New
PP-651	J-244	PJ-546	24.5	#N/A	#N/A	110	HDPE	New
PP-652	J-243	PJ-547	24.5	#N/A	#N/A	110	HDPE	New
PP-653	J-243	PJ-548	19.5	#N/A	#N/A	110	HDPE	New
PP-654	J-242	PJ-549	18.5	#N/A	#N/A	110	HDPE	New
PP-655	J-240	PJ-550	15.5	#N/A	#N/A	110	HDPE	New
PP-656	J-239	J-234	84.5	#N/A	#N/A	110	HDPE	New
PP-657	J-298	PJ-551	6.5	#N/A	#N/A	110	HDPE	New
PP-658	PJ-551	PJ-552	6.5	#N/A	#N/A	110	HDPE	New
PP-659	PJ-552	PJ-553	46	#N/A	#N/A	110	HDPE	New
PP-660	PJ-552	PJ-554	37	#N/A	#N/A	110	HDPE	New

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-661	PJ-551	PJ-555	30.5	#N/A	#N/A	110	HDPE	New
PP-662	PJ-555	J-193	37.5	#N/A	#N/A	110	HDPE	New
PP-663	PJ-555	J-195	56.5	#N/A	#N/A	110	HDPE	New
PP-664	J-300	PJ-556	6.5	#N/A	#N/A	110	HDPE	New
PP-665	J-301	PJ-557	12.5	#N/A	#N/A	110	HDPE	New
PP-666	PJ-558	J-307	9.5	#N/A	#N/A	110	HDPE	New
PP-667	J-307	J-302	10	#N/A	#N/A	110	HDPE	New
PP-668	J-303	PJ-559	9.5	#N/A	#N/A	110	HDPE	New
PP-669	J-306	PJ-560	48	#N/A	#N/A	110	HDPE	New
PP-670	J-321	PJ-561	38	#N/A	#N/A	110	HDPE	New
PP-671	PJ-561	J-322	13	#N/A	#N/A	110	HDPE	New
PP-672	J-292	PJ-561	11.5	#N/A	#N/A	110	HDPE	New
PP-673	J-323	PJ-562	14.5	#N/A	#N/A	110	HDPE	New
PP-674	J-327	PJ-563	23.5	#N/A	#N/A	110	HDPE	New
PP-675	PJ-564	J-328	41	#N/A	#N/A	110	HDPE	New
PP-676	J-328	PJ-565	12.5	#N/A	#N/A	110	HDPE	New
PP-677	PJ-565	PJ-566	26	#N/A	#N/A	110	HDPE	New
PP-678	J-329	PJ-567	18.5	#N/A	#N/A	110	HDPE	New
PP-679	PJ-565	PJ-568	11	#N/A	#N/A	110	HDPE	New
PP-680	J-330	PJ-569	17	#N/A	#N/A	110	HDPE	New
PP-681	PJ-569	PJ-570	18	#N/A	#N/A	110	HDPE	New
PP-682	PJ-571	PJ-569	12	#N/A	#N/A	110	HDPE	New
PP-683	J-331	PJ-572	9.5	#N/A	#N/A	110	HDPE	New
PP-684	J-332	PJ-573	26.5	#N/A	#N/A	110	HDPE	New
PP-685	J-333	PJ-574	11.5	#N/A	#N/A	110	HDPE	New
PP-686	PJ-574	PJ-575	9.5	#N/A	#N/A	110	HDPE	New
PP-687	PJ-574	PJ-576	18.5	#N/A	#N/A	110	HDPE	New
PP-688	PJ-577	J-334	21.5	#N/A	#N/A	110	HDPE	New
PP-689	J-347	PJ-578	24.5	#N/A	#N/A	110	HDPE	New
PP-690	PJ-578	J-335	27.5	#N/A	#N/A	110	HDPE	New
PP-691	PJ-578	J-337	26	#N/A	#N/A	110	HDPE	New
PP-692	J-339	J-232	15.5	#N/A	#N/A	110	HDPE	New
PP-693	J-233	J-338	30	#N/A	#N/A	110	HDPE	New
PP-694	J-235	J-236	5.5	#N/A	#N/A	110	HDPE	New
PP-696	J-345	PJ-579	23.5	#N/A	#N/A	110	HDPE	New
PP-697	J-345	J-346	23.5	#N/A	#N/A	110	HDPE	New
PP-698	J-346	PJ-580	23	#N/A	#N/A	110	HDPE	New
PP-699	J-350	J-343	37	#N/A	#N/A	110	HDPE	New
PP-700	J-349	PJ-581	37	#N/A	#N/A	110	HDPE	New
PP-701	PJ-581	J-352	13.5	#N/A	#N/A	110	HDPE	New
PP-702	PJ-581	J-354	36.5	#N/A	#N/A	110	HDPE	New
PP-703	J-353	PJ-582	43.5	#N/A	#N/A	110	HDPE	New
PP-704	J-263	PJ-583	70	#N/A	#N/A	110	HDPE	New
PP-705	PJ-583	J-265	46	#N/A	#N/A	110	HDPE	New
PP-706	J-264	PJ-584	44	#N/A	#N/A	110	HDPE	New
PP-707	J-266	PJ-585	22	#N/A	#N/A	110	HDPE	New
PP-708	J-267	PJ-586	62.5	#N/A	#N/A	110	HDPE	New
PP-709	PJ-583	PJ-587	18.5	#N/A	#N/A	110	HDPE	New
PP-710	J-268	PJ-588	26	#N/A	#N/A	110	HDPE	New
PP-711	PJ-588	PJ-589	50	#N/A	#N/A	110	HDPE	New
PP-712	PJ-589	J-274	6.5	#N/A	#N/A	110	HDPE	New
PP-713	J-274	J-286	39.5	#N/A	#N/A	110	HDPE	New
PP-714	PJ-588	PJ-590	24.5	#N/A	#N/A	110	HDPE	New
PP-715	PJ-590	PJ-589	46	#N/A	#N/A	110	HDPE	New
PP-716	J-274	PJ-591	55.5	#N/A	#N/A	110	HDPE	New
PP-717	PJ-591	J-287	31.5	#N/A	#N/A	110	HDPE	New
PP-718	PJ-590	PJ-591	24	#N/A	#N/A	110	HDPE	New
PP-719	PJ-591	PJ-592	7.5	#N/A	#N/A	110	HDPE	New
PP-720	PJ-593	J-273	40	#N/A	#N/A	110	HDPE	New
PP-721	J-273	PJ-594	60.5	#N/A	#N/A	110	HDPE	New

BOQ for Z9								
				Existing		Proposal to meet 2041 requirement		
Label	**From Node**	**To Node**	**Length (m)**	**Diameter (mm)**	**Material**	**Diameter (mm)**	**Material**	**Status**
PP-722	PJ-594	J-275	17	#N/A	#N/A	110	HDPE	New
PP-723	J-275	J-283	45	#N/A	#N/A	110	HDPE	New
PP-724	J-283	J-284	22.5	#N/A	#N/A	110	HDPE	New
PP-725	J-284	PJ-595	17.5	#N/A	#N/A	110	HDPE	New
PP-726	J-256	J-282	23	#N/A	#N/A	110	HDPE	New
PP-727	PJ-594	PJ-596	31.5	#N/A	#N/A	110	HDPE	New
PP-728	J-258	PJ-597	33.5	#N/A	#N/A	110	HDPE	New
PP-729	PJ-598	J-259	22	#N/A	#N/A	110	HDPE	New
PP-730	J-271	PJ-599	12.5	#N/A	#N/A	110	HDPE	New
PP-731	PJ-599	PJ-600	8	#N/A	#N/A	110	HDPE	New
PP-732	PJ-601	PJ-599	9	#N/A	#N/A	110	HDPE	New
PP-733	PJ-599	PJ-602	9.5	#N/A	#N/A	110	HDPE	New
PP-734	J-261	PJ-603	29.5	#N/A	#N/A	110	HDPE	New
PP-735	PJ-603	J-260	14	#N/A	#N/A	110	HDPE	New
PP-736	PJ-603	J-259	64	#N/A	#N/A	110	HDPE	New
PP-737	J-285	J-278	15.5	#N/A	#N/A	110	HDPE	New
PP-738	J-375	PJ-604	42.5	#N/A	#N/A	110	HDPE	New
PP-739	PJ-604	PJ-605	39.5	#N/A	#N/A	110	HDPE	New
PP-740	PJ-605	J-389	79	#N/A	#N/A	110	HDPE	New
PP-741	PJ-606	J-388	38	#N/A	#N/A	110	HDPE	New
PP-742	PJ-605	PJ-607	39	#N/A	#N/A	110	HDPE	New
PP-743	PJ-607	PJ-608	30	#N/A	#N/A	110	HDPE	New
PP-744	PJ-607	J-373	17	#N/A	#N/A	110	HDPE	New
PP-745	J-372	PJ-609	25.5	#N/A	#N/A	110	HDPE	New
PP-746	J-381	PJ-610	20	#N/A	#N/A	110	HDPE	New
PP-747	J-374	PJ-611	12.5	#N/A	#N/A	110	HDPE	New
PP-748	PJ-611	PJ-612	8.5	#N/A	#N/A	110	HDPE	New
PP-749	PJ-613	PJ-611	11.5	#N/A	#N/A	110	HDPE	New
PP-750	PJ-611	PJ-614	6	#N/A	#N/A	110	HDPE	New
PP-751	J-367	PJ-615	40	#N/A	#N/A	110	HDPE	New
PP-752	J-369	PJ-616	11	#N/A	#N/A	110	HDPE	New
PP-753	J-384	PJ-617	27.5	#N/A	#N/A	110	HDPE	New
PP-754	PJ-617	PJ-618	24	#N/A	#N/A	110	HDPE	New
PP-755	PJ-617	PJ-619	14.5	#N/A	#N/A	110	HDPE	New
PP-756	PJ-619	PJ-620	33	#N/A	#N/A	110	HDPE	New
PP-757	PJ-619	PJ-621	18	#N/A	#N/A	110	HDPE	New
PP-759	J-385	PJ-622	37	#N/A	#N/A	110	HDPE	New
PP-760	J-383	PJ-623	19	#N/A	#N/A	110	HDPE	New
PP-761	PJ-623	PJ-624	7.5	#N/A	#N/A	110	HDPE	New
PP-762	PJ-623	J-387	15.5	#N/A	#N/A	110	HDPE	New
PP-763	J-222	J-359	38	#N/A	#N/A	110	HDPE	New
PP-765	J-625	J-291	88	#N/A	#N/A	125	HDPE	New
PP-766	J-21	PJ-626	166.5	#N/A	#N/A	315	HDPE	New
PP-767	PJ-626	PJ-487	63	#N/A	#N/A	315	HDPE	New
PP-768	**T-1**	**PJ-626**	**17.5**	#N/A	#N/A	**355**	HDPE	New
			29354.00					

Zone -10

Distribution Network Design Output: Zone 10

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	115.5	21.514	21.355	-22.64139	J-1	J-2	232.6	-9,690.73	8,557.42	315	0.29	0.26	22.64139	HDPE	145	0.03
P-10	33	20.533	20.289	15.26763	J-10	J-11	232.74	-9,759.30	8,365.79	160	0.76	3.45	15.26763	HDPE	145	0.11
P-100	14	18.914	18.94	-1.90411	J-98	J-99	234.05	-9,399.57	8,424.79	110	0.2	0.45	1.90411	uPVC	145	0.01
P-101	7	18.914	18.745	0.09289	J-98	J-100	234.05	-9,399.57	8,424.79	110	0.01	0	0.09289	uPVC	145	0
P-102	39	19.092	18.968	0.94522	J-25	J-101	233.91	-9,417.09	8,476.31	110	0.1	0.12	0.94522	uPVC	145	0
P-103	65.5	18.968	18.695	-1.79437	J-101	J-102	234.03	-9,440.70	8,445.37	110	0.19	0.41	1.79437	uPVC	145	0.03
P-104	9	18.695	18.678	-9.50473	J-102	J-103	234.33	-9,478.95	8,391.94	125	0.77	4.78	9.50473	HDPE	145	0.04
P-105	32	18.678	18.573	2.97617	J-103	J-104	234.39	-9,484.64	8,384.67	160	0.15	0.17	2.97617	uPVC	145	0.01
P-106	43.5	18.573	17.829	2.51185	J-104	J-105	234.49	-9,503.77	8,359.21	160	0.12	0.12	2.51185	uPVC	145	0.01
P-107	16.5	17.829	17.387	1.23419	J-105	J-106	235.23	-9,515.15	8,318.27	110	0.13	0.2	1.23419	HDPE	145	0
P-108	25	17.387	17.503	0.90861	J-106	J-107	235.67	-9,498.87	8,314.48	110	0.1	0.11	0.90861	HDPE	145	0
P-109	36	17.503	16.745	0.10425	J-107	J-108	235.55	-9,519.90	8,300.56	110	0.01	0	0.10425	HDPE	145	0
P-11	51.5	21.396	21.156	88.50058	J-7	J-12	232.56	-9,676.90	8,529.01	315	1.14	3.3	88.50058	HDPE	145	0.17
P-110	51.5	17.503	17.082	0.47897	J-107	J-109	235.55	-9,519.90	8,300.56	110	0.05	0.04	0.47897	HDPE	145	0
P-111	78	17.829	19.105	0.87856	J-105	J-110	235.23	-9,515.15	8,318.27	160	0.04	0.02	0.87856	uPVC	145	0
P-112	17	19.105	19.334	3.23983	J-110	J-111	233.95	-9,587.56	8,289.66	125	0.26	0.65	3.23983	HDPE	145	0.01
P-113	8.5	19.334	19.377	-4.89545	J-111	J-112	233.71	-9,602.89	8,282.54	160	0.24	0.42	4.89545	uPVC	145	0
P-114	58.5	19.377	19.461	7.59397	J-112	J-113	233.67	-9,611.27	8,283.02	160	0.38	0.95	7.59397	uPVC	145	0.06
P-115	4	19.461	19.479	4.24397	J-113	J-114	233.53	-9,666.60	8,266.42	140	0.28	0.62	4.24397	HDPE	145	0
P-116	21.5	19.479	19.553	3.92418	J-114	J-115	233.51	-9,670.71	8,266.89	160	0.2	0.28	3.92418	uPVC	145	0.01
P-117	8	19.553	19.592	2.37648	J-115	J-116	233.43	-9,692.06	8,269.26	160	0.12	0.11	2.37648	uPVC	145	0
P-118	44.5	19.592	19.811	0.12882	J-116	J-117	233.39	-9,700.12	8,271.00	110	0.01	0	0.12882	HDPE	145	0
P-119	48	19.592	19.758	1.95696	J-116	J-118	233.39	-9,700.12	8,271.00	160	0.1	0.08	1.95696	uPVC	145	0
P-12	24.5	21.156	21.064	83.44967	J-12	J-13	232.63	-9,637.11	8,551.74	315	1.07	2.96	83.44967	HDPE	145	0.07
P-120	26.5	19.758	19.857	0.33175	J-118	J-119	233.22	-9,747.96	8,274.61	110	0.03	0.02	0.33175	HDPE	145	0
P-121	10.5	19.857	19.907	0.2246	J-119	J-120	233.12	-9,741.79	8,300.30	110	0.02	0.01	0.2246	HDPE	145	0
P-122	8.5	19.907	19.957	0.02476	J-120	J-121	233.07	-9,739.07	8,310.43	110	0	0	0.02476	HDPE	145	0
P-123	25	19.907	19.917	0.07246	J-120	J-122	233.07	-9,739.07	8,310.43	110	0.01	0	0.07246	HDPE	145	0
P-124	26	19.758	19.871	1.33452	J-118	J-123	233.22	-9,747.96	8,274.61	110	0.14	0.23	1.33452	HDPE	145	0.01

P-125	173	19.871	19.691	2.71347	J-123	J-124	233.1	-9,773.65	8,276.59	125	0.22	0.47	2.71347	HDPE	145	0.08
P-126	36	19.691	19.754	-6.13991	J-124	J-125	233.2	-9,928.22	8,354.83	160	0.31	0.64	6.13991	uPVC	145	0.02
P-127	72	19.754	19.813	4.89163	J-125	J-126	233.16	-9,949.22	8,383.85	160	0.24	0.42	4.89163	uPVC	145	0.03
P-128	42	19.813	19.867	1.02613	J-126	J-127	233.07	-9,993.06	8,440.98	110	0.11	0.14	1.02613	uPVC	145	0.01
P-129	26	19.867	19.9	-2.56896	J-127	J-128	233.01	-10,018.69	8,474.32	160	0.13	0.13	2.56896	uPVC	145	0
P-13	15.5	21.064	21.01	60.10533	J-13	J-14	232.65	-9,612.93	8,555.56	280	0.98	2.86	60.10533	HDPE	145	0.04
P-130	22	19.9	19.871	9.12259	J-128	J-129	232.98	-10,034.44	8,495.32	160	0.45	1.33	9.12259	uPVC	145	0.03
P-131	38.5	19.871	19.85	5.66462	J-129	J-130	232.98	-10,048.64	8,511.99	160	0.28	0.55	5.66462	uPVC	145	0.02
P-132	45	19.85	19.822	3.01087	J-130	J-131	232.98	-10,072.11	8,542.56	160	0.15	0.17	3.01087	uPVC	145	0.01
P-133	30.5	19.822	20.012	0.59728	J-131	J-132	233	-10,100.21	8,577.76	160	0.03	0.01	0.59728	uPVC	145	0
P-134	12.5	20.012	20.122	-1.79774	J-132	J-133	232.81	-10,119.35	8,601.54	160	0.09	0.07	1.79774	uPVC	145	0
P-135	37.5	20.122	20.048	-2.79498	J-133	J-134	232.7	-10,127.38	8,611.11	160	0.14	0.15	2.79498	uPVC	145	0.01
P-136	93	19.871	19.773	3.01407	J-129	J-135	232.98	-10,048.64	8,511.99	110	0.32	1.06	3.01407	uPVC	145	0.1
P-137	42	19.773	19.679	6.0785	J-135	J-136	232.98	-10,127.69	8,462.59	110	0.64	3.89	6.0785	uPVC	145	0.16
P-138	26.5	19.679	19.828	3.15929	J-136	J-137	232.91	-10,163.50	8,440.67	110	0.33	1.16	3.15929	uPVC	145	0.03
P-139	42.5	19.694	19.612	0.50304	J-138	J-139	232.73	-10,191.60	8,388.18	110	0.05	0.04	0.50304	uPVC	145	0
P-14	66.5	21.01	20.609	54.98653	J-14	J-15	232.66	-9,598.11	8,559.31	280	0.89	2.43	54.98653	HDPE	145	0.16
P-140	23	19.612	19.566	-4.14588	J-139	J-140	232.81	-10,150.84	8,375.83	110	0.44	1.92	4.14588	uPVC	145	0.04
P-141	15	19.566	19.588	-0.74681	J-140	J-141	232.9	-10,128.30	8,370.89	110	0.08	0.08	0.74681	uPVC	145	0
P-142	60	19.588	19.831	-6.22977	J-141	J-142	232.88	-10,113.79	8,367.18	110	0.66	4.07	6.22977	uPVC	145	0.24
P-143	84.5	19.831	19.723	-2.85022	J-142	J-143	232.88	-10,055.74	8,351.43	110	0.3	0.96	2.85022	uPVC	145	0.08
P-144	63	19.588	19.561	5.08386	J-141	J-144	232.88	-10,113.79	8,367.18	110	0.53	2.8	5.08386	uPVC	145	0.18
P-145	45	19.561	19.437	1.57713	J-144	J-145	232.73	-10,103.29	8,304.81	110	0.17	0.32	1.57713	HDPE	145	0.01
P-146	45	19.437	19.19	1.10847	J-145	J-146	232.84	-10,059.45	8,315.31	110	0.12	0.17	1.10847	uPVC	145	0.01
P-147	66.5	19.612	19.558	4.26717	J-139	J-147	232.81	-10,150.84	8,375.83	110	0.45	2.02	4.26717	uPVC	145	0.13
P-148	24.5	19.558	19.531	3.06065	J-147	J-148	232.73	-10,160.72	8,310.06	110	0.32	1.09	3.06065	uPVC	145	0.03
P-149	16.5	19.531	19.506	3.6421	J-148	J-149	232.73	-10,166.28	8,285.98	110	0.38	1.51	3.6421	uPVC	145	0.02
P-15	9.5	20.609	20.477	54.46006	J-15	J-16	232.9	-9,535.46	8,579.86	280	0.88	2.39	54.46006	HDPE	145	0.02
P-150	126	19.506	18.951	-0.87271	J-149	J-150	232.73	-10,167.83	8,270.23	110	0.09	0.11	0.87271	uPVC	145	0.01
P-151	22	18.951	19.031	-1.88193	J-150	J-151	233.3	-10,057.60	8,209.09	110	0.2	0.44	1.88193	HDPE	145	0.01
P-152	72	19.031	19.398	-0.89996	J-151	J-152	233.23	-10,049.57	8,229.78	110	0.09	0.11	0.89996	HDPE	145	0.01
P-153	38	19.398	19.561	-2.26803	J-152	J-144	232.87	-10,109.78	8,268.99	110	0.24	0.63	2.26803	HDPE	145	0.02
P-154	27	19.562	19.546	2.25409	J-153	J-154	232.73	-10,220.01	8,344.02	110	0.24	0.62	2.25409	uPVC	145	0.02
P-155	83.5	19.546	19.449	2.36434	J-154	J-155	232.73	-10,219.39	8,317.16	110	0.25	0.68	2.36434	uPVC	145	0.06
P-156	44	19.449	19.415	-1.00313	J-155	J-156	232.77	-10,223.40	8,240.59	110	0.11	0.14	1.00313	uPVC	145	0.01
P-157	39	19.415	19.506	-3.98997	J-156	J-149	232.81	-10,180.18	8,233.48	160	0.2	0.29	3.98997	uPVC	145	0.01

P-158	100.5	19.415	18.925	2.45623	J-156	J-157	232.81	-10,180.18	8,233.48	160	0.12	0.12	2.45623	uPVC	145	0.01
P-159	55.5	18.925	18.647	-1.2044	J-157	J-158	233.29	-10,098.04	8,181.92	160	0.06	0.03	1.2044	uPVC	145	0
P-16	37	20.477	19.837	53.95816	J-16	J-17	233.01	-9,526.18	8,580.06	250	1.1	4.07	53.95816	HDPE	145	0.15
P-160	43.5	18.647	18.83	-2.54574	J-158	J-159	233.57	-10,048.95	8,155.68	110	0.27	0.78	2.54574	uPVC	145	0.03
P-161	23.5	18.83	18.951	-0.51329	J-159	J-150	233.42	-10,037.22	8,197.36	110	0.05	0.04	0.51329	uPVC	145	0
P-162	21	18.83	18.894	-2.28702	J-159	J-160	233.42	-10,037.22	8,197.36	110	0.24	0.64	2.28702	HDPE	145	0.01
P-163	33.5	18.894	18.952	-1.38163	J-160	J-161	233.37	-10,026.10	8,214.96	110	0.15	0.25	1.38163	HDPE	145	0.01
P-164	30	18.952	19.108	0.9409	J-161	J-162	233.32	-10,008.50	8,243.37	110	0.1	0.12	0.9409	HDPE	145	0
P-165	63	18.952	18.736	-2.68838	J-161	J-163	233.32	-10,008.50	8,243.37	110	0.28	0.86	2.68838	HDPE	145	0.05
P-166	19.5	18.736	18.824	-5.7147	J-163	J-164	233.59	-9,954.16	8,211.87	110	0.6	3.47	5.7147	HDPE	145	0.07
P-167	31.5	18.824	18.973	-7.98471	J-164	J-165	233.57	-9,944.28	8,228.85	125	0.65	3.46	7.98471	HDPE	145	0.11
P-168	25.5	18.973	19.143	-8.10923	J-165	J-166	233.53	-9,921.12	8,248.00	125	0.66	3.56	8.10923	HDPE	145	0.09
P-169	18	19.143	19.28	-8.33364	J-166	J-167	233.45	-9,901.36	8,262.20	125	0.68	3.75	8.33364	HDPE	145	0.07
P-17	18.5	19.837	19.669	37.65491	J-17	J-18	233.5	-9,489.22	8,581.25	250	0.77	2.09	37.65491	HDPE	145	0.04
P-170	125	19.28	19.871	-9.02488	J-167	J-123	233.38	-9,893.33	8,278.56	140	0.59	2.5	9.02488	HDPE	145	0.31
P-171	65.5	19.871	19.549	8.40218	J-123	J-168	233.1	-9,773.65	8,276.59	300	0.12	0.05	8.40218	HDPE	145	0
P-172	58	19.549	19.486	8.51209	J-168	J-169	233.42	-9,739.57	8,220.83	300	0.12	0.05	8.51209	HDPE	145	0
P-173	196	19.486	17.682	3.79496	J-169	J-170	233.48	-9,763.03	8,175.13	200	0.12	0.09	3.79496	uPVC	145	0.02
P-174	74	17.682	18.062	3.01431	J-170	J-171	235.27	-9,870.17	8,020.43	110	0.32	1.06	3.01431	uPVC	145	0.08
P-175	126	18.062	17.601	2.16409	J-171	J-172	234.81	-9,817.68	8,072.93	110	0.23	0.57	2.16409	uPVC	145	0.07
P-176	20	17.601	17.719	0.75502	J-172	J-173	235.2	-9,696.34	8,093.92	110	0.08	0.08	0.75502	HDPE	145	0
P-177	19	17.719	17.809	0.21409	J-173	J-81	235.08	-9,685.22	8,109.98	110	0.02	0.01	0.21409	HDPE	145	0
P-178	106	19.486	17.846	3.67633	J-169	J-82	233.48	-9,763.03	8,175.13	110	0.39	1.53	3.67633	uPVC	145	0.16
P-179	60	17.601	16.528	0.81342	J-172	J-174	235.2	-9,696.34	8,093.92	110	0.09	0.09	0.81342	HDPE	145	0.01
P-18	24.5	19.669	19.569	37.26429	J-18	J-19	233.63	-9,470.84	8,579.86	250	0.76	2.05	37.26429	HDPE	145	0.05
P-180	15.5	16.528	16.128	0.47339	J-174	J-175	236.27	-9,653.73	8,051.62	110	0.05	0.03	0.47339	uPVC	145	0
P-181	30.5	16.128	15.629	0.08836	J-175	J-176	236.67	-9,642.30	8,040.81	110	0.01	0	0.08836	uPVC	145	0
P-182	31	19.24	19.391	-0.37347	J-177	J-178	233.73	-9,708.07	8,185.01	110	0.04	0.02	0.37347	HDPE	145	0
P-183	55	19.391	19.553	-1.30325	J-178	J-115	233.58	-9,703.13	8,215.58	110	0.14	0.22	1.30325	HDPE	145	0.01
P-184	16	19.377	19.476	-12.72953	J-112	J-179	233.67	-9,611.27	8,283.02	160	0.63	2.47	12.72953	HDPE	145	0.04
P-185	47.5	19.476	19.881	-10.42957	J-179	J-180	233.61	-9,609.57	8,298.94	140	0.68	3.27	10.42957	HDPE	145	0.16
P-186	49	19.881	20.262	-10.85632	J-180	J-181	233.36	-9,624.40	8,344.02	140	0.71	3.52	10.85632	HDPE	145	0.17
P-187	5.5	20.262	20.322	-11.11541	J-181	J-182	233.15	-9,626.25	8,393.12	140	0.72	3.68	11.11541	HDPE	145	0.02
P-188	34.5	20.322	20.589	-3.46446	J-182	J-183	233.11	-9,631.19	8,395.59	110	0.36	1.37	3.46446	HDPE	145	0.05
P-189	24	20.589	20.798	-3.8016	J-183	J-184	232.89	-9,665.77	8,392.50	110	0.4	1.63	3.8016	HDPE	145	0.04
P-19	41.5	19.569	19.556	36.7725	J-19	J-20	233.68	-9,446.54	8,578.68	250	0.75	2	36.7725	HDPE	145	0.08

P-190	8	20.798	20.748	0.46307	J-184	J-185	232.72	-9,686.77	8,397.44	110	0.05	0.03	0.46307	HDPE	145	0
P-191	61	20.748	20.468	0.17652	J-185	J-186	232.77	-9,685.84	8,389.41	110	0.02	0.01	0.17652	HDPE	145	0
P-192	25.5	19.881	20	0.0739	J-180	J-187	233.36	-9,624.40	8,344.02	110	0.01	0	0.0739	HDPE	145	0
P-193	14	20.798	20.898	-4.39783	J-184	J-188	232.72	-9,686.77	8,397.44	110	0.46	2.14	4.39783	HDPE	145	0.03
P-194	20	20.898	20.994	-4.60345	J-188	J-189	232.65	-9,686.15	8,411.64	110	0.48	2.33	4.60345	HDPE	145	0.05
P-195	25	20.994	21.149	-4.88423	J-189	J-190	232.6	-9,684.30	8,431.71	110	0.51	2.6	4.88423	HDPE	145	0.06
P-196	50	21.149	21.205	-5.21414	J-190	J-191	232.51	-9,688.00	8,456.11	110	0.55	2.93	5.21414	HDPE	145	0.15
P-197	23.5	21.205	21.352	-13.80637	J-191	J-192	232.6	-9,659.90	8,485.75	160	0.69	2.87	13.80637	HDPE	145	0.07
P-198	23	21.352	21.396	-28.26101	J-192	J-7	232.52	-9,668.86	8,507.67	200	0.9	3.64	28.26101	HDPE	145	0.08
P-199	106	21.205	20.322	8.07318	J-191	J-182	232.6	-9,659.90	8,485.75	125	0.66	3.53	8.07318	HDPE	145	0.37
P-2	30	21.355	21.374	-26.5313	J-2	J-3	232.79	-9,806.09	8,553.71	280	0.43	0.63	26.5313	HDPE	145	0.02
P-20	33	19.556	19.398	19.12027	J-20	J-21	233.61	-9,405.24	8,572.95	200	0.61	1.77	19.12027	uPVC	145	0.06
P-200	47.5	19.476	19.555	-2.62101	J-179	J-193	233.61	-9,609.57	8,298.94	110	0.28	0.82	2.62101	HDPE	145	0.04
P-201	13.5	19.555	19.614	-5.8616	J-193	J-194	233.57	-9,592.60	8,341.19	110	0.62	3.64	5.8616	HDPE	145	0.05
P-202	19	19.614	19.719	-6.14093	J-194	J-195	233.56	-9,588.40	8,354.28	110	0.65	3.97	6.14093	HDPE	145	0.08
P-203	35.5	19.719	19.913	-6.50408	J-195	J-196	233.53	-9,585.19	8,373.06	125	0.53	2.37	6.50408	HDPE	145	0.08
P-204	41.5	19.913	20.146	-6.91782	J-196	J-197	233.42	-9,580.25	8,408.13	140	0.45	1.53	6.91782	HDPE	145	0.06
P-205	5	20.146	20.174	-7.28098	J-197	J-198	233.25	-9,575.56	8,449.14	140	0.47	1.68	7.28098	HDPE	145	0.01
P-206	54.5	20.174	20.745	-22.18296	J-198	J-199	233.23	-9,574.57	8,454.08	180	0.87	3.89	22.18296	HDPE	145	0.21
P-207	11	20.745	20.793	-13.84816	J-199	J-200	232.87	-9,605.45	8,490.14	180	0.54	1.62	13.84816	HDPE	145	0.02
P-208	14.5	20.793	20.861	-9.08116	J-200	J-201	232.84	-9,601.25	8,500.27	160	0.45	1.32	9.08116	uPVC	145	0.02
P-209	46.5	20.861	21.01	-4.74716	J-201	J-14	232.79	-9,598.78	8,514.35	160	0.24	0.4	4.74716	uPVC	145	0.02
P-21	16	19.398	19.321	18.79324	J-21	J-22	233.71	-9,404.64	8,540.34	200	0.6	1.71	18.79324	uPVC	145	0.03
P-210	138.5	21.064	19.719	22.82818	J-13	J-202	232.65	-9,612.93	8,555.56	180	0.9	4.1	22.82818	HDPE	145	0.57
P-211	21.5	19.719	19.425	22.36549	J-202	J-203	233.43	-9,614.34	8,677.63	180	0.88	3.95	22.36549	HDPE	145	0.08
P-212	150.5	19.425	19.21	13.16472	J-203	J-204	233.64	-9,612.37	8,699.12	160	0.65	2.62	13.16472	uPVC	145	0.4
P-213	56	19.21	19.166	2.8764	J-204	J-205	233.46	-9,589.43	8,847.87	110	0.3	0.97	2.8764	uPVC	145	0.05
P-214	45	19.166	19.165	-1.24668	J-205	J-206	233.45	-9,644.02	8,859.24	110	0.13	0.21	1.24668	HDPE	145	0.01
P-215	65	19.165	19.12	-3.15168	J-206	J-207	233.46	-9,649.70	8,814.78	110	0.33	1.15	3.15168	HDPE	145	0.07
P-216	42.5	19.12	19.297	-8.27395	J-207	J-208	233.58	-9,658.35	8,750.30	125	0.67	3.7	8.27395	HDPE	145	0.16
P-217	53	19.297	19.425	-8.5502	J-208	J-203	233.56	-9,664.52	8,708.31	125	0.7	3.93	8.5502	HDPE	145	0.21
P-218	26.5	19.12	19.175	4.73475	J-207	J-209	233.58	-9,658.35	8,750.30	110	0.5	2.45	4.73475	HDPE	145	0.06
P-219	90.5	19.175	19.302	0.99489	J-209	J-210	233.46	-9,684.53	8,754.26	110	0.1	0.14	0.99489	HDPE	145	0.01
P-22	13	19.321	19.259	18.52692	J-22	J-23	233.76	-9,407.41	8,524.53	200	0.59	1.67	18.52692	uPVC	145	0.02
P-220	35	19.302	19.175	-1.66169	J-210	J-209	233.32	-9,719.11	8,758.46	110	0.17	0.35	1.66169	HDPE	145	0.01
P-221	64.5	19.175	19.157	1.45216	J-209	J-211	233.46	-9,684.53	8,754.26	110	0.15	0.27	1.45216	HDPE	145	0.02

P-222	26	19.157	19.165	-1.51168	J-211	J-206	233.46	-9,675.64	8,817.99	110	0.16	0.3	1.51168	HDPE	145	0.01
P-223	65	19.302	19.137	2.10573	J-210	J-212	233.32	-9,719.11	8,758.46	110	0.22	0.55	2.10573	HDPE	145	0.04
P-224	37.5	19.137	19.157	-2.59365	J-212	J-211	233.45	-9,712.69	8,823.17	110	0.27	0.8	2.59365	HDPE	145	0.03
P-225	39	19.137	19.148	4.29017	J-212	J-213	233.45	-9,712.69	8,823.17	110	0.45	2.04	4.29017	HDPE	145	0.08
P-226	72.5	19.148	19.166	-3.62138	J-213	J-205	233.36	-9,715.65	8,861.46	110	0.38	1.49	3.62138	HDPE	145	0.11
P-227	39	19.148	19.167	4.30715	J-213	J-214	233.36	-9,715.65	8,861.46	110	0.45	2.06	4.30715	HDPE	145	0.08
P-228	17	19.167	19.156	0.73474	J-214	J-215	233.26	-9,721.58	8,899.99	110	0.08	0.08	0.73474	uPVC	145	0
P-229	50.5	19.156	19.065	-2.84957	J-215	J-216	233.27	-9,738.38	8,898.51	110	0.3	0.96	2.84957	HDPE	145	0.05
P-23	19	19.259	19.169	18.22302	J-23	J-24	233.8	-9,409.98	8,511.88	200	0.58	1.62	18.22302	uPVC	145	0.03
P-230	30	19.065	19.148	-3.08246	J-216	J-213	233.41	-9,745.05	8,856.52	110	0.32	1.11	3.08246	HDPE	145	0.03
P-231	45.5	19.21	19.011	8.57322	J-204	J-217	233.46	-9,589.43	8,847.87	125	0.7	3.95	8.57322	HDPE	145	0.18
P-232	10	19.011	18.975	4.88041	J-217	J-218	233.48	-9,582.02	8,892.83	110	0.51	2.59	4.88041	uPVC	145	0.03
P-233	25	18.975	18.924	6.20036	J-218	J-219	233.49	-9,578.81	8,902.47	110	0.65	4.04	6.20036	uPVC	145	0.1
P-234	18.5	18.924	18.928	3.51379	J-219	J-220	233.44	-9,569.91	8,925.68	110	0.37	1.41	3.51379	uPVC	145	0.03
P-235	65.5	18.928	18.987	3.05958	J-220	J-221	233.41	-9,563.74	8,943.22	110	0.32	1.09	3.05958	uPVC	145	0.07
P-236	86.5	18.987	19.009	2.54623	J-221	J-222	233.28	-9,542.00	9,004.98	110	0.27	0.78	2.54623	uPVC	145	0.07
P-237	61.5	19.009	19.146	3.20257	J-222	J-223	233.19	-9,458.76	9,008.93	110	0.34	1.19	3.20257	uPVC	145	0.07
P-238	4	19.146	19.122	2.77004	J-223	J-224	232.98	-9,484.94	9,063.27	110	0.29	0.91	2.77004	uPVC	145	0
P-239	97.5	19.122	19.4	2.65417	J-224	J-225	233	-9,483.95	9,066.98	110	0.28	0.84	2.65417	uPVC	145	0.08
P-24	17	19.169	19.092	17.90756	J-24	J-25	233.86	-9,413.93	8,493.11	200	0.57	1.56	17.90756	uPVC	145	0.03
P-240	126.5	19.4	18.812	1.06891	J-225	J-226	232.64	-9,473.96	9,163.86	110	0.11	0.16	1.06891	uPVC	145	0.02
P-241	105.5	18.812	18.165	-0.31606	J-226	J-227	233.21	-9,348.36	9,147.76	110	0.03	0.02	0.31606	uPVC	145	0
P-242	84	19.122	17.448	-0.42053	J-224	J-228	233	-9,483.95	9,066.98	110	0.04	0.03	0.42053	uPVC	145	0
P-243	145	17.448	17.794	2.02334	J-228	J-229	234.68	-9,401.94	9,049.87	110	0.21	0.51	2.02334	uPVC	145	0.07
P-244	29.5	19.009	18.606	-1.16961	J-222	J-230	233.19	-9,458.76	9,008.93	110	0.12	0.18	1.16961	uPVC	145	0.01
P-245	6	18.606	18.44	4.85808	J-230	J-231	233.6	-9,429.95	9,003.61	110	0.51	2.57	4.85808	uPVC	145	0.02
P-246	247.5	18.44	17.883	0.71561	J-231	J-232	233.75	-9,424.22	9,002.22	110	0.08	0.07	0.71561	uPVC	145	0.02
P-247	63.5	20.477	20.317	0.18375	J-16	J-233	233.01	-9,526.18	8,580.06	110	0.02	0.01	0.18375	HDPE	145	0
P-248	25.5	20.174	19.883	14.65609	J-198	J-234	233.23	-9,574.57	8,454.08	160	0.73	3.2	14.65609	uPVC	145	0.08
P-249	30	19.883	19.951	0.5735	J-234	J-235	233.44	-9,549.55	8,449.59	110	0.06	0.05	0.5735	HDPE	145	0
P-25	40	19.092	19.077	16.68465	J-25	J-26	233.91	-9,417.09	8,476.31	200	0.53	1.37	16.68465	uPVC	145	0.05
P-250	25	19.951	19.991	0.07246	J-235	J-236	233.37	-9,547.02	8,479.31	110	0.01	0	0.07246	HDPE	145	0
P-251	17	19.951	19.791	0.29272	J-235	J-237	233.37	-9,547.02	8,479.31	110	0.03	0.01	0.29272	HDPE	145	0
P-252	13	19.791	19.662	0.20581	J-237	J-238	233.53	-9,529.95	8,478.99	110	0.02	0.01	0.20581	HDPE	145	0
P-253	8.5	19.662	19.582	0.14347	J-238	J-239	233.66	-9,517.77	8,474.56	110	0.02	0	0.14347	HDPE	145	0
P-254	20.5	19.582	19.632	0.05945	J-239	J-240	233.74	-9,509.08	8,475.20	110	0.01	0	0.05945	HDPE	145	0

P-255	31	19.883	19.555	13.83236	J-234	J-241	233.44	-9,549.55	8,449.59	160	0.69	2.88	13.83236	uPVC	145	0.09
P-256	36.5	19.555	19.123	13.63705	J-241	J-242	233.68	-9,536.43	8,421.60	160	0.68	2.8	13.63705	uPVC	145	0.1
P-257	27	19.123	19.161	0.6976	J-242	J-243	234.01	-9,506.55	8,400.58	110	0.07	0.07	0.6976	HDPE	145	0
P-258	69	19.161	19.239	0.41991	J-243	J-244	233.97	-9,498.96	8,426.51	110	0.04	0.03	0.41991	HDPE	145	0
P-259	7.5	19.239	19.299	0.19859	J-244	J-245	233.89	-9,487.74	8,494.64	110	0.02	0.01	0.19859	HDPE	145	0
P-26	5.5	19.077	19.069	18.01709	J-26	J-27	233.87	-9,377.57	8,469.20	200	0.57	1.58	18.01709	uPVC	145	0.01
P-260	17	19.299	19.329	0.12757	J-245	J-246	233.83	-9,492.41	8,500.74	110	0.01	0	0.12757	HDPE	145	0
P-261	27	19.123	18.678	12.67766	J-242	J-103	234.01	-9,506.55	8,400.58	160	0.63	2.45	12.67766	uPVC	145	0.07
P-262	23.5	18.69	18.651	-0.61428	J-247	J-248	233.22	-10,177.11	7,863.41	110	0.06	0.06	0.61428	HDPE	145	0
P-263	48	18.651	18.212	-1.19473	J-248	J-249	233.26	-10,192.72	7,881.00	110	0.13	0.19	1.19473	HDPE	145	0.01
P-264	53.5	18.212	18.392	-2.51254	J-249	J-250	233.71	-10,226.54	7,914.98	110	0.26	0.76	2.51254	HDPE	145	0.04
P-265	86.5	18.392	18.618	2.01586	J-250	J-251	233.57	-10,264.21	7,952.65	110	0.21	0.5	2.01586	HDPE	145	0.04
P-266	52	18.618	18.357	0.43214	J-251	J-252	233.3	-10,313.30	7,885.34	110	0.05	0.03	0.43214	HDPE	145	0
P-267	39.5	18.357	18.212	-0.91004	J-252	J-249	233.56	-10,264.52	7,903.87	110	0.1	0.12	0.91004	HDPE	145	0
P-268	39	18.357	18.711	0.96477	J-252	J-253	233.56	-10,264.52	7,903.87	110	0.1	0.13	0.96477	HDPE	145	0.01
P-269	63.5	18.711	18.651	-0.19003	J-253	J-248	233.2	-10,254.64	7,865.89	110	0.02	0.01	0.19003	HDPE	145	0
P-27	15	19.069	19.066	17.65683	J-27	J-28	233.87	-9,372.43	8,467.62	200	0.56	1.52	17.65683	uPVC	145	0.02
P-270	42.5	18.618	18.801	1.06033	J-251	J-254	233.3	-10,313.30	7,885.34	110	0.11	0.15	1.06033	HDPE	145	0.01
P-271	80.5	18.801	18.711	0.03455	J-254	J-253	233.11	-10,333.06	7,847.67	110	0	0	0.03455	HDPE	145	0
P-272	61	18.711	18.699	0.48386	J-253	J-255	233.2	-10,254.64	7,865.89	110	0.05	0.04	0.48386	HDPE	145	0
P-273	56.5	18.801	18.848	0.50672	J-254	J-256	233.11	-10,333.06	7,847.67	110	0.05	0.04	0.50672	HDPE	145	0
P-274	100.5	19.113	18.704	-0.15224	J-257	J-258	232.99	-10,254.72	8,136.62	110	0.02	0	0.15224	HDPE	145	0
P-275	52.5	18.704	18.747	2.04921	J-258	J-259	233.4	-10,165.56	8,090.69	110	0.22	0.52	2.04921	HDPE	145	0.03
P-276	113.5	18.925	18.704	2.88143	J-157	J-258	233.29	-10,098.04	8,181.92	110	0.3	0.98	2.88143	HDPE	145	0.11
P-277	90.5	18.704	18.746	-0.35216	J-258	J-260	233.4	-10,165.56	8,090.69	110	0.04	0.02	0.35216	HDPE	145	0
P-278	53	18.746	18.621	1.48132	J-260	J-261	233.36	-10,085.67	8,048.24	110	0.16	0.29	1.48132	HDPE	145	0.02
P-279	39.5	18.647	18.417	0.9408	J-158	J-262	233.57	-10,048.95	8,155.68	160	0.05	0.02	0.9408	uPVC	145	0
P-28	32	19.066	18.928	17.28066	J-28	J-29	233.85	-9,357.61	8,465.45	180	0.68	2.45	17.28066	HDPE	145	0.08
P-280	106.5	18.417	18.746	2.96986	J-262	J-260	233.8	-10,018.13	8,130.83	110	0.31	1.03	2.96986	HDPE	145	0.11
P-281	71.5	18.746	18.636	0.20687	J-260	J-263	233.36	-10,085.67	8,048.24	110	0.02	0.01	0.20687	HDPE	145	0
P-282	37.5	17.643	17.838	0.94317	J-264	J-265	234.59	-9,943.98	8,050.74	110	0.1	0.12	0.94317	HDPE	145	0
P-283	74.5	17.838	18.417	2.66663	J-265	J-262	234.39	-9,960.53	8,084.34	160	0.13	0.14	2.66663	uPVC	145	0.01
P-284	66.5	18.894	18.548	-1.25534	J-160	J-266	233.37	-10,026.10	8,214.96	110	0.13	0.21	1.25534	HDPE	145	0.01
P-285	45	18.548	18.736	-3.04089	J-266	J-163	233.73	-9,975.27	8,171.91	110	0.32	1.08	3.04089	HDPE	145	0.05
P-286	76	18.736	18.651	-0.603	J-163	J-267	233.59	-9,954.16	8,211.87	110	0.06	0.05	0.603	HDPE	145	0
P-287	68	18.548	18.234	1.2665	J-266	J-268	233.73	-9,975.27	8,171.91	110	0.13	0.21	1.2665	HDPE	145	0.01

P-288	41.5	18.234	17.989	1.70975	J-268	J-269	234.03	-9,920.93	8,131.16	110	0.18	0.37	1.70975	uPVC	145	0.02
P-29	26	18.928	18.878	16.75419	J-29	J-30	233.91	-9,326.00	8,460.11	180	0.66	2.31	16.75419	HDPE	145	0.06
P-3	62	21.374	21.607	-51.62831	J-3	J-4	232.79	-9,802.88	8,583.36	280	0.84	2.16	51.62831	HDPE	145	0.13
P-30	22.5	18.878	18.824	15.26716	J-30	J-31	233.9	-9,300.31	8,456.16	180	0.6	1.95	15.26716	HDPE	145	0.04
P-31	13	18.824	18.803	12.56093	J-31	J-32	233.91	-9,278.37	8,452.01	160	0.62	2.41	12.56093	uPVC	145	0.03
P-32	64	18.803	19.78	8.28874	J-32	J-33	233.9	-9,265.33	8,451.02	160	0.41	1.11	8.28874	uPVC	145	0.07
P-33	60.5	19.78	19.448	4.07221	J-33	J-34	232.85	-9,201.70	8,446.47	110	0.43	1.85	4.07221	uPVC	145	0.11
P-34	7.5	19.448	19.418	-0.34226	J-34	J-35	233.07	-9,205.97	8,506.96	110	0.04	0.02	0.34226	uPVC	145	0
P-35	39	19.418	19.279	0.11293	J-35	J-36	233.1	-9,206.13	8,514.55	110	0.01	0	0.11293	HDPE	145	0
P-36	57.5	19.78	19.821	3.69025	J-33	J-37	232.85	-9,201.70	8,446.47	110	0.39	1.54	3.69025	uPVC	145	0.09
P-37	6	19.821	19.798	5.957	J-37	J-38	232.72	-9,194.51	8,389.31	110	0.63	3.75	5.957	uPVC	145	0.02
P-38	19	19.798	19.83	1.84591	J-38	J-39	232.72	-9,192.19	8,383.52	110	0.19	0.43	1.84591	uPVC	145	0.01
P-39	38	19.83	19.665	3.90658	J-39	J-40	232.68	-9,190.65	8,364.61	110	0.41	1.72	3.90658	uPVC	145	0.07
P-4	30.5	21.355	21.315	3.38097	J-2	J-5	232.79	-9,806.09	8,553.71	110	0.36	1.31	3.38097	HDPE	145	0.04
P-40	212	19.665	18.827	2.15053	J-40	J-41	232.78	-9,182.54	8,327.56	110	0.23	0.57	2.15053	uPVC	145	0.12
P-41	48.5	18.827	18.65	1.0132	J-41	J-42	233.5	-8,972.83	8,357.53	110	0.11	0.14	1.0132	uPVC	145	0.01
P-42	54	18.65	18.576	0.71672	J-42	J-43	233.67	-8,925.05	8,364.98	110	0.08	0.07	0.71672	uPVC	145	0
P-43	88	18.576	18.492	0.57302	J-43	J-44	233.74	-8,932.95	8,418.33	110	0.06	0.05	0.57302	uPVC	145	0
P-44	81.5	18.492	18.432	0.12287	J-44	J-45	233.82	-8,945.80	8,505.16	110	0.01	0	0.12287	uPVC	145	0
P-45	184	18.432	18.793	0.53206	J-45	J-46	233.88	-8,957.90	8,585.52	110	0.06	0.04	0.53206	uPVC	145	0.01
P-46	44	18.553	17.564	0.85724	J-47	J-48	233.89	-9,228.32	8,257.27	160	0.04	0.02	0.85724	uPVC	145	0
P-47	15.5	17.564	17.233	2.15135	J-48	J-49	234.88	-9,234.80	8,213.73	160	0.11	0.09	2.15135	uPVC	145	0
P-48	47.5	17.233	17.531	1.21958	J-49	J-50	235.21	-9,236.66	8,198.29	160	0.06	0.03	1.21958	uPVC	145	0
P-49	54.5	17.531	18.05	0.25991	J-50	J-51	234.91	-9,241.79	8,151.12	160	0.01	0	0.25991	uPVC	145	0
P-5	46.5	21.315	21.215	0.13461	J-5	J-6	232.79	-9,828.07	8,541.36	110	0.01	0	0.13461	HDPE	145	0
P-50	19	17.273	16.809	-3.32683	J-52	J-53	235.2	-9,276.05	8,270.50	110	0.35	1.27	3.32683	HDPE	145	0.02
P-51	43.5	16.809	18.405	0.23038	J-53	J-54	235.69	-9,285.69	8,287.10	110	0.02	0.01	0.23038	HDPE	145	0
P-52	7	18.405	18.495	0.02043	J-54	J-55	234.09	-9,257.87	8,299.75	110	0	0	0.02043	HDPE	145	0
P-53	11	18.405	18.874	0.03199	J-54	J-56	234.09	-9,257.87	8,299.75	110	0	0	0.03199	HDPE	145	0
P-54	21.5	16.809	15.716	-3.80022	J-53	J-57	235.69	-9,285.69	8,287.10	110	0.4	1.63	3.80022	HDPE	145	0.04
P-55	39	15.716	16.698	-1.71745	J-57	J-58	236.82	-9,306.24	8,293.74	110	0.18	0.37	1.71745	HDPE	145	0.01
P-56	44	16.698	18.374	-2.3395	J-58	J-59	235.85	-9,285.85	8,327.09	110	0.25	0.66	2.3395	HDPE	145	0.03
P-57	10.5	18.374	18.575	-5.20559	J-59	J-60	234.2	-9,273.83	8,369.46	110	0.55	2.92	5.20559	HDPE	145	0.03
P-58	14.5	18.575	18.636	-0.79661	J-60	J-61	234.03	-9,270.35	8,379.42	110	0.08	0.09	0.79661	HDPE	145	0
P-59	57.5	18.636	18.803	-3.88322	J-61	J-32	233.97	-9,267.98	8,393.81	110	0.41	1.7	3.88322	HDPE	145	0.1
P-6	31.5	21.514	21.396	152.31957	J-1	J-7	232.6	-9,690.73	8,557.42	355	1.54	5.04	152.31957	HDPE	145	0.16

Distribution Network Design Output: Zone 10

P-60	83.5	18.824	17.677	2.36205	J-31	J-62	233.91	-9,278.37	8,452.01	160	0.12	0.11	2.36205	uPVC	145	0.01
P-61	51.5	17.677	18.575	4.63031	J-62	J-60	235.05	-9,321.89	8,381.00	110	0.49	2.35	4.63031	HDPE	145	0.12
P-62	46.5	16.698	16.319	0.24753	J-58	J-63	235.85	-9,285.85	8,327.09	110	0.03	0.01	0.24753	HDPE	145	0
P-63	41.5	17.677	17.304	-2.77864	J-62	J-64	235.05	-9,321.89	8,381.00	160	0.14	0.15	2.77864	uPVC	145	0.01
P-64	39.5	17.304	17.035	-2.93056	J-64	J-65	235.43	-9,360.62	8,365.67	110	0.31	1.01	2.93056	HDPE	145	0.04
P-65	12.5	17.035	17.195	-6.65741	J-65	J-66	235.74	-9,398.25	8,353.65	125	0.54	2.47	6.65741	HDPE	145	0.03
P-66	61.5	17.195	18.33	-7.23014	J-66	J-67	235.61	-9,409.16	8,359.82	125	0.59	2.88	7.23014	HDPE	145	0.18
P-67	32.5	17.304	16.666	-0.17636	J-64	J-68	235.43	-9,360.62	8,365.67	160	0.01	0	0.17636	uPVC	145	0
P-68	28.5	16.666	16.185	3.05871	J-68	J-69	236.07	-9,378.17	8,338.16	110	0.32	1.09	3.05871	HDPE	145	0.03
P-69	38.5	16.185	17.172	2.59564	J-69	J-70	236.52	-9,393.66	8,314.45	110	0.27	0.8	2.59564	HDPE	145	0.03
P-7	98	21.396	21.158	34.9681	J-7	J-8	232.56	-9,676.90	8,529.01	225	0.88	3.04	34.9681	HDPE	145	0.3
P-70	78	17.172	14.773	3.22777	J-70	J-71	235.5	-9,417.85	8,284.41	110	0.34	1.21	3.22777	HDPE	145	0.09
P-71	63.5	14.773	15.716	2.4414	J-71	J-57	237.81	-9,349.08	8,248.06	110	0.26	0.72	2.4414	HDPE	145	0.05
P-72	9.5	14.773	15.063	0.3497	J-71	J-72	237.81	-9,349.08	8,248.06	110	0.04	0.02	0.3497	HDPE	145	0
P-73	34.5	15.063	16.071	-0.15982	J-72	J-73	237.52	-9,356.19	8,241.74	110	0.02	0	0.15982	HDPE	145	0
P-74	27	16.071	16.68	-0.48251	J-73	J-74	236.51	-9,382.67	8,219.41	110	0.05	0.04	0.48251	HDPE	145	0
P-75	43.5	16.68	16.019	-3.98766	J-74	J-75	235.9	-9,400.65	8,199.05	110	0.42	1.78	3.98766	HDPE	145	0.08
P-76	56	16.019	14.894	-3.4008	J-75	J-76	236.64	-9,439.98	8,186.80	160	0.17	0.21	3.4008	uPVC	145	0.01
P-77	62.5	14.894	15.077	-1.71999	J-76	J-77	237.78	-9,482.47	8,154.99	160	0.09	0.06	1.71999	uPVC	145	0
P-78	60.5	15.077	14.784	-2.27826	J-77	J-78	237.6	-9,526.14	8,116.65	160	0.11	0.1	2.27826	uPVC	145	0.01
P-79	81.5	14.784	15.332	0.23578	J-78	J-79	237.9	-9,555.58	8,063.69	160	0.01	0	0.23578	uPVC	145	0
P-8	28	21.158	20.955	28.40085	J-8	J-9	232.5	-9,730.50	8,447.00	200	0.9	3.68	28.40085	HDPE	145	0.1
P-80	51	14.784	16.027	-3.07211	J-78	J-80	237.9	-9,555.58	8,063.69	110	0.32	1.1	3.07211	uPVC	145	0.06
P-81	84	16.027	17.809	-2.54344	J-80	J-81	236.71	-9,596.68	8,089.38	110	0.27	0.78	2.54344	HDPE	145	0.07
P-82	9	17.809	17.846	-2.65329	J-81	J-82	234.99	-9,672.96	8,124.75	110	0.28	0.84	2.65329	HDPE	145	0.01
P-83	53	17.846	18.004	0.53724	J-82	J-83	234.96	-9,666.84	8,131.07	110	0.06	0.04	0.53724	HDPE	145	0
P-84	16	18.004	18.097	-2.61678	J-83	J-84	234.8	-9,629.49	8,168.42	110	0.28	0.82	2.61678	HDPE	145	0.01
P-85	41.5	18.097	18.516	0.12015	J-84	J-85	234.72	-9,619.61	8,181.27	110	0.01	0	0.12015	HDPE	145	0
P-86	31	18.097	18.418	-2.99294	J-84	J-86	234.72	-9,619.61	8,181.27	110	0.31	1.05	2.99294	HDPE	145	0.03
P-87	41	18.418	18.941	-3.39223	J-86	J-87	234.43	-9,608.15	8,210.12	110	0.36	1.32	3.39223	HDPE	145	0.05
P-88	12	18.941	18.544	6.82291	J-87	J-88	233.96	-9,597.48	8,249.25	110	0.72	4.82	6.82291	uPVC	145	0.06
P-89	21.5	16.395	16.609	-1.27916	J-89	J-90	236.35	-9,574.35	8,136.01	110	0.13	0.22	1.27916	HDPE	145	0
P-9	77	20.955	20.533	15.80855	J-9	J-10	232.6	-9,757.92	8,442.56	160	0.79	3.68	15.80855	HDPE	145	0.28
P-90	103.5	16.609	17.534	0.94659	J-90	J-91	236.14	-9,567.24	8,156.17	110	0.1	0.12	0.94659	HDPE	145	0.01
P-91	37	17.534	16.255	7.18955	J-91	J-92	235.2	-9,563.49	8,259.13	160	0.36	0.86	7.18955	uPVC	145	0.03
P-92	17	16.255	15.972	6.7787	J-92	J-93	236.45	-9,531.13	8,245.54	160	0.34	0.77	6.7787	uPVC	145	0.01

P-93	14.5	15.972	15.993	6.32555	J-93	J-94	236.72	-9,516.55	8,236.89	160	0.31	0.68	6.32555	uPVC	145	0.01
P-94	18.5	15.993	15.808	4.06033	J-94	J-95	236.69	-9,504.20	8,229.48	160	0.2	0.3	4.06033	uPVC	145	0.01
P-95	61	15.808	14.894	2.19986	J-95	J-76	236.87	-9,494.82	8,214.91	160	0.11	0.1	2.19986	uPVC	145	0.01
P-96	99.5	15.993	17.053	1.88202	J-94	J-96	236.69	-9,504.20	8,229.48	160	0.09	0.07	1.88202	uPVC	145	0.01
P-97	17	17.053	17.172	1.36567	J-96	J-70	235.62	-9,428.37	8,271.23	160	0.07	0.04	1.36567	uPVC	145	0
P-98	62	18.928	18.149	0.17941	J-29	J-97	233.91	-9,326.00	8,460.11	110	0.02	0.01	0.17941	uPVC	145	0
P-99	49.5	19.077	18.914	-1.60724	J-26	J-98	233.87	-9,377.57	8,469.20	110	0.17	0.33	1.60724	uPVC	145	0.02
PP-289	196	19.156	19.601	2.82245	J-215	PJ-270	233.27	-9,738.38	8,898.51	110	0.3	0.94	2.82245	HDPE	145	0.18
PP-290	84	19.601	19.515	2.95162	PJ-270	PJ-271	232.64	-9,786.50	9,088.67	110	0.31	1.02	2.95162	HDPE	145	0.09
PP-291	172.5	19.515	19.412	2.20999	PJ-271	PJ-272	232.64	-9,808.88	9,169.72	110	0.23	0.6	2.20999	HDPE	145	0.1
PP-292	76.5	19.412	19.412	0.22132	PJ-272	PJ-273	232.64	-9,652.18	9,236.88	110	0.02	0.01	0.22132	HDPE	145	0
PP-293	185.5	19.412	19.398	0.73252	PJ-272	PJ-274	232.64	-9,652.18	9,236.88	110	0.08	0.08	0.73252	HDPE	145	0.01
PP-294	65	19.398	19.398	0.00823	PJ-274	PJ-275	232.64	-9,470.78	9,272.39	110	0	0	0.00823	HDPE	145	0
PP-295	43.5	19.398	19.4	-0.53703	PJ-275	J-225	232.64	-9,474.64	9,207.55	110	0.06	0.04	0.53703	HDPE	145	0
PP-296	47.5	19.4	19.4	0.1375	J-225	PJ-276	232.64	-9,473.96	9,163.86	110	0.01	0	0.1375	HDPE	145	0
PP-297	40	19.398	19.398	-0.11582	PJ-277	PJ-275	232.64	-9,514.40	9,212.18	110	0.01	0	0.11582	HDPE	145	0
PP-298	123.5	18.812	18.36	0.35718	J-226	PJ-278	233.21	-9,348.36	9,147.76	110	0.04	0.02	0.35718	HDPE	145	0
PP-299	42	19.146	19.246	0.1216	J-223	PJ-279	232.98	-9,484.94	9,063.27	110	0.01	0	0.1216	HDPE	145	0
PP-300	52.5	18.44	17.448	3.25776	J-231	J-228	233.75	-9,424.22	9,002.22	110	0.34	1.23	3.25776	HDPE	145	0.06
PP-301	170	17.794	18.165	1.11261	J-229	J-227	234.26	-9,260.21	9,026.93	110	0.12	0.17	1.11261	HDPE	145	0.03
PP-302	42	18.606	18.368	-6.2519	J-230	PJ-280	233.6	-9,429.95	9,003.61	110	0.66	4.1	6.2519	HDPE	145	0.17
PP-303	65	18.368	18.387	-3.85264	PJ-280	PJ-281	234.01	-9,407.16	8,968.47	110	0.41	1.67	3.85264	HDPE	145	0.11
PP-304	164	18.387	18.316	-0.91306	PJ-281	PJ-282	234.1	-9,343.92	8,953.77	110	0.1	0.12	0.91306	HDPE	145	0.02
PP-305	55.5	18.387	18.645	-3.76215	PJ-281	PJ-283	234.1	-9,343.92	8,953.77	110	0.4	1.6	3.76215	HDPE	145	0.09
PP-306	70.5	18.645	18.442	-0.77821	PJ-283	PJ-284	233.93	-9,357.86	8,900.24	110	0.08	0.09	0.77821	HDPE	145	0.01
PP-307	136.5	18.442	18.386	-1.37675	PJ-284	PJ-285	234.14	-9,291.16	8,884.18	110	0.14	0.25	1.37675	HDPE	145	0.03
PP-308	84	18.386	18.535	-0.00901	PJ-285	PJ-286	234.23	-9,294.87	8,748.94	110	0	0	0.00901	HDPE	145	0
PP-309	50	18.386	18.284	-2.14984	PJ-285	PJ-287	234.23	-9,294.87	8,748.94	110	0.23	0.57	2.14984	HDPE	145	0.03
PP-310	62.5	18.284	18.3	1.3133	PJ-287	PJ-288	234.36	-9,344.27	8,756.66	110	0.14	0.23	1.3133	HDPE	145	0.01
PP-311	83.5	18.3	18.645	2.31079	PJ-288	PJ-283	234.33	-9,351.99	8,818.72	110	0.24	0.65	2.31079	HDPE	145	0.05
PP-312	110.5	18.645	18.701	-1.59833	PJ-283	PJ-289	233.93	-9,357.86	8,900.24	110	0.17	0.33	1.59833	HDPE	145	0.04
PP-313	8.5	18.701	18.73	1.09354	PJ-289	PJ-290	233.91	-9,444.31	8,831.07	110	0.12	0.16	1.09354	HDPE	145	0
PP-314	39.5	18.73	18.826	3.096	PJ-290	PJ-291	233.88	-9,450.49	8,836.94	110	0.33	1.12	3.096	HDPE	145	0.04
PP-315	13	18.826	18.787	5.93148	PJ-291	PJ-292	233.74	-9,479.82	8,863.49	110	0.62	3.72	5.93148	HDPE	145	0.05
PP-316	127	18.787	18.368	3.07585	PJ-292	PJ-280	233.73	-9,489.39	8,872.45	110	0.32	1.1	3.07585	HDPE	145	0.14
PP-317	52	18.787	18.864	2.30044	PJ-292	PJ-293	233.73	-9,489.39	8,872.45	110	0.24	0.64	2.30044	HDPE	145	0.03

PP-318	69	18.864	18.853	0.19964	PJ-293	PJ-294	233.62	-9,528.91	8,906.41	110	0.02	0.01	0.19964	HDPE	145	0
PP-319	57	18.864	18.975	1.58608	PJ-293	J-218	233.62	-9,528.91	8,906.41	110	0.17	0.32	1.58608	HDPE	145	0.02
PP-320	36.5	18.928	18.788	0.1057	J-220	PJ-295	233.41	-9,563.74	8,943.22	110	0.01	0	0.1057	HDPE	145	0
PP-321	30.5	18.924	19.012	2.47247	J-219	PJ-296	233.44	-9,569.91	8,925.68	110	0.26	0.74	2.47247	HDPE	145	0.02
PP-322	56.5	19.012	19.169	0.57703	PJ-296	PJ-297	233.33	-9,598.70	8,935.44	110	0.06	0.05	0.57703	HDPE	145	0
PP-323	45	19.169	19.256	1.97544	PJ-297	PJ-298	233.17	-9,652.73	8,951.18	110	0.21	0.49	1.97544	HDPE	145	0.02
PP-324	57	19.256	19.098	-1.21866	PJ-298	PJ-299	233.06	-9,641.61	8,994.72	110	0.13	0.2	1.21866	HDPE	145	0.01
PP-325	45	19.098	19.012	-1.51369	PJ-299	PJ-296	233.23	-9,586.96	8,978.66	110	0.16	0.3	1.51369	HDPE	145	0.01
PP-326	48	19.256	19.403	2.76032	PJ-298	PJ-300	233.06	-9,641.61	8,994.72	110	0.29	0.9	2.76032	HDPE	145	0.04
PP-327	21	19.403	19.266	1.60298	PJ-300	PJ-301	232.87	-9,630.50	9,041.34	110	0.17	0.33	1.60298	HDPE	145	0.01
PP-328	74.5	19.266	18.987	0.14156	PJ-301	J-221	233	-9,610.74	9,033.93	110	0.01	0	0.14156	HDPE	145	0
PP-329	34.5	19.403	19.62	1.66388	PJ-300	PJ-302	232.87	-9,630.50	9,041.34	110	0.18	0.35	1.66388	HDPE	145	0.01
PP-330	19.5	19.62	19.47	0.24247	PJ-302	PJ-303	232.64	-9,620.00	9,074.07	110	0.03	0.01	0.24247	HDPE	145	0
PP-331	34	19.47	19.266	-1.0869	PJ-303	PJ-301	232.79	-9,601.78	9,066.97	110	0.11	0.16	1.0869	HDPE	145	0.01
PP-332	30.5	19.47	19.615	1.08637	PJ-303	PJ-304	232.79	-9,601.78	9,066.97	110	0.11	0.16	1.08637	HDPE	145	0
PP-333	110.5	19.615	19.608	0.67861	PJ-304	PJ-305	232.64	-9,593.76	9,096.61	110	0.07	0.07	0.67861	HDPE	145	0.01
PP-334	30.5	19.608	19.607	0.27084	PJ-305	PJ-306	232.64	-9,696.88	9,135.83	110	0.03	0.01	0.27084	HDPE	145	0
PP-335	95.5	19.607	19.62	-0.98908	PJ-306	PJ-302	232.64	-9,708.62	9,107.73	110	0.1	0.13	0.98908	HDPE	145	0.01
PP-336	33.5	19.403	19.636	-0.90276	PJ-300	PJ-307	232.87	-9,630.50	9,041.34	110	0.09	0.11	0.90276	HDPE	145	0
PP-337	30	19.636	19.636	0.08691	PJ-307	PJ-308	232.64	-9,661.99	9,053.39	110	0.01	0	0.08691	HDPE	145	0
PP-338	67.5	19.636	19.294	-1.36853	PJ-307	PJ-309	232.64	-9,661.99	9,053.39	110	0.14	0.25	1.36853	HDPE	145	0.02
PP-339	27.5	19.294	19.254	-3.58643	PJ-309	PJ-310	233	-9,674.34	8,987.00	110	0.38	1.46	3.58643	HDPE	145	0.04
PP-340	27.5	19.254	19.169	-1.09033	PJ-310	PJ-297	233.08	-9,678.98	8,960.14	110	0.11	0.16	1.09033	HDPE	145	0
PP-341	47.5	19.169	19.109	-2.99911	PJ-297	PJ-311	233.17	-9,652.73	8,951.18	110	0.32	1.05	2.99911	HDPE	145	0.05
PP-342	81.5	19.109	19.011	-3.29661	PJ-311	J-217	233.28	-9,662.61	8,904.87	110	0.35	1.25	3.29661	HDPE	145	0.1
PP-343	30.5	19.167	19.109	3.32218	J-214	PJ-312	233.26	-9,721.58	8,899.99	110	0.35	1.27	3.32218	HDPE	145	0.04
PP-344	58	19.109	19.254	2.82293	PJ-312	PJ-310	233.28	-9,691.33	8,903.32	110	0.3	0.94	2.82293	HDPE	145	0.05
PP-345	29	19.109	19.109	0.15941	PJ-312	PJ-311	233.28	-9,691.33	8,903.32	110	0.02	0	0.15941	HDPE	145	0
PP-346	44.5	19.294	19.295	1.81447	PJ-309	PJ-313	233	-9,674.34	8,987.00	110	0.19	0.41	1.81447	HDPE	145	0.02
PP-347	125	19.295	19.606	1.32432	PJ-313	PJ-314	232.98	-9,717.26	8,975.88	110	0.14	0.23	1.32432	HDPE	145	0.03
PP-348	34	19.606	19.606	-0.2563	PJ-314	PJ-315	232.64	-9,755.55	9,095.07	110	0.03	0.01	0.2563	HDPE	145	0
PP-349	15	19.606	19.607	-0.85215	PJ-315	PJ-306	232.64	-9,722.82	9,103.41	110	0.09	0.1	0.85215	HDPE	145	0
PP-350	78.5	19.606	19.605	0.2271	PJ-315	PJ-316	232.64	-9,722.82	9,103.41	110	0.02	0.01	0.2271	HDPE	145	0
PP-351	31.5	19.606	19.601	1.02978	PJ-314	PJ-270	232.64	-9,755.55	9,095.07	110	0.11	0.15	1.02978	HDPE	145	0
PP-352	32.5	19.21	18.737	0.89253	J-204	PJ-317	233.46	-9,589.43	8,847.87	110	0.09	0.11	0.89253	HDPE	145	0
PP-353	85	18.737	18.27	-1.97816	PJ-317	PJ-318	233.93	-9,557.57	8,840.52	110	0.21	0.49	1.97816	HDPE	145	0.04

PP-354	42.5	18.27	18.659	0.12304	PJ-318	PJ-319	234.44	-9,569.43	8,760.41	110	0.01	0	0.12304	HDPE	145	0
PP-355	23.5	18.27	18.288	-2.53788	PJ-318	PJ-320	234.44	-9,569.43	8,760.41	110	0.27	0.77	2.53788	HDPE	145	0.02
PP-356	45.5	18.288	18.667	-3.05279	PJ-320	PJ-321	234.44	-9,546.38	8,756.08	110	0.32	1.09	3.05279	HDPE	145	0.05
PP-357	57.5	18.667	18.581	-3.35071	PJ-321	PJ-322	234.11	-9,560.71	8,713.10	110	0.35	1.29	3.35071	HDPE	145	0.07
PP-358	117	18.581	18.495	4.06678	PJ-322	PJ-323	234.27	-9,507.36	8,691.11	110	0.43	1.85	4.06678	HDPE	145	0.22
PP-359	41.5	18.495	18.546	1.23867	PJ-323	PJ-324	234.14	-9,463.88	8,799.55	110	0.13	0.2	1.23867	HDPE	145	0.01
PP-360	62	18.546	18.737	-2.35164	PJ-324	PJ-317	234.08	-9,501.92	8,816.10	110	0.25	0.67	2.35164	HDPE	145	0.04
PP-361	54.5	18.288	18.547	0.15773	PJ-320	PJ-325	234.44	-9,546.38	8,756.08	110	0.02	0	0.15773	HDPE	145	0
PP-362	52.5	18.546	18.826	3.13919	PJ-324	PJ-291	234.08	-9,501.92	8,816.10	110	0.33	1.14	3.13919	HDPE	145	0.06
PP-363	39.5	18.495	18.73	2.25558	PJ-323	PJ-290	234.14	-9,463.88	8,799.55	110	0.24	0.62	2.25558	HDPE	145	0.02
PP-364	30	18.701	18.536	-3.12276	PJ-289	PJ-326	233.91	-9,444.31	8,831.07	110	0.33	1.13	3.12276	HDPE	145	0.03
PP-365	95	18.536	18.327	-3.32865	PJ-326	PJ-327	234.11	-9,421.91	8,811.06	110	0.35	1.28	3.32865	HDPE	145	0.12
PP-366	53.5	18.327	18.662	-6.4914	PJ-327	PJ-328	234.44	-9,452.45	8,721.03	110	0.68	4.4	6.4914	HDPE	145	0.24
PP-367	43	18.662	18.581	8.04639	PJ-328	PJ-322	234.34	-9,469.74	8,670.39	125	0.66	3.51	8.04639	HDPE	145	0.15
PP-368	96.5	18.662	18.698	0.52068	PJ-328	PJ-329	234.34	-9,469.74	8,670.39	110	0.05	0.04	0.52068	HDPE	145	0
PP-369	74.5	18.698	18.364	5.78705	PJ-329	PJ-330	234.3	-9,389.22	8,627.66	110	0.61	3.55	5.78705	HDPE	145	0.26
PP-370	47	18.364	18.288	0.97455	PJ-330	PJ-331	234.37	-9,359.33	8,695.83	110	0.1	0.13	0.97455	HDPE	145	0.01
PP-371	49.5	18.288	18.327	-2.59022	PJ-331	PJ-327	234.44	-9,404.28	8,708.92	110	0.27	0.8	2.59022	HDPE	145	0.04
PP-372	73.5	18.288	18.217	3.07318	PJ-331	PJ-332	234.44	-9,404.28	8,708.92	110	0.32	1.1	3.07318	HDPE	145	0.08
PP-373	46	18.217	18.536	0.2886	PJ-332	PJ-326	234.43	-9,387.73	8,780.56	110	0.03	0.01	0.2886	HDPE	145	0
PP-374	52.5	18.3	18.217	-1.57146	PJ-288	PJ-332	234.33	-9,351.99	8,818.72	110	0.17	0.32	1.57146	HDPE	145	0.02
PP-375	50	18.217	18.284	0.57122	PJ-332	PJ-287	234.43	-9,387.73	8,780.56	110	0.06	0.05	0.57122	HDPE	145	0
PP-376	62.5	18.284	18.364	-3.54249	PJ-287	PJ-330	234.36	-9,344.27	8,756.66	110	0.37	1.43	3.54249	HDPE	145	0.09
PP-377	92.5	18.364	18.58	0.47056	PJ-330	PJ-333	234.37	-9,359.33	8,695.83	110	0.05	0.03	0.47056	HDPE	145	0
PP-378	46.5	18.58	18.587	3.44217	PJ-333	PJ-334	234.15	-9,267.19	8,690.89	110	0.36	1.36	3.44217	HDPE	145	0.06
PP-379	44	18.587	18.535	3.18038	PJ-334	PJ-286	234.08	-9,220.75	8,688.67	110	0.33	1.17	3.18038	HDPE	145	0.05
PP-380	69	18.58	18.81	-3.57305	PJ-333	PJ-335	234.15	-9,267.19	8,690.89	110	0.38	1.45	3.57305	HDPE	145	0.1
PP-381	108.5	18.81	18.698	-3.68942	PJ-335	PJ-329	234.02	-9,280.53	8,626.42	110	0.39	1.54	3.68942	HDPE	145	0.17
PP-382	57	18.698	19.556	-9.92866	PJ-329	J-20	234.3	-9,389.22	8,627.66	140	0.64	2.98	9.92866	HDPE	145	0.17
PP-383	43	19.556	19.037	0.12449	J-20	PJ-336	233.61	-9,405.24	8,572.95	110	0.01	0	0.12449	HDPE	145	0
PP-384	91	19.837	18.662	15.87958	J-17	PJ-328	233.5	-9,489.22	8,581.25	160	0.79	3.71	15.87958	HDPE	145	0.34
PP-385	53	20.609	20.05	0.15339	J-15	PJ-337	232.9	-9,535.46	8,579.86	110	0.02	0	0.15339	HDPE	145	0
PP-386	36.5	19.556	19.478	6.98899	J-20	PJ-338	233.61	-9,405.24	8,572.95	125	0.57	2.7	6.98899	HDPE	145	0.1
PP-387	24.5	19.478	19.208	0.07101	PJ-338	PJ-339	233.59	-9,372.67	8,572.82	110	0.01	0	0.07101	HDPE	145	0
PP-388	19.5	19.478	19.459	6.68509	PJ-338	PJ-340	233.59	-9,372.67	8,572.82	125	0.54	2.49	6.68509	HDPE	145	0.05
PP-389	19	19.459	19.279	0.05512	PJ-340	PJ-341	233.56	-9,353.40	8,569.11	110	0.01	0	0.05512	HDPE	145	0

PP-390	83	19.459	19.345	6.27857	PJ-340	PJ-342	233.56	-9,353.40	8,569.11	125	0.51	2.22	6.27857	HDPE	145	0.18
PP-391	95	19.345	18.81	0.67151	PJ-342	PJ-335	233.49	-9,292.88	8,532.31	110	0.07	0.07	0.67151	HDPE	145	0.01
PP-392	24	19.345	19.19	5.02298	PJ-342	PJ-343	233.49	-9,292.88	8,532.31	110	0.53	2.73	5.02298	HDPE	145	0.07
PP-393	40	19.19	18.98	0.11582	PJ-343	PJ-344	233.58	-9,295.35	8,508.60	110	0.01	0	0.11582	HDPE	145	0
PP-394	45.5	19.19	19.205	5.4455	PJ-343	PJ-345	233.58	-9,295.35	8,508.60	110	0.57	3.17	5.4455	HDPE	145	0.14
PP-395	97	19.205	18.785	0.28058	PJ-345	PJ-346	233.42	-9,251.38	8,520.45	110	0.03	0.01	0.28058	HDPE	145	0
PP-396	45.5	19.205	19.418	4.62129	PJ-345	J-35	233.42	-9,251.38	8,520.45	110	0.49	2.34	4.62129	HDPE	145	0.11
PP-397	125	19.418	18.891	3.53865	J-35	PJ-347	233.1	-9,206.13	8,514.55	110	0.37	1.43	3.53865	HDPE	145	0.18
PP-398	27	18.891	18.779	2.60827	PJ-347	PJ-348	233.45	-9,122.92	8,607.32	110	0.27	0.81	2.60827	HDPE	145	0.02
PP-399	88.5	18.779	18.467	1.04711	PJ-348	PJ-349	233.54	-9,104.43	8,626.77	110	0.11	0.15	1.04711	HDPE	145	0.01
PP-400	88	18.467	18.386	0.25457	PJ-349	PJ-350	233.84	-9,039.18	8,686.68	110	0.03	0.01	0.25457	HDPE	145	0
PP-401	76.5	18.467	18.377	0.06103	PJ-349	PJ-351	233.84	-9,039.18	8,686.68	110	0.01	0	0.06103	HDPE	145	0
PP-402	52	18.377	18.476	0.1505	PJ-351	PJ-352	233.93	-8,973.57	8,646.93	110	0.02	0	0.1505	HDPE	145	0
PP-403	132.5	18.779	18.377	0.84411	PJ-348	PJ-351	233.54	-9,104.43	8,626.77	110	0.09	0.1	0.84411	HDPE	145	0.01
PP-404	45	18.891	18.95	0.36074	PJ-347	PJ-353	233.45	-9,122.92	8,607.32	110	0.04	0.02	0.36074	HDPE	145	0
PP-405	111.5	18.95	18.562	1.09343	PJ-353	PJ-354	233.39	-9,115.60	8,562.79	110	0.12	0.16	1.09343	HDPE	145	0.02
PP-406	47.5	18.562	18.432	1.31414	PJ-354	J-45	233.76	-9,004.83	8,577.46	110	0.14	0.23	1.31414	HDPE	145	0.01
PP-407	43	18.562	18.616	-0.8048	PJ-354	PJ-355	233.76	-9,004.83	8,577.46	110	0.08	0.09	0.8048	HDPE	145	0
PP-408	111.5	18.616	19.029	-1.27026	PJ-355	PJ-356	233.71	-8,998.65	8,535.00	110	0.13	0.21	1.27026	HDPE	145	0.02
PP-409	43	19.029	18.95	1.30955	PJ-356	PJ-353	233.32	-9,109.42	8,520.34	110	0.14	0.23	1.30955	HDPE	145	0.01
PP-410	97.5	19.448	19.029	3.93589	J-34	PJ-356	233.07	-9,205.97	8,506.96	110	0.41	1.74	3.93589	HDPE	145	0.17
PP-411	83	19.029	19.147	0.38754	PJ-356	PJ-357	233.32	-9,109.42	8,520.34	110	0.04	0.02	0.38754	HDPE	145	0
PP-412	112	19.147	18.707	1.18896	PJ-357	PJ-358	233.2	-9,097.07	8,438.13	110	0.13	0.19	1.18896	HDPE	145	0.02
PP-413	82.5	18.707	18.616	0.21981	PJ-358	PJ-355	233.62	-8,985.92	8,453.57	110	0.02	0.01	0.21981	HDPE	145	0
PP-414	74	18.636	19.821	2.66439	J-61	J-37	233.97	-9,267.98	8,393.81	110	0.28	0.84	2.66439	HDPE	145	0.06
PP-415	101	19.798	19.229	3.74669	J-38	PJ-359	232.72	-9,192.19	8,383.52	110	0.39	1.59	3.74669	HDPE	145	0.16
PP-416	42	19.229	19.147	1.48668	PJ-359	PJ-357	233.13	-9,092.05	8,396.44	110	0.16	0.29	1.48668	HDPE	145	0.01
PP-417	113.5	19.229	18.756	1.51838	PJ-359	PJ-360	233.13	-9,092.05	8,396.44	110	0.16	0.3	1.51838	HDPE	145	0.03
PP-418	42.5	18.756	18.707	-0.28389	PJ-360	PJ-358	233.57	-8,979.74	8,411.50	110	0.03	0.01	0.28389	HDPE	145	0
PP-419	54.5	18.827	18.756	0.2266	J-41	PJ-360	233.5	-8,972.83	8,357.53	110	0.02	0.01	0.2266	HDPE	145	0
PP-420	47.5	18.756	18.576	1.2829	PJ-360	J-43	233.57	-8,979.74	8,411.50	110	0.13	0.22	1.2829	HDPE	145	0.01
PP-421	21.5	18.576	18.554	0.8165	J-43	PJ-361	233.74	-8,932.95	8,418.33	110	0.09	0.09	0.8165	HDPE	145	0
PP-422	110.5	18.554	18.492	0.3594	PJ-361	J-44	233.76	-8,911.43	8,420.76	110	0.04	0.02	0.3594	HDPE	145	0
PP-423	13	18.554	18.554	0.03777	PJ-361	PJ-362	233.76	-8,911.43	8,420.76	110	0	0	0.03777	HDPE	145	0
PP-424	46	19.669	19.579	0.13316	J-18	PJ-363	233.63	-9,470.84	8,579.86	110	0.01	0	0.13316	HDPE	145	0
PP-425	13.5	19.329	19.359	0.03922	J-246	PJ-364	233.8	-9,490.21	8,517.46	110	0	0	0.03922	HDPE	145	0

PP-426	52	19.569	19.479	0.1505	J-19	PJ-365	233.68	-9,446.54	8,578.68	110	0.02	0	0.1505	HDPE	145	0
PP-427	32	19.398	19.428	0.09269	J-21	PJ-366	233.71	-9,404.64	8,540.34	110	0.01	0	0.09269	HDPE	145	0
PP-428	31.5	19.321	19.331	0.09125	J-22	PJ-367	233.76	-9,407.41	8,524.53	110	0.01	0	0.09125	HDPE	145	0
PP-429	36.5	19.259	19.259	0.1057	J-23	PJ-368	233.8	-9,409.98	8,511.88	110	0.01	0	0.1057	HDPE	145	0
PP-430	36.5	19.169	19.169	0.1057	J-24	PJ-369	233.86	-9,413.93	8,493.11	110	0.01	0	0.1057	HDPE	145	0
PP-431	10.5	21.352	21.33	14.28969	J-192	PJ-370	232.52	-9,668.86	8,507.67	160	0.71	3.05	14.28969	HDPE	145	0.03
PP-432	26	21.33	21.211	5.33591	PJ-370	PJ-371	232.51	-9,658.69	8,505.67	110	0.56	3.06	5.33591	HDPE	145	0.08
PP-433	14.5	21.211	21.171	0.10025	PJ-371	PJ-372	232.55	-9,645.11	8,519.51	110	0.01	0	0.10025	HDPE	145	0
PP-434	19	21.171	21.156	-4.77612	PJ-372	J-12	232.59	-9,641.16	8,533.34	125	0.39	1.34	4.77612	HDPE	145	0.03
PP-435	46.5	21.171	20.861	4.64493	PJ-372	J-201	232.59	-9,641.16	8,533.34	110	0.49	2.36	4.64493	HDPE	145	0.11
PP-436	48	21.211	20.793	4.97965	PJ-371	J-200	232.55	-9,645.11	8,519.51	110	0.52	2.69	4.97965	HDPE	145	0.13
PP-437	56	21.33	20.745	8.6862	PJ-370	J-199	232.51	-9,658.69	8,505.67	125	0.71	4.04	8.6862	HDPE	145	0.23
PP-438	19.5	21.169	21.149	-0.05656	PJ-373	J-190	232.49	-9,706.70	8,451.48	110	0.01	0	0.05656	HDPE	145	0
PP-439	26	21.104	20.994	-0.07535	PJ-374	J-189	232.49	-9,702.59	8,438.20	110	0.01	0	0.07535	HDPE	145	0
PP-440	18.5	20.898	20.768	0.05367	J-188	PJ-375	232.65	-9,686.15	8,411.64	110	0.01	0	0.05367	HDPE	145	0
PP-441	15	20.748	20.838	0.04355	J-185	PJ-376	232.77	-9,685.84	8,389.41	110	0	0	0.04355	HDPE	145	0
PP-442	29	20.589	20.43	0.08402	J-183	PJ-377	232.89	-9,665.77	8,392.50	110	0.01	0	0.08402	HDPE	145	0
PP-443	42.5	19.479	19.349	0.12304	J-114	PJ-378	233.51	-9,670.71	8,266.89	110	0.01	0	0.12304	HDPE	145	0
PP-444	24.5	19.461	19.314	3.09832	J-113	PJ-379	233.53	-9,666.60	8,266.42	110	0.33	1.12	3.09832	HDPE	145	0.03
PP-445	37	19.314	19.044	2.65712	PJ-379	PJ-380	233.65	-9,643.42	8,260.04	110	0.28	0.84	2.65712	HDPE	145	0.03
PP-446	10	19.044	18.941	10.39745	PJ-380	J-87	233.89	-9,607.36	8,250.90	140	0.68	3.25	10.39745	HDPE	145	0.03
PP-447	32	19.334	19.044	7.96888	J-111	PJ-380	233.71	-9,602.89	8,282.54	125	0.65	3.45	7.96888	HDPE	145	0.11
PP-448	24	18.544	17.534	6.71866	J-88	J-91	234.3	-9,587.20	8,255.17	110	0.71	4.68	6.71866	HDPE	145	0.11
PP-449	45.5	19.314	19.154	0.13172	PJ-379	PJ-381	233.65	-9,643.42	8,260.04	110	0.01	0	0.13172	HDPE	145	0
PP-450	33	18.418	18.847	0.09558	J-86	PJ-382	234.43	-9,608.15	8,210.12	110	0.01	0	0.09558	HDPE	145	0
PP-451	37	19.549	19.391	-0.57404	J-168	J-178	233.42	-9,739.57	8,220.83	110	0.06	0.05	0.57404	HDPE	145	0
PP-452	23.5	19.24	19.23	0.06812	J-177	PJ-383	233.73	-9,708.07	8,185.01	110	0.01	0	0.06812	HDPE	145	0
PP-453	25.5	19.24	18.841	0.0739	J-177	PJ-384	233.73	-9,708.07	8,185.01	110	0.01	0	0.0739	HDPE	145	0
PP-454	63.5	18.004	16.609	2.77082	J-83	J-90	234.8	-9,629.49	8,168.42	110	0.29	0.91	2.77082	HDPE	145	0.06
PP-455	51.5	16.395	16.027	1.06796	J-89	J-80	236.35	-9,574.35	8,136.01	110	0.11	0.16	1.06796	HDPE	145	0.01
PP-456	35	15.077	15.965	0.10136	J-77	PJ-385	237.6	-9,526.14	8,116.65	110	0.01	0	0.10136	HDPE	145	0
PP-457	74	17.719	16.252	0.2141	J-173	PJ-386	235.08	-9,685.22	8,109.98	110	0.02	0.01	0.2141	HDPE	145	0
PP-458	21	16.528	16.518	0.0609	J-174	PJ-387	236.27	-9,653.73	8,051.62	110	0.01	0	0.0609	HDPE	145	0
PP-459	27	16.128	15.988	0.17382	J-175	PJ-388	236.67	-9,642.30	8,040.81	110	0.02	0.01	0.17382	HDPE	145	0
PP-460	16.5	15.988	15.639	0.04789	PJ-388	PJ-389	236.81	-9,620.73	8,057.01	110	0.01	0	0.04789	HDPE	145	0
PP-461	47	18.062	17.014	0.13605	J-171	PJ-390	234.81	-9,817.68	8,072.93	110	0.01	0	0.13605	HDPE	145	0

PP-462	79	17.643	17.989	-1.28011	J-264	J-269	234.59	-9,943.98	8,050.74	110	0.13	0.22	1.28011	HDPE	145	0.02
PP-463	14	17.989	18.119	0.04066	J-269	PJ-391	234.26	-9,887.58	8,106.15	110	0	0	0.04066	HDPE	145	0
PP-464	61.5	17.838	18.234	-2.22518	J-265	J-268	234.39	-9,960.53	8,084.34	110	0.23	0.61	2.22518	HDPE	145	0.04
PP-465	53	18.234	18.651	-3.31612	J-268	J-267	234.03	-9,920.93	8,131.16	110	0.35	1.27	3.31612	HDPE	145	0.07
PP-466	18.5	18.651	18.759	-4.34567	J-267	PJ-392	233.68	-9,888.81	8,173.46	110	0.46	2.09	4.34567	HDPE	145	0.04
PP-467	23	18.759	18.865	-3.13563	PJ-392	PJ-393	233.61	-9,877.41	8,188.18	110	0.33	1.14	3.13563	HDPE	145	0.03
PP-468	21.5	18.865	18.875	0.06234	PJ-393	PJ-394	233.53	-9,869.69	8,210.10	110	0.01	0	0.06234	HDPE	145	0
PP-469	79.5	18.759	18.824	-1.55999	PJ-392	J-164	233.61	-9,877.41	8,188.18	110	0.16	0.31	1.55999	HDPE	145	0.02
PP-470	57.5	18.824	19.073	0.1664	J-164	PJ-395	233.57	-9,944.28	8,228.85	110	0.02	0.01	0.1664	HDPE	145	0
PP-471	16	18.973	18.954	3.96311	J-165	PJ-396	233.53	-9,921.12	8,248.00	110	0.42	1.76	3.96311	HDPE	145	0.03
PP-472	45	18.954	18.994	0.13027	PJ-396	PJ-397	233.52	-9,906.96	8,241.01	110	0.01	0	0.13027	HDPE	145	0
PP-473	57	18.954	18.865	3.49156	PJ-396	PJ-393	233.52	-9,906.96	8,241.01	110	0.37	1.39	3.49156	HDPE	145	0.08
PP-474	17	19.143	19.163	0.04933	J-166	PJ-398	233.45	-9,901.36	8,262.20	110	0.01	0	0.04933	HDPE	145	0
PP-475	60.5	18.973	19.282	-4.22468	J-165	PJ-399	233.53	-9,921.12	8,248.00	110	0.44	1.98	4.22468	HDPE	145	0.12
PP-476	85.5	19.282	19.674	-4.6469	PJ-399	PJ-400	233.34	-9,976.04	8,270.89	110	0.49	2.37	4.6469	HDPE	145	0.2
PP-477	18.5	19.674	19.691	-8.19558	PJ-400	J-124	233.15	-9,946.36	8,351.14	125	0.67	3.63	8.19558	HDPE	145	0.07
PP-478	26.5	19.723	19.674	-3.17127	J-143	PJ-400	233.07	-9,972.38	8,346.49	110	0.33	1.17	3.17127	HDPE	145	0.03
PP-479	48	19.28	19.27	0.13894	J-167	PJ-401	233.38	-9,893.33	8,278.56	110	0.01	0	0.13894	HDPE	145	0
PP-480	99.5	19.754	20.3	-11.63153	J-125	PJ-402	233.16	-9,949.22	8,383.85	140	0.76	4	11.63153	HDPE	145	0.4
PP-481	39.5	20.3	20.42	0.11437	PJ-402	PJ-403	233.01	-9,859.02	8,426.03	110	0.01	0	0.11437	HDPE	145	0
PP-482	46.5	20.3	20.263	-0.64119	PJ-402	PJ-404	233.01	-9,859.02	8,426.03	110	0.07	0.06	0.64119	HDPE	145	0
PP-483	23.5	20.263	20.293	0.06812	PJ-404	PJ-405	233.05	-9,873.84	8,461.01	110	0.01	0	0.06812	HDPE	145	0
PP-484	119	20.263	20.368	-1.25582	PJ-404	PJ-406	233.05	-9,873.84	8,461.01	110	0.13	0.21	1.25582	HDPE	145	0.02
PP-485	165.5	20.368	20.573	2.15666	PJ-406	PJ-407	232.97	-9,946.62	8,554.88	110	0.23	0.57	2.15666	HDPE	145	0.09
PP-486	110	20.573	19.999	5.73797	PJ-407	PJ-408	232.67	-10,044.56	8,688.52	110	0.6	3.5	5.73797	HDPE	145	0.38
PP-487	30	19.999	20.048	2.99029	PJ-408	J-134	232.86	-10,153.60	8,673.08	110	0.31	1.05	2.99029	HDPE	145	0.03
PP-488	106	19.9	20.368	-12.13689	J-128	PJ-406	232.98	-10,034.44	8,495.32	140	0.79	4.33	12.13689	HDPE	145	0.46
PP-489	58	20.368	20.588	-16.846	PJ-406	PJ-409	232.97	-9,946.62	8,554.88	160	0.84	4.14	16.846	HDPE	145	0.24
PP-490	70	20.588	20.379	1.45234	PJ-409	PJ-410	232.99	-9,901.27	8,591.06	110	0.15	0.27	1.45234	HDPE	145	0.02
PP-491	67	20.379	19.434	4.92437	PJ-410	PJ-411	233.18	-9,943.73	8,646.55	110	0.52	2.64	4.92437	HDPE	145	0.18
PP-492	61	19.434	20.573	4.55419	PJ-411	PJ-407	233.95	-9,984.74	8,699.62	110	0.48	2.28	4.55419	HDPE	145	0.14
PP-493	115	20.626	20.588	-0.33261	PJ-412	PJ-409	232.95	-9,833.73	8,497.95	110	0.03	0.02	0.33261	HDPE	145	0
PP-494	55.5	20.588	20.709	-19.49398	PJ-409	PJ-413	232.99	-9,901.27	8,591.06	160	0.97	5.43	19.49398	HDPE	145	0.3
PP-495	71.5	20.709	20.278	3.71229	PJ-413	PJ-414	233.17	-9,856.41	8,623.87	110	0.39	1.56	3.71229	HDPE	145	0.11
PP-496	112	20.278	20.054	1.28609	PJ-414	PJ-415	233.49	-9,838.07	8,686.11	110	0.14	0.22	1.28609	HDPE	145	0.02
PP-497	23	20.054	20.002	0.89567	PJ-415	PJ-416	233.69	-9,851.10	8,764.26	110	0.09	0.11	0.89567	HDPE	145	0

PP-498	44.5	20.002	20.033	-1.40414	PJ-416	PJ-417	233.74	-9,859.30	8,743.04	110	0.15	0.26	1.40414	HDPE	145	0.01
PP-499	39	20.033	20.278	-1.78285	PJ-417	PJ-414	233.72	-9,874.26	8,701.06	110	0.19	0.4	1.78285	HDPE	145	0.02
PP-500	45	20.709	20.357	3.48869	PJ-413	PJ-418	233.17	-9,856.41	8,623.87	110	0.37	1.39	3.48869	HDPE	145	0.06
PP-501	54.5	20.357	20.033	3.20089	PJ-418	PJ-417	233.46	-9,892.45	8,649.88	110	0.34	1.19	3.20089	HDPE	145	0.06
PP-502	44.5	20.033	19.785	3.05187	PJ-417	PJ-419	233.72	-9,874.26	8,701.06	110	0.32	1.09	3.05187	HDPE	145	0.05
PP-503	77.5	19.785	20.379	4.09226	PJ-419	PJ-410	233.92	-9,914.99	8,718.62	110	0.43	1.87	4.09226	HDPE	145	0.14
PP-504	38	19.755	19.785	-0.11004	PJ-420	PJ-419	233.95	-9,950.36	8,732.25	110	0.01	0	0.11004	HDPE	145	0
PP-505	85	19.785	20.002	-1.85881	PJ-419	PJ-416	233.92	-9,914.99	8,718.62	110	0.2	0.43	1.85881	HDPE	145	0.04
PP-506	55	20.709	21.177	-27.35133	PJ-413	PJ-421	233.17	-9,856.41	8,623.87	200	0.87	3.43	27.35133	HDPE	145	0.19
PP-507	20.5	21.177	21.374	-24.77163	PJ-421	J-3	232.89	-9,823.19	8,580.04	180	0.97	4.77	24.77163	HDPE	145	0.1
PP-508	39	21.315	21.177	2.91086	J-5	PJ-421	232.79	-9,828.07	8,541.36	110	0.31	1	2.91086	HDPE	145	0.04
PP-509	55.5	21.514	21.623	-130.2637	J-1	PJ-422	232.6	-9,690.73	8,557.42	355	1.32	3.77	130.26371	HDPE	145	0.21
PP-510	38	21.623	21.607	51.91756	PJ-422	J-4	232.7	-9,714.19	8,607.52	355	0.52	0.69	51.91756	HDPE	145	0.03
PP-511	104	21.623	21.013	0.30081	PJ-422	PJ-423	232.7	-9,714.19	8,607.52	110	0.03	0.01	0.30081	HDPE	145	0
PP-512	112	20.3	20.955	-11.96485	PJ-402	J-9	233.01	-9,859.02	8,426.03	160	0.6	2.2	11.96485	HDPE	145	0.25
PP-513	38.5	20.533	20.433	0.11148	J-10	PJ-424	232.74	-9,759.30	8,365.79	110	0.01	0	0.11148	HDPE	145	0
PP-514	5.5	20.289	20.24	15.15615	J-11	PJ-425	232.87	-9,760.29	8,332.94	160	0.75	3.41	15.15615	HDPE	145	0.02
PP-515	52.5	20.24	19.871	20.08385	PJ-425	J-123	232.9	-9,760.67	8,327.49	180	0.79	3.23	20.08385	HDPE	145	0.17
PP-516	45	20.16	20.24	-0.13027	PJ-426	PJ-425	232.98	-9,805.13	8,334.16	110	0.01	0	0.13027	HDPE	145	0
PP-517	146.5	20.24	21.158	-5.77937	PJ-425	J-8	232.9	-9,760.67	8,327.49	110	0.61	3.54	5.77937	HDPE	145	0.52
PP-518	82.5	18.69	18.699	0.30768	J-247	J-255	233.22	-10,177.11	7,863.41	110	0.03	0.02	0.30768	HDPE	145	0
PP-519	124.5	18.699	18.848	0.01667	J-255	J-256	233.21	-10,237.65	7,807.22	110	0	0	0.01667	HDPE	145	0
PP-520	90	18.621	18.747	1.06778	J-261	J-259	233.47	-10,117.70	8,006.17	110	0.11	0.16	1.06778	HDPE	145	0.01
PP-521	66.5	18.747	18.916	2.51266	J-259	PJ-427	233.33	-10,196.83	8,048.62	110	0.26	0.76	2.51266	HDPE	145	0.05
PP-522	54	18.916	19.113	-3.5409	PJ-427	J-257	233.11	-10,254.01	8,082.61	110	0.37	1.43	3.5409	HDPE	145	0.08
PP-523	40	19.113	19.273	-3.95107	J-257	PJ-428	232.99	-10,254.72	8,136.62	110	0.42	1.75	3.95107	HDPE	145	0.07
PP-524	74.5	19.273	19.449	-2.272	PJ-428	J-155	232.9	-10,260.96	8,176.01	110	0.24	0.63	2.272	HDPE	145	0.05
PP-525	45.5	19.449	19.448	0.37985	J-155	PJ-429	232.77	-10,223.40	8,240.59	110	0.04	0.02	0.37985	HDPE	145	0
PP-526	75.5	19.448	19.273	2.22847	PJ-429	PJ-428	232.77	-10,267.52	8,250.89	110	0.23	0.61	2.22847	HDPE	145	0.05
PP-527	60.5	19.398	19.531	0.87503	J-152	J-148	232.87	-10,109.78	8,268.99	110	0.09	0.11	0.87503	HDPE	145	0.01
PP-528	57.5	19.561	19.558	0.65027	J-144	J-147	232.73	-10,103.29	8,304.81	110	0.07	0.06	0.65027	HDPE	145	0
PP-529	59	19.558	19.546	1.2568	J-147	J-154	232.73	-10,160.72	8,310.06	110	0.13	0.21	1.2568	HDPE	145	0.01
PP-530	19	19.546	19.545	0.60148	J-154	PJ-430	232.73	-10,219.39	8,317.16	110	0.06	0.05	0.60148	HDPE	145	0
PP-531	79.5	19.545	19.448	2.42837	PJ-430	PJ-429	232.73	-10,238.19	8,319.98	110	0.26	0.71	2.42837	HDPE	145	0.06
PP-532	30	19.545	19.562	-2.19853	PJ-430	J-153	232.73	-10,238.19	8,319.98	110	0.23	0.59	2.19853	HDPE	145	0.02
PP-533	53	19.562	19.694	-4.77077	J-153	J-138	232.73	-10,220.01	8,344.02	110	0.5	2.48	4.77077	HDPE	145	0.13

PP-534	39.5	19.694	19.828	-5.66423	J-138	J-137	232.73	-10,191.60	8,388.18	110	0.6	3.42	5.66423	HDPE	145	0.13
PP-535	41.5	19.828	19.867	-2.81587	J-137	PJ-431	232.73	-10,186.35	8,427.39	110	0.3	0.94	2.81587	HDPE	145	0.04
PP-536	34.5	19.867	19.679	1.33875	PJ-431	J-136	232.73	-10,183.38	8,468.96	110	0.14	0.24	1.33875	HDPE	145	0.01
PP-537	78	19.679	19.566	3.73457	J-136	J-140	232.91	-10,163.50	8,440.67	110	0.39	1.58	3.73457	HDPE	145	0.12
PP-538	36	19.437	19.377	0.10425	J-145	PJ-432	232.84	-10,059.45	8,315.31	110	0.01	0	0.10425	HDPE	145	0
PP-539	30	19.28	19.19	-0.08691	PJ-433	J-146	232.99	-10,014.72	8,321.91	110	0.01	0	0.08691	HDPE	145	0
PP-540	39	19.19	19.108	0.69184	J-146	J-162	233.08	-10,020.24	8,293.39	110	0.07	0.07	0.69184	HDPE	145	0
PP-541	31	19.108	19.031	1.34348	J-162	J-151	233.16	-10,035.36	8,257.26	110	0.14	0.24	1.34348	HDPE	145	0.01
PP-542	28	19.831	19.879	-3.87837	J-142	PJ-434	232.88	-10,055.74	8,351.43	110	0.41	1.69	3.87837	HDPE	145	0.05
PP-543	102.5	19.879	19.813	-3.23949	PJ-434	J-126	232.88	-10,071.45	8,374.78	110	0.34	1.21	3.23949	HDPE	145	0.12
PP-544	46	19.879	19.847	-1.14925	PJ-434	PJ-435	232.88	-10,071.45	8,374.78	110	0.12	0.18	1.14925	HDPE	145	0.01
PP-545	97.5	19.847	19.867	-3.1165	PJ-435	J-127	232.92	-10,095.38	8,414.15	110	0.33	1.13	3.1165	HDPE	145	0.11
PP-546	58	19.847	19.773	1.3846	PJ-435	J-135	232.92	-10,095.38	8,414.15	110	0.15	0.25	1.3846	HDPE	145	0.01
PP-547	40.5	19.773	19.949	-2.35497	J-135	PJ-436	232.98	-10,127.69	8,462.59	110	0.25	0.67	2.35497	HDPE	145	0.03
PP-548	88	19.949	19.85	-2.15782	PJ-436	J-130	232.83	-10,147.87	8,497.52	110	0.23	0.57	2.15782	HDPE	145	0.05
PP-549	42	19.949	20.052	-0.69019	PJ-436	PJ-437	232.83	-10,147.87	8,497.52	110	0.07	0.07	0.69019	HDPE	145	0
PP-550	83.5	20.052	19.822	-1.9538	PJ-437	J-131	232.73	-10,170.65	8,533.03	110	0.21	0.48	1.9538	HDPE	145	0.04
PP-551	79	19.867	20.05	-4.60286	PJ-431	PJ-438	232.73	-10,183.38	8,468.96	110	0.48	2.33	4.60286	HDPE	145	0.18
PP-552	17	20.05	20.052	-0.8515	PJ-438	PJ-437	232.73	-10,178.75	8,547.69	110	0.09	0.1	0.8515	HDPE	145	0
PP-553	80	20.05	20.012	-2.03929	PJ-438	J-132	232.73	-10,178.75	8,547.69	110	0.21	0.51	2.03929	HDPE	145	0.04
PP-554	56.5	20.05	20.079	-2.38432	PJ-438	PJ-439	232.73	-10,178.75	8,547.69	110	0.25	0.69	2.38432	HDPE	145	0.04
PP-555	40.5	20.079	20.122	-0.73545	PJ-439	J-133	232.74	-10,167.17	8,602.89	110	0.08	0.08	0.73545	HDPE	145	0
PP-556	71.5	20.079	19.999	-2.13613	PJ-439	PJ-408	232.74	-10,167.17	8,602.89	110	0.22	0.56	2.13613	HDPE	145	0.04
PP-557	27	18.316	18.324	-1.46535	PJ-282	PJ-440	234.19	-9,187.42	8,907.96	110	0.15	0.28	1.46535	HDPE	145	0.01
PP-558	151	18.324	18.535	-2.36471	PJ-440	PJ-286	234.19	-9,190.12	8,881.01	110	0.25	0.68	2.36471	HDPE	145	0.1
PP-559	66.5	18.293	18.324	-0.19242	PJ-441	PJ-440	234.22	-9,256.32	8,885.75	110	0.02	0.01	0.19242	HDPE	145	0
PP-560	19	18.968	18.955	2.38241	J-101	PJ-442	234.03	-9,440.70	8,445.37	110	0.25	0.69	2.38241	HDPE	145	0.01
PP-561	13	18.955	18.995	0.03777	PJ-442	PJ-443	234.03	-9,424.01	8,436.46	110	0	0	0.03777	HDPE	145	0
PP-562	7	18.955	18.921	2.23172	PJ-442	PJ-444	234.03	-9,424.01	8,436.46	110	0.23	0.61	2.23172	HDPE	145	0
PP-563	17	18.921	18.871	0.04933	PJ-444	PJ-445	234.06	-9,427.77	8,430.73	110	0.01	0	0.04933	HDPE	145	0
PP-564	12.5	18.921	18.914	2.07668	PJ-444	PJ-446	234.06	-9,427.77	8,430.73	110	0.22	0.53	2.07668	HDPE	145	0.01
PP-565	7	18.914	18.94	1.96501	PJ-446	J-99	234.06	-9,416.70	8,424.60	110	0.21	0.48	1.96501	HDPE	145	0
PP-566	9.5	18.884	18.914	-0.02765	PJ-447	PJ-446	234.09	-9,422.63	8,416.89	110	0	0	0.02765	HDPE	145	0
PP-567	12.5	18.745	18.435	0.03633	J-100	PJ-448	234.22	-9,402.98	8,418.59	110	0	0	0.03633	HDPE	145	0
PP-568	15	18.33	18.695	-7.45146	J-67	J-102	234.65	-9,465.12	8,385.59	125	0.61	3.04	7.45146	HDPE	145	0.05
PP-569	52	19.069	18.51	0.1505	J-27	PJ-449	233.87	-9,372.43	8,467.62	110	0.02	0	0.1505	HDPE	145	0

PP-570	41.5	19.066	18.557	0.12015	J-28	PJ-450	233.85	-9,357.61	8,465.45	110	0.01	0	0.12015	HDPE	145	0
PP-571	62	17.195	18.183	0.17941	J-66	PJ-451	235.61	-9,409.16	8,359.82	110	0.02	0.01	0.17941	HDPE	145	0
PP-572	28.5	17.035	16.666	3.49397	J-65	J-68	235.74	-9,398.25	8,353.65	110	0.37	1.4	3.49397	HDPE	145	0.04
PP-573	20	16.734	16.185	-0.05801	PJ-452	J-69	235.97	-9,409.98	8,325.99	110	0.01	0	0.05801	HDPE	145	0
PP-574	26.5	16.185	15.836	0.07679	J-69	PJ-453	236.52	-9,393.66	8,314.45	110	0.01	0	0.07679	HDPE	145	0
PP-575	19.5	16.319	15.959	0.05656	J-63	PJ-454	236.23	-9,329.32	8,329.31	110	0.01	0	0.05656	HDPE	145	0
PP-576	20	17.172	17.092	0.28964	J-70	PJ-455	235.5	-9,417.85	8,284.41	110	0.03	0.01	0.28964	HDPE	145	0
PP-577	26.5	17.092	17.132	0.07679	PJ-455	PJ-456	235.58	-9,435.67	8,293.98	110	0.01	0	0.07679	HDPE	145	0
PP-578	13.5	17.092	16.973	0.03922	PJ-455	PJ-457	235.58	-9,435.67	8,293.98	110	0	0	0.03922	HDPE	145	0
PP-579	31	17.053	17.023	0.0898	J-96	PJ-458	235.62	-9,428.37	8,271.23	110	0.01	0	0.0898	HDPE	145	0
PP-580	27.5	17.082	16.983	0.07968	J-109	PJ-459	235.97	-9,472.15	8,280.80	110	0.01	0	0.07968	HDPE	145	0
PP-581	29.5	17.082	17.272	0.08547	J-109	PJ-460	235.97	-9,472.15	8,280.80	110	0.01	0	0.08547	HDPE	145	0
PP-582	35.5	17.387	17.247	0.10281	J-106	PJ-461	235.67	-9,498.87	8,314.48	110	0.01	0	0.10281	HDPE	145	0
PP-583	42.5	18.573	19.171	0.12304	J-104	PJ-462	234.49	-9,503.77	8,359.21	110	0.01	0	0.12304	HDPE	145	0
PP-584	32.5	18.439	18.878	-0.09414	PJ-463	J-30	234.34	-9,311.07	8,425.74	110	0.01	0	0.09414	HDPE	145	0
PP-585	52.5	18.878	19.19	1.00681	J-30	PJ-343	233.9	-9,300.31	8,456.16	110	0.11	0.14	1.00681	HDPE	145	0.01
PP-586	17.5	20.262	20.133	0.05078	J-181	PJ-464	233.15	-9,626.25	8,393.12	110	0.01	0	0.05078	HDPE	145	0
PP-587	39.5	20.146	20.275	0.11437	J-197	PJ-465	233.25	-9,575.56	8,449.14	110	0.01	0	0.11437	HDPE	145	0
PP-588	33	19.913	19.633	0.09558	J-196	PJ-466	233.42	-9,580.25	8,408.13	110	0.01	0	0.09558	HDPE	145	0
PP-589	35.5	19.719	19.44	0.10281	J-195	PJ-467	233.53	-9,585.19	8,373.06	110	0.01	0	0.10281	HDPE	145	0
PP-590	32	19.614	19.354	0.09269	J-194	PJ-468	233.56	-9,588.40	8,354.28	110	0.01	0	0.09269	HDPE	145	0
PP-591	23	19.555	19.351	2.99758	J-193	PJ-469	233.57	-9,592.60	8,341.19	110	0.32	1.05	2.99758	HDPE	145	0.02
PP-592	51	19.351	19.105	2.78348	PJ-469	J-110	233.75	-9,570.75	8,335.45	110	0.29	0.92	2.78348	HDPE	145	0.05
PP-593	44	16.255	17.043	0.12738	J-92	PJ-470	236.45	-9,531.13	8,245.54	110	0.01	0	0.12738	HDPE	145	0
PP-594	45	15.972	16.651	0.23183	J-93	PJ-471	236.72	-9,516.55	8,236.89	110	0.02	0.01	0.23183	HDPE	145	0
PP-595	7.5	16.651	16.481	0.02187	PJ-471	PJ-472	236.04	-9,533.55	8,199.42	110	0	0	0.02187	HDPE	145	0
PP-596	10	16.651	16.691	0.0291	PJ-471	PJ-473	236.04	-9,533.55	8,199.42	110	0	0	0.0291	HDPE	145	0
PP-597	35.5	15.808	16.535	1.52786	J-95	PJ-474	236.87	-9,494.82	8,214.91	110	0.16	0.3	1.52786	HDPE	145	0.01
PP-598	10	16.535	16.583	1.30345	PJ-474	PJ-475	236.13	-9,460.44	8,223.63	110	0.14	0.23	1.30345	HDPE	145	0
PP-599	15	16.583	16.471	1.04272	PJ-475	PJ-476	236.08	-9,451.54	8,219.43	110	0.11	0.15	1.04272	HDPE	145	0
PP-600	13	16.471	16.22	0.96158	PJ-476	PJ-477	236.19	-9,441.91	8,208.07	110	0.1	0.13	0.96158	HDPE	145	0
PP-601	8.5	16.22	16.019	0.89924	PJ-477	J-75	236.44	-9,439.69	8,195.47	110	0.09	0.11	0.89924	HDPE	145	0
PP-602	16	16.535	16.605	0.04644	PJ-474	PJ-478	236.13	-9,460.44	8,223.63	110	0	0	0.04644	HDPE	145	0
PP-603	16	16.583	16.743	0.14203	PJ-475	PJ-479	236.08	-9,451.54	8,219.43	110	0.01	0	0.14203	HDPE	145	0
PP-604	16.5	16.743	16.872	0.04789	PJ-479	PJ-480	235.92	-9,440.92	8,231.53	110	0.01	0	0.04789	HDPE	145	0
PP-605	83.5	18.374	19.83	2.467	J-59	J-39	234.2	-9,273.83	8,369.46	110	0.26	0.73	2.467	HDPE	145	0.06

PP-606	8	17.273	17.453	3.24859	J-52	PJ-481	235.2	-9,276.05	8,270.50	110	0.34	1.22	3.24859	HDPE	145	0.01
PP-607	20.5	17.453	18.092	0.05945	PJ-481	PJ-482	235.01	-9,272.29	8,263.46	110	0.01	0	0.05945	HDPE	145	0
PP-608	44.5	17.453	18.553	1.81411	PJ-481	J-47	235.01	-9,272.29	8,263.46	110	0.19	0.41	1.81411	HDPE	145	0.02
PP-609	39.5	18.553	19.421	0.11437	J-47	PJ-483	233.89	-9,228.32	8,257.27	110	0.01	0	0.11437	HDPE	145	0
PP-610	25	16.769	16.071	-0.07246	PJ-484	J-73	235.81	-9,403.51	8,233.35	110	0.01	0	0.07246	HDPE	145	0
PP-611	31	15.063	15.042	0.29253	J-72	PJ-485	237.52	-9,356.19	8,241.74	110	0.03	0.01	0.29253	HDPE	145	0
PP-612	9.5	15.042	15.202	0.02765	PJ-485	PJ-486	237.54	-9,329.02	8,231.42	110	0	0	0.02765	HDPE	145	0
PP-613	25.5	15.042	15.581	0.0739	PJ-485	PJ-487	237.54	-9,329.02	8,231.42	110	0.01	0	0.0739	HDPE	145	0
PP-614	109	16.68	15.669	2.9861	J-74	PJ-488	235.9	-9,400.65	8,199.05	110	0.31	1.04	2.9861	HDPE	145	0.11
PP-615	62	15.669	17.358	0.94148	PJ-488	PJ-489	236.8	-9,302.39	8,190.51	110	0.1	0.12	0.94148	HDPE	145	0.01
PP-616	38	17.358	17.453	-1.05398	PJ-489	PJ-481	235.1	-9,262.64	8,238.37	110	0.11	0.15	1.05398	HDPE	145	0.01
PP-617	30.5	15.669	16.548	1.46198	PJ-488	PJ-490	236.8	-9,302.39	8,190.51	110	0.15	0.28	1.46198	HDPE	145	0.01
PP-618	14	16.548	16.888	0.04066	PJ-490	PJ-491	235.91	-9,281.94	8,167.74	110	0	0	0.04066	HDPE	145	0
PP-619	76	16.548	17.435	1.07281	PJ-490	PJ-492	235.91	-9,281.94	8,167.74	110	0.11	0.16	1.07281	HDPE	145	0.01
PP-620	51.5	17.435	18.05	0.70406	PJ-492	J-51	235.01	-9,292.74	8,116.41	110	0.07	0.07	0.70406	HDPE	145	0
PP-621	43	18.05	17.848	0.53308	J-51	PJ-493	234.39	-9,248.27	8,097.08	110	0.06	0.04	0.53308	HDPE	145	0
PP-622	53.5	17.848	18.198	-0.15779	PJ-493	PJ-494	234.59	-9,205.52	8,092.09	110	0.02	0	0.15779	HDPE	145	0
PP-623	36.5	18.198	17.531	-0.55913	PJ-494	J-50	234.24	-9,205.52	8,145.35	110	0.06	0.05	0.55913	HDPE	145	0
PP-624	41.5	17.564	17.358	-1.58625	J-48	PJ-489	234.88	-9,234.80	8,213.73	110	0.17	0.32	1.58625	HDPE	145	0.01
PP-625	33	17.233	17.98	0.65408	J-49	PJ-495	235.21	-9,236.66	8,198.29	110	0.07	0.06	0.65408	HDPE	145	0
PP-626	38	17.98	17.899	0.44865	PJ-495	PJ-496	234.46	-9,203.59	8,195.14	110	0.05	0.03	0.44865	HDPE	145	0
PP-627	12	17.899	18.198	-0.10632	PJ-496	PJ-494	234.54	-9,205.52	8,157.32	110	0.01	0	0.10632	HDPE	145	0
PP-628	58.5	17.848	18.317	0.24264	PJ-493	PJ-497	234.59	-9,205.52	8,092.09	110	0.03	0.01	0.24264	HDPE	145	0
PP-629	73	18.317	18.497	-0.13767	PJ-497	PJ-498	234.12	-9,146.85	8,089.00	110	0.01	0	0.13767	HDPE	145	0
PP-630	47	18.497	17.899	-0.27439	PJ-498	PJ-496	233.94	-9,158.81	8,160.79	110	0.03	0.01	0.27439	HDPE	145	0
PP-631	115	18.497	19.38	-0.54276	PJ-498	PJ-499	233.94	-9,158.81	8,160.79	110	0.06	0.04	0.54276	HDPE	145	0.01
PP-632	55.5	19.38	18.553	-0.31188	PJ-499	J-47	233.06	-9,175.41	8,274.65	110	0.03	0.02	0.31188	HDPE	145	0
PP-633	53.5	19.38	19.665	-0.87857	PJ-499	J-40	233.06	-9,175.41	8,274.65	110	0.09	0.11	0.87857	HDPE	145	0.01
PP-634	**33.5**	**1.796**	**21.623**	**183.14999**	**T-1**	**PJ-422**	**232.7**	**-9,681.52**	**8,615.62**	**400**	**1.46**	**3.97**	**183.14999**	HDPE	**145**	**0.13**
PP-635	133.5	18.392	18.916	-5.31916	J-250	PJ-427	233.57	-10,264.21	7,952.65	160	0.26	0.49	5.31916	HDPE	145	0.07
	31680.5															

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	J-1	J-2	115.5	200	PVC	315	HDPE	Replacement
P-10	J-10	J-11	33	75	PVC	160	HDPE	Replacement
P-100	J-98	J-99	14	110	PVC	110	uPVC	Retained
P-101	J-98	J-100	7	110	PVC	110	uPVC	Retained
P-102	J-25	J-101	39	110	PVC	110	uPVC	Retained
P-103	J-101	J-102	65.5	110	PVC	110	uPVC	Retained
P-104	J-102	J-103	9	110	PVC	125	HDPE	Replacement
P-105	J-103	J-104	32	160	PVC	160	uPVC	Retained
P-106	J-104	J-105	43.5	160	PVC	160	uPVC	Retained
P-107	J-105	J-106	16.5	75	PVC	110	HDPE	Replacement
P-108	J-106	J-107	25	75	PVC	110	HDPE	Replacement
P-109	J-107	J-108	36	75	PVC	110	HDPE	Replacement
P-11	J-7	J-12	51.5	200	PVC	315	HDPE	Replacement
P-110	J-107	J-109	51.5	75	PVC	110	HDPE	Replacement
P-111	J-105	J-110	78	160	PVC	160	uPVC	Retained
P-112	J-110	J-111	17	0	PVC	125	HDPE	Replacement
P-113	J-111	J-112	8.5	160	PVC	160	uPVC	Retained
P-114	J-112	J-113	58.5	160	PVC	160	uPVC	Retained
P-115	J-113	J-114	4	110	PVC	140	HDPE	Replacement
P-116	J-114	J-115	21.5	160	PVC	160	uPVC	Retained
P-117	J-115	J-116	8	160	PVC	160	uPVC	Retained
P-118	J-116	J-117	44.5	75	PVC	110	HDPE	Replacement
P-119	J-116	J-118	48	160	PVC	160	uPVC	Retained
P-12	J-12	J-13	24.5	200	PVC	315	HDPE	Replacement
P-120	J-118	J-119	26.5	75	PVC	110	HDPE	Replacement
P-121	J-119	J-120	10.5	75	PVC	110	HDPE	Replacement
P-122	J-120	J-121	8.5	75	PVC	110	HDPE	Replacement
P-123	J-120	J-122	25	75	PVC	110	HDPE	Replacement
P-124	J-118	J-123	26	75	PVC	110	HDPE	Replacement
P-125	J-123	J-124	173	75	PVC	125	HDPE	Replacement
P-126	J-124	J-125	36	160	PVC	160	uPVC	Retained
P-127	J-125	J-126	72	160	PVC	160	uPVC	Retained
P-128	J-126	J-127	42	0	PVC	110	HDPE	Replacement
P-129	J-127	J-128	26	160	PVC	160	uPVC	Retained
P-13	J-13	J-14	15.5	200	PVC	280	HDPE	Replacement
P-130	J-128	J-129	22	160	PVC	160	uPVC	Retained
P-131	J-129	J-130	38.5	160	PVC	160	uPVC	Retained
P-132	J-130	J-131	45	160	PVC	160	uPVC	Retained
P-133	J-131	J-132	30.5	160	PVC	160	uPVC	Retained
P-134	J-132	J-133	12.5	160	PVC	160	uPVC	Retained
P-135	J-133	J-134	37.5	160	PVC	160	uPVC	Retained
P-136	J-129	J-135	93	110	PVC	110	uPVC	Retained
P-137	J-135	J-136	42	110	PVC	110	uPVC	Retained
P-138	J-136	J-137	26.5	110	PVC	110	uPVC	Retained
P-139	J-138	J-139	42.5	110	PVC	110	uPVC	Retained
P-14	J-14	J-15	66.5	200	PVC	280	HDPE	Replacement
P-140	J-139	J-140	23	110	PVC	110	uPVC	Retained
P-141	J-140	J-141	15	110	PVC	110	uPVC	Retained
P-142	J-141	J-142	60	110	PVC	110	uPVC	Retained
P-143	J-142	J-143	84.5	110	PVC	110	uPVC	Retained
P-144	J-141	J-144	63	110	PVC	110	uPVC	Retained
P-145	J-144	J-145	45	75	PVC	110	HDPE	Replacement
P-146	J-145	J-146	45	110	PVC	110	uPVC	Retained
P-147	J-139	J-147	66.5	110	PVC	110	uPVC	Retained
P-148	J-147	J-148	24.5	110	PVC	110	uPVC	Retained
P-149	J-148	J-149	16.5	110	PVC	110	uPVC	Retained
P-15	J-15	J-16	9.5	200	PVC	280	HDPE	Replacement
P-150	J-149	J-150	126	110	PVC	110	uPVC	Retained
P-151	J-150	J-151	22	75	PVC	110	HDPE	Replacement

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-151	J-152	72	75	PVC	110	HDPE	Replacement
P-153	J-152	J-144	38	75	PVC	110	HDPE	Replacement
P-154	J-153	J-154	27	110	PVC	110	uPVC	Retained
P-155	J-154	J-155	83.5	110	PVC	110	uPVC	Retained
P-156	J-155	J-156	44	110	PVC	110	uPVC	Retained
P-157	J-156	J-149	39	160	PVC	160	uPVC	Retained
P-158	J-156	J-157	100.5	160	PVC	160	uPVC	Retained
P-159	J-157	J-158	55.5	160	PVC	160	uPVC	Retained
P-16	J-16	J-17	37	200	0	250	HDPE	Replacement
P-160	J-158	J-159	43.5	110	PVC	110	uPVC	Retained
P-161	J-159	J-150	23.5	110	PVC	110	uPVC	Retained
P-162	J-159	J-160	21	75	PVC	110	HDPE	Replacement
P-163	J-160	J-161	33.5	75	PVC	110	HDPE	Replacement
P-164	J-161	J-162	30	75	PVC	110	HDPE	Replacement
P-165	J-161	J-163	63	75	PVC	110	HDPE	Replacement
P-166	J-163	J-164	19.5	75	PVC	110	HDPE	Replacement
P-167	J-164	J-165	31.5	75	PVC	125	HDPE	Replacement
P-168	J-165	J-166	25.5	75	PVC	125	HDPE	Replacement
P-169	J-166	J-167	18	75	PVC	125	HDPE	Replacement
P-17	J-17	J-18	18.5	200	PVC	250	HDPE	Replacement
P-170	J-167	J-123	125	75	PVC	140	HDPE	Replacement
P-171	J-123	J-168	65.5	315	PVC	300	HDPE	Replacement
P-172	J-168	J-169	58	315	PVC	300	HDPE	Replacement
P-173	J-169	J-170	196	200	PVC	200	uPVC	Retained
P-174	J-170	J-171	74	110	PVC	110	uPVC	Retained
P-175	J-171	J-172	126	110	PVC	110	uPVC	Retained
P-176	J-172	J-173	20	75	PVC	110	HDPE	Replacement
P-177	J-173	J-81	19	75	PVC	110	HDPE	Replacement
P-178	J-169	J-82	106	110	PVC	110	uPVC	Retained
P-179	J-172	J-174	60	75	PVC	110	HDPE	Replacement
P-18	J-18	J-19	24.5	200	PVC	250	HDPE	Replacement
P-180	J-174	J-175	15.5	110	PVC	110	uPVC	Retained
P-181	J-175	J-176	30.5	110	PVC	110	uPVC	Retained
P-182	J-177	J-178	31	75	PVC	110	HDPE	Replacement
P-183	J-178	J-115	55	75	PVC	110	HDPE	Replacement
P-184	J-112	J-179	16	75	PVC	160	HDPE	Replacement
P-185	J-179	J-180	47.5	75	PVC	140	HDPE	Replacement
P-186	J-180	J-181	49	75	PVC	140	HDPE	Replacement
P-187	J-181	J-182	5.5	75	PVC	140	HDPE	Replacement
P-188	J-182	J-183	34.5	75	PVC	110	HDPE	Replacement
P-189	J-183	J-184	24	75	PVC	110	HDPE	Replacement
P-19	J-19	J-20	41.5	200	PVC	250	HDPE	Replacement
P-190	J-184	J-185	8	75	PVC	110	HDPE	Replacement
P-191	J-185	J-186	61	75	PVC	110	HDPE	Replacement
P-192	J-180	J-187	25.5	75	PVC	110	HDPE	Replacement
P-193	J-184	J-188	14	75	PVC	110	HDPE	Replacement
P-194	J-188	J-189	20	75	PVC	110	HDPE	Replacement
P-195	J-189	J-190	25	75	PVC	110	HDPE	Replacement
P-196	J-190	J-191	50	75	PVC	110	HDPE	Replacement
P-197	J-191	J-192	23.5	75	PVC	160	HDPE	Replacement
P-198	J-192	J-7	23	75	PVC	200	HDPE	Replacement
P-199	J-191	J-182	106	75	PVC	125	HDPE	Replacement
P-2	J-2	J-3	30	75	0	280	HDPE	Replacement
P-20	J-20	J-21	33	200	PVC	200	uPVC	Retained
P-200	J-179	J-193	47.5	75	PVC	110	HDPE	Replacement
P-201	J-193	J-194	13.5	75	PVC	110	HDPE	Replacement
P-202	J-194	J-195	19	75	PVC	110	HDPE	Replacement
P-203	J-195	J-196	35.5	75	PVC	125	HDPE	Replacement
P-204	J-196	J-197	41.5	75	PVC	140	HDPE	Replacement
P-205	J-197	J-198	5	110	PVC	140	HDPE	Replacement

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-206	J-198	J-199	54.5	160	PVC	180	HDPE	Replacement
P-207	J-199	J-200	11	160	PVC	180	HDPE	Replacement
P-208	J-200	J-201	14.5	160	PVC	160	uPVC	Retained
P-209	J-201	J-14	46.5	160	PVC	160	uPVC	Retained
P-21	J-21	J-22	16	200	PVC	200	uPVC	Retained
P-210	J-13	J-202	138.5	160	PVC	180	HDPE	Replacement
P-211	J-202	J-203	21.5	160	PVC	180	HDPE	Replacement
P-212	J-203	J-204	150.5	160	PVC	160	uPVC	Retained
P-213	J-204	J-205	56	110	PVC	110	uPVC	Retained
P-214	J-205	J-206	45	75	PVC	110	HDPE	Replacement
P-215	J-206	J-207	65	75	PVC	110	HDPE	Replacement
P-216	J-207	J-208	42.5	75	PVC	125	HDPE	Replacement
P-217	J-208	J-203	53	75	PVC	125	HDPE	Replacement
P-218	J-207	J-209	26.5	75	PVC	110	HDPE	Replacement
P-219	J-209	J-210	90.5	75	PVC	110	HDPE	Replacement
P-22	J-22	J-23	13	200	PVC	200	uPVC	Retained
P-220	J-210	J-209	35	75	PVC	110	HDPE	Replacement
P-221	J-209	J-211	64.5	75	PVC	110	HDPE	Replacement
P-222	J-211	J-206	26	75	PVC	110	HDPE	Replacement
P-223	J-210	J-212	65	75	PVC	110	HDPE	Replacement
P-224	J-212	J-211	37.5	75	PVC	110	HDPE	Replacement
P-225	J-212	J-213	39	0	PVC	110	HDPE	Replacement
P-226	J-213	J-205	72.5	75	PVC	110	HDPE	Replacement
P-227	J-213	J-214	39	75	PVC	110	HDPE	Replacement
P-228	J-214	J-215	17	110	PVC	110	uPVC	Retained
P-229	J-215	J-216	50.5	75	PVC	110	HDPE	Replacement
P-23	J-23	J-24	19	200	PVC	200	uPVC	Retained
P-230	J-216	J-213	30	75	PVC	110	HDPE	Replacement
P-231	J-204	J-217	45.5	110	PVC	125	HDPE	Replacement
P-232	J-217	J-218	10	110	PVC	110	uPVC	Retained
P-233	J-218	J-219	25	110	PVC	110	uPVC	Retained
P-234	J-219	J-220	18.5	110	PVC	110	uPVC	Retained
P-235	J-220	J-221	65.5	110	PVC	110	uPVC	Retained
P-236	J-221	J-222	86.5	110	PVC	110	uPVC	Retained
P-237	J-222	J-223	61.5	110	PVC	110	uPVC	Retained
P-238	J-223	J-224	4	110	PVC	110	uPVC	Retained
P-239	J-224	J-225	97.5	110	PVC	110	uPVC	Retained
P-24	J-24	J-25	17	200	PVC	200	uPVC	Retained
P-240	J-225	J-226	126.5	110	PVC	110	uPVC	Retained
P-241	J-226	J-227	105.5	110	PVC	110	uPVC	Retained
P-242	J-224	J-228	84	110	PVC	110	uPVC	Retained
P-243	J-228	J-229	145	110	PVC	110	uPVC	Retained
P-244	J-222	J-230	29.5	110	PVC	110	uPVC	Retained
P-245	J-230	J-231	6	110	PVC	110	uPVC	Retained
P-246	J-231	J-232	247.5	110	PVC	110	uPVC	Retained
P-247	J-16	J-233	63.5	75	PVC	110	HDPE	Replacement
P-248	J-198	J-234	25.5	160	PVC	160	uPVC	Retained
P-249	J-234	J-235	30	75	PVC	110	HDPE	Replacement
P-25	J-25	J-26	40	200	PVC	200	uPVC	Retained
P-250	J-235	J-236	25	75	PVC	110	HDPE	Replacement
P-251	J-235	J-237	17	75	PVC	110	HDPE	Replacement
P-252	J-237	J-238	13	75	PVC	110	HDPE	Replacement
P-253	J-238	J-239	8.5	75	PVC	110	HDPE	Replacement
P-254	J-239	J-240	20.5	75	PVC	110	HDPE	Replacement
P-255	J-234	J-241	31	160	PVC	160	uPVC	Retained
P-256	J-241	J-242	36.5	160	PVC	160	uPVC	Retained
P-257	J-242	J-243	27	75	PVC	110	HDPE	Replacement
P-258	J-243	J-244	69	75	PVC	110	HDPE	Replacement
P-259	J-244	J-245	7.5	75	PVC	110	HDPE	Replacement
P-26	J-26	J-27	5.5	200	PVC	200	uPVC	Retained

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-260	J-245	J-246	17	75	PVC	110	HDPE	Replacement
P-261	J-242	J-103	27	160	PVC	160	uPVC	Retained
P-262	J-247	J-248	23.5	75	PVC	110	HDPE	Replacement
P-263	J-248	J-249	48	75	PVC	110	HDPE	Replacement
P-264	J-249	J-250	53.5	75	PVC	110	HDPE	Replacement
P-265	J-250	J-251	86.5	75	PVC	110	HDPE	Replacement
P-266	J-251	J-252	52	75	PVC	110	HDPE	Replacement
P-267	J-252	J-249	39.5	75	PVC	110	HDPE	Replacement
P-268	J-252	J-253	39	75	PVC	110	HDPE	Replacement
P-269	J-253	J-248	63.5	75	PVC	110	HDPE	Replacement
P-27	J-27	J-28	15	200	PVC	200	uPVC	Retained
P-270	J-251	J-254	42.5	75	PVC	110	HDPE	Replacement
P-271	J-254	J-253	80.5	75	PVC	110	HDPE	Replacement
P-272	J-253	J-255	61	75	PVC	110	HDPE	Replacement
P-273	J-254	J-256	56.5	75	PVC	110	HDPE	Replacement
P-274	J-257	J-258	100.5	75	PVC	110	HDPE	Replacement
P-275	J-258	J-259	52.5	75	PVC	110	HDPE	Replacement
P-276	J-157	J-258	113.5	75	PVC	110	HDPE	Replacement
P-277	J-258	J-260	90.5	75	PVC	110	HDPE	Replacement
P-278	J-260	J-261	53	75	PVC	110	HDPE	Replacement
P-279	J-158	J-262	39.5	160	PVC	160	uPVC	Retained
P-28	J-28	J-29	32	110	PVC	180	HDPE	Replacement
P-280	J-262	J-260	106.5	75	PVC	110	HDPE	Replacement
P-281	J-260	J-263	71.5	75	PVC	110	HDPE	Replacement
P-282	J-264	J-265	37.5	75	PVC	110	HDPE	Replacement
P-283	J-265	J-262	74.5	160	PVC	160	uPVC	Retained
P-284	J-160	J-266	66.5	75	PVC	110	HDPE	Replacement
P-285	J-266	J-163	45	75	PVC	110	HDPE	Replacement
P-286	J-163	J-267	76	75	PVC	110	HDPE	Replacement
P-287	J-266	J-268	68	75	PVC	110	HDPE	Replacement
P-288	J-268	J-269	41.5	110	PVC	110	uPVC	Retained
P-29	J-29	J-30	26	160	PVC	180	HDPE	Replacement
P-3	J-3	J-4	62	75	PVC	280	HDPE	Replacement
P-30	J-30	J-31	22.5	160	PVC	180	HDPE	Replacement
P-31	J-31	J-32	13	160	PVC	160	uPVC	Retained
P-32	J-32	J-33	64	160	PVC	160	uPVC	Retained
P-33	J-33	J-34	60.5	110	PVC	110	uPVC	Retained
P-34	J-34	J-35	7.5	110	PVC	110	uPVC	Retained
P-35	J-35	J-36	39	75	PVC	110	HDPE	Replacement
P-36	J-33	J-37	57.5	110	PVC	110	uPVC	Retained
P-37	J-37	J-38	6	110	PVC	110	uPVC	Retained
P-38	J-38	J-39	19	110	PVC	110	uPVC	Retained
P-39	J-39	J-40	38	110	PVC	110	uPVC	Retained
P-4	J-2	J-5	30.5	75	PVC	110	HDPE	Replacement
P-40	J-40	J-41	212	110	PVC	110	uPVC	Retained
P-41	J-41	J-42	48.5	110	PVC	110	uPVC	Retained
P-42	J-42	J-43	54	110	PVC	110	uPVC	Retained
P-43	J-43	J-44	88	110	PVC	110	uPVC	Retained
P-44	J-44	J-45	81.5	110	PVC	110	uPVC	Retained
P-45	J-45	J-46	184	110	PVC	110	uPVC	Retained
P-46	J-47	J-48	44	160	PVC	160	uPVC	Retained
P-47	J-48	J-49	15.5	160	PVC	160	uPVC	Retained
P-48	J-49	J-50	47.5	160	PVC	160	uPVC	Retained
P-49	J-50	J-51	54.5	160	PVC	160	uPVC	Retained
P-5	J-5	J-6	46.5	75	PVC	110	HDPE	Replacement
P-50	J-52	J-53	19	75	PVC	110	HDPE	Replacement
P-51	J-53	J-54	43.5	75	PVC	110	HDPE	Replacement
P-52	J-54	J-55	7	75	PVC	110	HDPE	Replacement
P-53	J-54	J-56	11	75	PVC	110	HDPE	Replacement
P-54	J-53	J-57	21.5	75	PVC	110	HDPE	Replacement

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-55	J-57	J-58	39	75	PVC	110	HDPE	Replacement
P-56	J-58	J-59	44	75	PVC	110	HDPE	Replacement
P-57	J-59	J-60	10.5	75	PVC	110	HDPE	Replacement
P-58	J-60	J-61	14.5	75	PVC	110	HDPE	Replacement
P-59	J-61	J-32	57.5	75	PVC	110	HDPE	Replacement
P-6	J-1	J-7	31.5	200	PVC	355	HDPE	Replacement
P-60	J-31	J-62	83.5	160	PVC	160	uPVC	Retained
P-61	J-62	J-60	51.5	75	PVC	110	HDPE	Replacement
P-62	J-58	J-63	46.5	75	PVC	110	HDPE	Replacement
P-63	J-62	J-64	41.5	160	PVC	160	uPVC	Retained
P-64	J-64	J-65	39.5	75	PVC	110	HDPE	Replacement
P-65	J-65	J-66	12.5	75	PVC	125	HDPE	Replacement
P-66	J-66	J-67	61.5	75	PVC	125	HDPE	Replacement
P-67	J-64	J-68	32.5	160	PVC	160	uPVC	Retained
P-68	J-68	J-69	28.5	0	PVC	110	HDPE	Replacement
P-69	J-69	J-70	38.5	0	PVC	110	HDPE	Replacement
P-7	J-7	J-8	98	75	PVC	225	HDPE	Replacement
P-70	J-70	J-71	78	75	PVC	110	HDPE	Replacement
P-71	J-71	J-57	63.5	75	PVC	110	HDPE	Replacement
P-72	J-71	J-72	9.5	75	PVC	110	HDPE	Replacement
P-73	J-72	J-73	34.5	75	PVC	110	HDPE	Replacement
P-74	J-73	J-74	27	75	PVC	110	HDPE	Replacement
P-75	J-74	J-75	43.5	75	PVC	110	HDPE	Replacement
P-76	J-75	J-76	56	160	PVC	160	uPVC	Retained
P-77	J-76	J-77	62.5	160	PVC	160	uPVC	Retained
P-78	J-77	J-78	60.5	160	PVC	160	uPVC	Retained
P-79	J-78	J-79	81.5	160	PVC	160	uPVC	Retained
P-8	J-8	J-9	28	75	PVC	200	HDPE	Replacement
P-80	J-78	J-80	51	110	PVC	110	uPVC	Retained
P-81	J-80	J-81	84	75	PVC	110	HDPE	Replacement
P-82	J-81	J-82	9	75	PVC	110	HDPE	Replacement
P-83	J-82	J-83	53	75	PVC	110	HDPE	Replacement
P-84	J-83	J-84	16	75	PVC	110	HDPE	Replacement
P-85	J-84	J-85	41.5	0	PVC	110	HDPE	Replacement
P-86	J-84	J-86	31	75	PVC	110	HDPE	Replacement
P-87	J-86	J-87	41	75	PVC	110	HDPE	Replacement
P-88	J-87	J-88	12	110	PVC	110	uPVC	Retained
P-89	J-89	J-90	21.5	75	PVC	110	HDPE	Replacement
P-9	J-9	J-10	77	75	PVC	160	HDPE	Replacement
P-90	J-90	J-91	103.5	75	PVC	110	HDPE	Replacement
P-91	J-91	J-92	37	160	PVC	160	uPVC	Retained
P-92	J-92	J-93	17	160	PVC	160	uPVC	Retained
P-93	J-93	J-94	14.5	160	PVC	160	uPVC	Retained
P-94	J-94	J-95	18.5	160	PVC	160	uPVC	Retained
P-95	J-95	J-76	61	160	PVC	160	uPVC	Retained
P-96	J-94	J-96	99.5	160	PVC	160	uPVC	Retained
P-97	J-96	J-70	17	160	PVC	160	uPVC	Retained
P-98	J-29	J-97	62	110	PVC	110	uPVC	Retained
P-99	J-26	J-98	49.5	110	PVC	110	uPVC	Retained
PP-289	J-215	PJ-270	196	#N/A	#N/A	110	HDPE	New
PP-290	PJ-270	PJ-271	84	#N/A	#N/A	110	HDPE	New
PP-291	PJ-271	PJ-272	172.5	#N/A	#N/A	110	HDPE	New
PP-292	PJ-272	PJ-273	76.5	#N/A	#N/A	110	HDPE	New
PP-293	PJ-272	PJ-274	185.5	#N/A	#N/A	110	HDPE	New
PP-294	PJ-274	PJ-275	65	#N/A	#N/A	110	HDPE	New
PP-295	PJ-275	J-225	43.5	#N/A	#N/A	110	HDPE	New
PP-296	J-225	PJ-276	47.5	#N/A	#N/A	110	HDPE	New
PP-297	PJ-277	PJ-275	40	#N/A	#N/A	110	HDPE	New
PP-298	J-226	PJ-278	123.5	#N/A	#N/A	110	HDPE	New
PP-299	J-223	PJ-279	42	#N/A	#N/A	110	HDPE	New

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-300	J-231	J-228	52.5	#N/A	#N/A	110	HDPE	New
PP-301	J-229	J-227	170	#N/A	#N/A	110	HDPE	New
PP-302	J-230	PJ-280	42	#N/A	#N/A	110	HDPE	New
PP-303	PJ-280	PJ-281	65	#N/A	#N/A	110	HDPE	New
PP-304	PJ-281	PJ-282	164	#N/A	#N/A	110	HDPE	New
PP-305	PJ-281	PJ-283	55.5	#N/A	#N/A	110	HDPE	New
PP-306	PJ-283	PJ-284	70.5	#N/A	#N/A	110	HDPE	New
PP-307	PJ-284	PJ-285	136.5	#N/A	#N/A	110	HDPE	New
PP-308	PJ-285	PJ-286	84	#N/A	#N/A	110	HDPE	New
PP-309	PJ-285	PJ-287	50	#N/A	#N/A	110	HDPE	New
PP-310	PJ-287	PJ-288	62.5	#N/A	#N/A	110	HDPE	New
PP-311	PJ-288	PJ-283	83.5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-283	PJ-289	110.5	#N/A	#N/A	110	HDPE	New
PP-313	PJ-289	PJ-290	8.5	#N/A	#N/A	110	HDPE	New
PP-314	PJ-290	PJ-291	39.5	#N/A	#N/A	110	HDPE	New
PP-315	PJ-291	PJ-292	13	#N/A	#N/A	110	HDPE	New
PP-316	PJ-292	PJ-280	127	#N/A	#N/A	110	HDPE	New
PP-317	PJ-292	PJ-293	52	#N/A	#N/A	110	HDPE	New
PP-318	PJ-293	PJ-294	69	#N/A	#N/A	110	HDPE	New
PP-319	PJ-293	J-218	57	#N/A	#N/A	110	HDPE	New
PP-320	J-220	PJ-295	36.5	#N/A	#N/A	110	HDPE	New
PP-321	J-219	PJ-296	30.5	#N/A	#N/A	110	HDPE	New
PP-322	PJ-296	PJ-297	56.5	#N/A	#N/A	110	HDPE	New
PP-323	PJ-297	PJ-298	45	#N/A	#N/A	110	HDPE	New
PP-324	PJ-298	PJ-299	57	#N/A	#N/A	110	HDPE	New
PP-325	PJ-299	PJ-296	45	#N/A	#N/A	110	HDPE	New
PP-326	PJ-298	PJ-300	48	#N/A	#N/A	110	HDPE	New
PP-327	PJ-300	PJ-301	21	#N/A	#N/A	110	HDPE	New
PP-328	PJ-301	J-221	74.5	#N/A	#N/A	110	HDPE	New
PP-329	PJ-300	PJ-302	34.5	#N/A	#N/A	110	HDPE	New
PP-330	PJ-302	PJ-303	19.5	#N/A	#N/A	110	HDPE	New
PP-331	PJ-303	PJ-301	34	#N/A	#N/A	110	HDPE	New
PP-332	PJ-303	PJ-304	30.5	#N/A	#N/A	110	HDPE	New
PP-333	PJ-304	PJ-305	110.5	#N/A	#N/A	110	HDPE	New
PP-334	PJ-305	PJ-306	30.5	#N/A	#N/A	110	HDPE	New
PP-335	PJ-306	PJ-302	95.5	#N/A	#N/A	110	HDPE	New
PP-336	PJ-300	PJ-307	33.5	#N/A	#N/A	110	HDPE	New
PP-337	PJ-307	PJ-308	30	#N/A	#N/A	110	HDPE	New
PP-338	PJ-307	PJ-309	67.5	#N/A	#N/A	110	HDPE	New
PP-339	PJ-309	PJ-310	27.5	#N/A	#N/A	110	HDPE	New
PP-340	PJ-310	PJ-297	27.5	#N/A	#N/A	110	HDPE	New
PP-341	PJ-297	PJ-311	47.5	#N/A	#N/A	110	HDPE	New
PP-342	PJ-311	J-217	81.5	#N/A	#N/A	110	HDPE	New
PP-343	J-214	PJ-312	30.5	#N/A	#N/A	110	HDPE	New
PP-344	PJ-312	PJ-310	58	#N/A	#N/A	110	HDPE	New
PP-345	PJ-312	PJ-311	29	#N/A	#N/A	110	HDPE	New
PP-346	PJ-309	PJ-313	44.5	#N/A	#N/A	110	HDPE	New
PP-347	PJ-313	PJ-314	125	#N/A	#N/A	110	HDPE	New
PP-348	PJ-314	PJ-315	34	#N/A	#N/A	110	HDPE	New
PP-349	PJ-315	PJ-306	15	#N/A	#N/A	110	HDPE	New
PP-350	PJ-315	PJ-316	78.5	#N/A	#N/A	110	HDPE	New
PP-351	PJ-314	PJ-270	31.5	#N/A	#N/A	110	HDPE	New
PP-352	J-204	PJ-317	32.5	#N/A	#N/A	110	HDPE	New
PP-353	PJ-317	PJ-318	85	#N/A	#N/A	110	HDPE	New
PP-354	PJ-318	PJ-319	42.5	#N/A	#N/A	110	HDPE	New
PP-355	PJ-318	PJ-320	23.5	#N/A	#N/A	110	HDPE	New
PP-356	PJ-320	PJ-321	45.5	#N/A	#N/A	110	HDPE	New
PP-357	PJ-321	PJ-322	57.5	#N/A	#N/A	110	HDPE	New
PP-358	PJ-322	PJ-323	117	#N/A	#N/A	110	HDPE	New
PP-359	PJ-323	PJ-324	41.5	#N/A	#N/A	110	HDPE	New

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-360	PJ-324	PJ-317	62	#N/A	#N/A	110	HDPE	New
PP-361	PJ-320	PJ-325	54.5	#N/A	#N/A	110	HDPE	New
PP-362	PJ-324	PJ-291	52.5	#N/A	#N/A	110	HDPE	New
PP-363	PJ-323	PJ-290	39.5	#N/A	#N/A	110	HDPE	New
PP-364	PJ-289	PJ-326	30	#N/A	#N/A	110	HDPE	New
PP-365	PJ-326	PJ-327	95	#N/A	#N/A	110	HDPE	New
PP-366	PJ-327	PJ-328	53.5	#N/A	#N/A	110	HDPE	New
PP-367	PJ-328	PJ-322	43	#N/A	#N/A	125	HDPE	New
PP-368	PJ-328	PJ-329	96.5	#N/A	#N/A	110	HDPE	New
PP-369	PJ-329	PJ-330	74.5	#N/A	#N/A	110	HDPE	New
PP-370	PJ-330	PJ-331	47	#N/A	#N/A	110	HDPE	New
PP-371	PJ-331	PJ-327	49.5	#N/A	#N/A	110	HDPE	New
PP-372	PJ-331	PJ-332	73.5	#N/A	#N/A	110	HDPE	New
PP-373	PJ-332	PJ-326	46	#N/A	#N/A	110	HDPE	New
PP-374	PJ-288	PJ-332	52.5	#N/A	#N/A	110	HDPE	New
PP-375	PJ-332	PJ-287	50	#N/A	#N/A	110	HDPE	New
PP-376	PJ-287	PJ-330	62.5	#N/A	#N/A	110	HDPE	New
PP-377	PJ-330	PJ-333	92.5	#N/A	#N/A	110	HDPE	New
PP-378	PJ-333	PJ-334	46.5	#N/A	#N/A	110	HDPE	New
PP-379	PJ-334	PJ-286	44	#N/A	#N/A	110	HDPE	New
PP-380	PJ-333	PJ-335	69	#N/A	#N/A	110	HDPE	New
PP-381	PJ-335	PJ-329	108.5	#N/A	#N/A	110	HDPE	New
PP-382	PJ-329	J-20	57	#N/A	#N/A	140	HDPE	New
PP-383	J-20	PJ-336	43	#N/A	#N/A	110	HDPE	New
PP-384	J-17	PJ-328	91	#N/A	#N/A	160	HDPE	New
PP-385	J-15	PJ-337	53	#N/A	#N/A	110	HDPE	New
PP-386	J-20	PJ-338	36.5	#N/A	#N/A	125	HDPE	New
PP-387	PJ-338	PJ-339	24.5	#N/A	#N/A	110	HDPE	New
PP-388	PJ-338	PJ-340	19.5	#N/A	#N/A	125	HDPE	New
PP-389	PJ-340	PJ-341	19	#N/A	#N/A	110	HDPE	New
PP-390	PJ-340	PJ-342	83	#N/A	#N/A	125	HDPE	New
PP-391	PJ-342	PJ-335	95	#N/A	#N/A	110	HDPE	New
PP-392	PJ-342	PJ-343	24	#N/A	#N/A	110	HDPE	New
PP-393	PJ-343	PJ-344	40	#N/A	#N/A	110	HDPE	New
PP-394	PJ-343	PJ-345	45.5	#N/A	#N/A	110	HDPE	New
PP-395	PJ-345	PJ-346	97	#N/A	#N/A	110	HDPE	New
PP-396	PJ-345	J-35	45.5	#N/A	#N/A	110	HDPE	New
PP-397	J-35	PJ-347	125	#N/A	#N/A	110	HDPE	New
PP-398	PJ-347	PJ-348	27	#N/A	#N/A	110	HDPE	New
PP-399	PJ-348	PJ-349	88.5	#N/A	#N/A	110	HDPE	New
PP-400	PJ-349	PJ-350	88	#N/A	#N/A	110	HDPE	New
PP-401	PJ-349	PJ-351	76.5	#N/A	#N/A	110	HDPE	New
PP-402	PJ-351	PJ-352	52	#N/A	#N/A	110	HDPE	New
PP-403	PJ-348	PJ-351	132.5	#N/A	#N/A	110	HDPE	New
PP-404	PJ-347	PJ-353	45	#N/A	#N/A	110	HDPE	New
PP-405	PJ-353	PJ-354	111.5	#N/A	#N/A	110	HDPE	New
PP-406	PJ-354	J-45	47.5	#N/A	#N/A	110	HDPE	New
PP-407	PJ-354	PJ-355	43	#N/A	#N/A	110	HDPE	New
PP-408	PJ-355	PJ-356	111.5	#N/A	#N/A	110	HDPE	New
PP-409	PJ-356	PJ-353	43	#N/A	#N/A	110	HDPE	New
PP-410	J-34	PJ-356	97.5	#N/A	#N/A	110	HDPE	New
PP-411	PJ-356	PJ-357	83	#N/A	#N/A	110	HDPE	New
PP-412	PJ-357	PJ-358	112	#N/A	#N/A	110	HDPE	New
PP-413	PJ-358	PJ-355	82.5	#N/A	#N/A	110	HDPE	New
PP-414	J-61	J-37	74	#N/A	#N/A	110	HDPE	New
PP-415	J-38	PJ-359	101	#N/A	#N/A	110	HDPE	New
PP-416	PJ-359	PJ-357	42	#N/A	#N/A	110	HDPE	New
PP-417	PJ-359	PJ-360	113.5	#N/A	#N/A	110	HDPE	New
PP-418	PJ-360	PJ-358	42.5	#N/A	#N/A	110	HDPE	New
PP-419	J-41	PJ-360	54.5	#N/A	#N/A	110	HDPE	New

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-420	PJ-360	J-43	47.5	#N/A	#N/A	110	HDPE	New
PP-421	J-43	PJ-361	21.5	#N/A	#N/A	110	HDPE	New
PP-422	PJ-361	J-44	110.5	#N/A	#N/A	110	HDPE	New
PP-423	PJ-361	PJ-362	13	#N/A	#N/A	110	HDPE	New
PP-424	J-18	PJ-363	46	#N/A	#N/A	110	HDPE	New
PP-425	J-246	PJ-364	13.5	#N/A	#N/A	110	HDPE	New
PP-426	J-19	PJ-365	52	#N/A	#N/A	110	HDPE	New
PP-427	J-21	PJ-366	32	#N/A	#N/A	110	HDPE	New
PP-428	J-22	PJ-367	31.5	#N/A	#N/A	110	HDPE	New
PP-429	J-23	PJ-368	36.5	#N/A	#N/A	110	HDPE	New
PP-430	J-24	PJ-369	36.5	#N/A	#N/A	110	HDPE	New
PP-431	J-192	PJ-370	10.5	#N/A	#N/A	160	HDPE	New
PP-432	PJ-370	PJ-371	26	#N/A	#N/A	110	HDPE	New
PP-433	PJ-371	PJ-372	14.5	#N/A	#N/A	110	HDPE	New
PP-434	PJ-372	J-12	19	#N/A	#N/A	125	HDPE	New
PP-435	PJ-372	J-201	46.5	#N/A	#N/A	110	HDPE	New
PP-436	PJ-371	J-200	48	#N/A	#N/A	110	HDPE	New
PP-437	PJ-370	J-199	56	#N/A	#N/A	125	HDPE	New
PP-438	PJ-373	J-190	19.5	#N/A	#N/A	110	HDPE	New
PP-439	PJ-374	J-189	26	#N/A	#N/A	110	HDPE	New
PP-440	J-188	PJ-375	18.5	#N/A	#N/A	110	HDPE	New
PP-441	J-185	PJ-376	15	#N/A	#N/A	110	HDPE	New
PP-442	J-183	PJ-377	29	#N/A	#N/A	110	HDPE	New
PP-443	J-114	PJ-378	42.5	#N/A	#N/A	110	HDPE	New
PP-444	J-113	PJ-379	24.5	#N/A	#N/A	110	HDPE	New
PP-445	PJ-379	PJ-380	37	#N/A	#N/A	110	HDPE	New
PP-446	PJ-380	J-87	10	#N/A	#N/A	140	HDPE	New
PP-447	J-111	PJ-380	32	#N/A	#N/A	125	HDPE	New
PP-448	J-88	J-91	24	#N/A	#N/A	110	HDPE	New
PP-449	PJ-379	PJ-381	45.5	#N/A	#N/A	110	HDPE	New
PP-450	J-86	PJ-382	33	#N/A	#N/A	110	HDPE	New
PP-451	J-168	J-178	37	#N/A	#N/A	110	HDPE	New
PP-452	J-177	PJ-383	23.5	#N/A	#N/A	110	HDPE	New
PP-453	J-177	PJ-384	25.5	#N/A	#N/A	110	HDPE	New
PP-454	J-83	J-90	63.5	#N/A	#N/A	110	HDPE	New
PP-455	J-89	J-80	51.5	#N/A	#N/A	110	HDPE	New
PP-456	J-77	PJ-385	35	#N/A	#N/A	110	HDPE	New
PP-457	J-173	PJ-386	74	#N/A	#N/A	110	HDPE	New
PP-458	J-174	PJ-387	21	#N/A	#N/A	110	HDPE	New
PP-459	J-175	PJ-388	27	#N/A	#N/A	110	HDPE	New
PP-460	PJ-388	PJ-389	16.5	#N/A	#N/A	110	HDPE	New
PP-461	J-171	PJ-390	47	#N/A	#N/A	110	HDPE	New
PP-462	J-264	J-269	79	#N/A	#N/A	110	HDPE	New
PP-463	J-269	PJ-391	14	#N/A	#N/A	110	HDPE	New
PP-464	J-265	J-268	61.5	#N/A	#N/A	110	HDPE	New
PP-465	J-268	J-267	53	#N/A	#N/A	110	HDPE	New
PP-466	J-267	PJ-392	18.5	#N/A	#N/A	110	HDPE	New
PP-467	PJ-392	PJ-393	23	#N/A	#N/A	110	HDPE	New
PP-468	PJ-393	PJ-394	21.5	#N/A	#N/A	110	HDPE	New
PP-469	PJ-392	J-164	79.5	#N/A	#N/A	110	HDPE	New
PP-470	J-164	PJ-395	57.5	#N/A	#N/A	110	HDPE	New
PP-471	J-165	PJ-396	16	#N/A	#N/A	110	HDPE	New
PP-472	PJ-396	PJ-397	45	#N/A	#N/A	110	HDPE	New
PP-473	PJ-396	PJ-393	57	#N/A	#N/A	110	HDPE	New
PP-474	J-166	PJ-398	17	#N/A	#N/A	110	HDPE	New
PP-475	J-165	PJ-399	60.5	#N/A	#N/A	110	HDPE	New
PP-476	PJ-399	PJ-400	85.5	#N/A	#N/A	110	HDPE	New
PP-477	PJ-400	J-124	18.5	#N/A	#N/A	125	HDPE	New
PP-478	J-143	PJ-400	26.5	#N/A	#N/A	110	HDPE	New
PP-479	J-167	PJ-401	48	#N/A	#N/A	110	HDPE	New

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-480	J-125	PJ-402	99.5	#N/A	#N/A	140	HDPE	New
PP-481	PJ-402	PJ-403	39.5	#N/A	#N/A	110	HDPE	New
PP-482	PJ-402	PJ-404	46.5	#N/A	#N/A	110	HDPE	New
PP-483	PJ-404	PJ-405	23.5	#N/A	#N/A	110	HDPE	New
PP-484	PJ-404	PJ-406	119	#N/A	#N/A	110	HDPE	New
PP-485	PJ-406	PJ-407	165.5	#N/A	#N/A	110	HDPE	New
PP-486	PJ-407	PJ-408	110	#N/A	#N/A	110	HDPE	New
PP-487	PJ-408	J-134	30	#N/A	#N/A	110	HDPE	New
PP-488	J-128	PJ-406	106	#N/A	#N/A	140	HDPE	New
PP-489	PJ-406	PJ-409	58	#N/A	#N/A	160	HDPE	New
PP-490	PJ-409	PJ-410	70	#N/A	#N/A	110	HDPE	New
PP-491	PJ-410	PJ-411	67	#N/A	#N/A	110	HDPE	New
PP-492	PJ-411	PJ-407	61	#N/A	#N/A	110	HDPE	New
PP-493	PJ-412	PJ-409	115	#N/A	#N/A	110	HDPE	New
PP-494	PJ-409	PJ-413	55.5	#N/A	#N/A	160	HDPE	New
PP-495	PJ-413	PJ-414	71.5	#N/A	#N/A	110	HDPE	New
PP-496	PJ-414	PJ-415	112	#N/A	#N/A	110	HDPE	New
PP-497	PJ-415	PJ-416	23	#N/A	#N/A	110	HDPE	New
PP-498	PJ-416	PJ-417	44.5	#N/A	#N/A	110	HDPE	New
PP-499	PJ-417	PJ-414	39	#N/A	#N/A	110	HDPE	New
PP-500	PJ-413	PJ-418	45	#N/A	#N/A	110	HDPE	New
PP-501	PJ-418	PJ-417	54.5	#N/A	#N/A	110	HDPE	New
PP-502	PJ-417	PJ-419	44.5	#N/A	#N/A	110	HDPE	New
PP-503	PJ-419	PJ-410	77.5	#N/A	#N/A	110	HDPE	New
PP-504	PJ-420	PJ-419	38	#N/A	#N/A	110	HDPE	New
PP-505	PJ-419	PJ-416	85	#N/A	#N/A	110	HDPE	New
PP-506	PJ-413	PJ-421	55	#N/A	#N/A	200	HDPE	New
PP-507	PJ-421	J-3	20.5	#N/A	#N/A	180	HDPE	New
PP-508	J-5	PJ-421	39	#N/A	#N/A	110	HDPE	New
PP-509	J-1	PJ-422	55.5	#N/A	#N/A	355	HDPE	New
PP-510	PJ-422	J-4	38	#N/A	#N/A	355	HDPE	New
PP-511	PJ-422	PJ-423	104	#N/A	#N/A	110	HDPE	New
PP-512	PJ-402	J-9	112	#N/A	#N/A	160	HDPE	New
PP-513	J-10	PJ-424	38.5	#N/A	#N/A	110	HDPE	New
PP-514	J-11	PJ-425	5.5	#N/A	#N/A	160	HDPE	New
PP-515	PJ-425	J-123	52.5	#N/A	#N/A	180	HDPE	New
PP-516	PJ-426	PJ-425	45	#N/A	#N/A	110	HDPE	New
PP-517	PJ-425	J-8	146.5	#N/A	#N/A	110	HDPE	New
PP-518	J-247	J-255	82.5	#N/A	#N/A	110	HDPE	New
PP-519	J-255	J-256	124.5	#N/A	#N/A	110	HDPE	New
PP-520	J-261	J-259	90	#N/A	#N/A	110	HDPE	New
PP-521	J-259	PJ-427	66.5	#N/A	#N/A	110	HDPE	New
PP-522	PJ-427	J-257	54	#N/A	#N/A	110	HDPE	New
PP-523	J-257	PJ-428	40	#N/A	#N/A	110	HDPE	New
PP-524	PJ-428	J-155	74.5	#N/A	#N/A	110	HDPE	New
PP-525	J-155	PJ-429	45.5	#N/A	#N/A	110	HDPE	New
PP-526	PJ-429	PJ-428	75.5	#N/A	#N/A	110	HDPE	New
PP-527	J-152	J-148	60.5	#N/A	#N/A	110	HDPE	New
PP-528	J-144	J-147	57.5	#N/A	#N/A	110	HDPE	New
PP-529	J-147	J-154	59	#N/A	#N/A	110	HDPE	New
PP-530	J-154	PJ-430	19	#N/A	#N/A	110	HDPE	New
PP-531	PJ-430	PJ-429	79.5	#N/A	#N/A	110	HDPE	New
PP-532	PJ-430	J-153	30	#N/A	#N/A	110	HDPE	New
PP-533	J-153	J-138	53	#N/A	#N/A	110	HDPE	New
PP-534	J-138	J-137	39.5	#N/A	#N/A	110	HDPE	New
PP-535	J-137	PJ-431	41.5	#N/A	#N/A	110	HDPE	New
PP-536	PJ-431	J-136	34.5	#N/A	#N/A	110	HDPE	New
PP-537	J-136	J-140	78	#N/A	#N/A	110	HDPE	New
PP-538	J-145	PJ-432	36	#N/A	#N/A	110	HDPE	New
PP-539	PJ-433	J-146	30	#N/A	#N/A	110	HDPE	New

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-540	J-146	J-162	39	#N/A	#N/A	110	HDPE	New
PP-541	J-162	J-151	31	#N/A	#N/A	110	HDPE	New
PP-542	J-142	PJ-434	28	#N/A	#N/A	110	HDPE	New
PP-543	PJ-434	J-126	102.5	#N/A	#N/A	110	HDPE	New
PP-544	PJ-434	PJ-435	46	#N/A	#N/A	110	HDPE	New
PP-545	PJ-435	J-127	97.5	#N/A	#N/A	110	HDPE	New
PP-546	PJ-435	J-135	58	#N/A	#N/A	110	HDPE	New
PP-547	J-135	PJ-436	40.5	#N/A	#N/A	110	HDPE	New
PP-548	PJ-436	J-130	88	#N/A	#N/A	110	HDPE	New
PP-549	PJ-436	PJ-437	42	#N/A	#N/A	110	HDPE	New
PP-550	PJ-437	J-131	83.5	#N/A	#N/A	110	HDPE	New
PP-551	PJ-431	PJ-438	79	#N/A	#N/A	110	HDPE	New
PP-552	PJ-438	PJ-437	17	#N/A	#N/A	110	HDPE	New
PP-553	PJ-438	J-132	80	#N/A	#N/A	110	HDPE	New
PP-554	PJ-438	PJ-439	56.5	#N/A	#N/A	110	HDPE	New
PP-555	PJ-439	J-133	40.5	#N/A	#N/A	110	HDPE	New
PP-556	PJ-439	PJ-408	71.5	#N/A	#N/A	110	HDPE	New
PP-557	PJ-282	PJ-440	27	#N/A	#N/A	110	HDPE	New
PP-558	PJ-440	PJ-286	151	#N/A	#N/A	110	HDPE	New
PP-559	PJ-441	PJ-440	66.5	#N/A	#N/A	110	HDPE	New
PP-560	J-101	PJ-442	19	#N/A	#N/A	110	HDPE	New
PP-561	PJ-442	PJ-443	13	#N/A	#N/A	110	HDPE	New
PP-562	PJ-442	PJ-444	7	#N/A	#N/A	110	HDPE	New
PP-563	PJ-444	PJ-445	17	#N/A	#N/A	110	HDPE	New
PP-564	PJ-444	PJ-446	12.5	#N/A	#N/A	110	HDPE	New
PP-565	PJ-446	J-99	7	#N/A	#N/A	110	HDPE	New
PP-566	PJ-447	PJ-446	9.5	#N/A	#N/A	110	HDPE	New
PP-567	J-100	PJ-448	12.5	#N/A	#N/A	110	HDPE	New
PP-568	J-67	J-102	15	#N/A	#N/A	125	HDPE	New
PP-569	J-27	PJ-449	52	#N/A	#N/A	110	HDPE	New
PP-570	J-28	PJ-450	41.5	#N/A	#N/A	110	HDPE	New
PP-571	J-66	PJ-451	62	#N/A	#N/A	110	HDPE	New
PP-572	J-65	J-68	28.5	#N/A	#N/A	110	HDPE	New
PP-573	PJ-452	J-69	20	#N/A	#N/A	110	HDPE	New
PP-574	J-69	PJ-453	26.5	#N/A	#N/A	110	HDPE	New
PP-575	J-63	PJ-454	19.5	#N/A	#N/A	110	HDPE	New
PP-576	J-70	PJ-455	20	#N/A	#N/A	110	HDPE	New
PP-577	PJ-455	PJ-456	26.5	#N/A	#N/A	110	HDPE	New
PP-578	PJ-455	PJ-457	13.5	#N/A	#N/A	110	HDPE	New
PP-579	J-96	PJ-458	31	#N/A	#N/A	110	HDPE	New
PP-580	J-109	PJ-459	27.5	#N/A	#N/A	110	HDPE	New
PP-581	J-109	PJ-460	29.5	#N/A	#N/A	110	HDPE	New
PP-582	J-106	PJ-461	35.5	#N/A	#N/A	110	HDPE	New
PP-583	J-104	PJ-462	42.5	#N/A	#N/A	110	HDPE	New
PP-584	PJ-463	J-30	32.5	#N/A	#N/A	110	HDPE	New
PP-585	J-30	PJ-343	52.5	#N/A	#N/A	110	HDPE	New
PP-586	J-181	PJ-464	17.5	#N/A	#N/A	110	HDPE	New
PP-587	J-197	PJ-465	39.5	#N/A	#N/A	110	HDPE	New
PP-588	J-196	PJ-466	33	#N/A	#N/A	110	HDPE	New
PP-589	J-195	PJ-467	35.5	#N/A	#N/A	110	HDPE	New
PP-590	J-194	PJ-468	32	#N/A	#N/A	110	HDPE	New
PP-591	J-193	PJ-469	23	#N/A	#N/A	110	HDPE	New
PP-592	PJ-469	J-110	51	#N/A	#N/A	110	HDPE	New
PP-593	J-92	PJ-470	44	#N/A	#N/A	110	HDPE	New
PP-594	J-93	PJ-471	45	#N/A	#N/A	110	HDPE	New
PP-595	PJ-471	PJ-472	7.5	#N/A	#N/A	110	HDPE	New
PP-596	PJ-471	PJ-473	10	#N/A	#N/A	110	HDPE	New
PP-597	J-95	PJ-474	35.5	#N/A	#N/A	110	HDPE	New
PP-598	PJ-474	PJ-475	10	#N/A	#N/A	110	HDPE	New
PP-599	PJ-475	PJ-476	15	#N/A	#N/A	110	HDPE	New

BOQ for Z10								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-600	PJ-476	PJ-477	13	#N/A	#N/A	110	HDPE	New
PP-601	PJ-477	J-75	8.5	#N/A	#N/A	110	HDPE	New
PP-602	PJ-474	PJ-478	16	#N/A	#N/A	110	HDPE	New
PP-603	PJ-475	PJ-479	16	#N/A	#N/A	110	HDPE	New
PP-604	PJ-479	PJ-480	16.5	#N/A	#N/A	110	HDPE	New
PP-605	J-59	J-39	83.5	#N/A	#N/A	110	HDPE	New
PP-606	J-52	PJ-481	8	#N/A	#N/A	110	HDPE	New
PP-607	PJ-481	PJ-482	20.5	#N/A	#N/A	110	HDPE	New
PP-608	PJ-481	J-47	44.5	#N/A	#N/A	110	HDPE	New
PP-609	J-47	PJ-483	39.5	#N/A	#N/A	110	HDPE	New
PP-610	PJ-484	J-73	25	#N/A	#N/A	110	HDPE	New
PP-611	J-72	PJ-485	31	#N/A	#N/A	110	HDPE	New
PP-612	PJ-485	PJ-486	9.5	#N/A	#N/A	110	HDPE	New
PP-613	PJ-485	PJ-487	25.5	#N/A	#N/A	110	HDPE	New
PP-614	J-74	PJ-488	109	#N/A	#N/A	110	HDPE	New
PP-615	PJ-488	PJ-489	62	#N/A	#N/A	110	HDPE	New
PP-616	PJ-489	PJ-481	38	#N/A	#N/A	110	HDPE	New
PP-617	PJ-488	PJ-490	30.5	#N/A	#N/A	110	HDPE	New
PP-618	PJ-490	PJ-491	14	#N/A	#N/A	110	HDPE	New
PP-619	PJ-490	PJ-492	76	#N/A	#N/A	110	HDPE	New
PP-620	PJ-492	J-51	51.5	#N/A	#N/A	110	HDPE	New
PP-621	J-51	PJ-493	43	#N/A	#N/A	110	HDPE	New
PP-622	PJ-493	PJ-494	53.5	#N/A	#N/A	110	HDPE	New
PP-623	PJ-494	J-50	36.5	#N/A	#N/A	110	HDPE	New
PP-624	J-48	PJ-489	41.5	#N/A	#N/A	110	HDPE	New
PP-625	J-49	PJ-495	33	#N/A	#N/A	110	HDPE	New
PP-626	PJ-495	PJ-496	38	#N/A	#N/A	110	HDPE	New
PP-627	PJ-496	PJ-494	12	#N/A	#N/A	110	HDPE	New
PP-628	PJ-493	PJ-497	58.5	#N/A	#N/A	110	HDPE	New
PP-629	PJ-497	PJ-498	73	#N/A	#N/A	110	HDPE	New
PP-630	PJ-498	PJ-496	47	#N/A	#N/A	110	HDPE	New
PP-631	PJ-498	PJ-499	115	#N/A	#N/A	110	HDPE	New
PP-632	PJ-499	J-47	55.5	#N/A	#N/A	110	HDPE	New
PP-633	PJ-499	J-40	53.5	#N/A	#N/A	110	HDPE	New
PP-634	**T-1**	**PJ-422**	**33.5**	#N/A	#N/A	**400**	HDPE	New
PP-635	J-250	PJ-427	133.5	#N/A	#N/A	160	HDPE	New
			31680.50					

Zone -11

Distribution Network Design Output: Zone 11

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	11.5	1.796	21.745	115.6275	T-1	J-1	235	-9,115.38	7,288.01	450	0.73	0.95	115.6275	HDPE	145	0.01
P-10	56.5	20.597	20.296	11.87146	J-10	J-11	235.89	-9,346.14	7,450.16	200	0.38	0.73	11.87146	HDPE	145	0.04
P-100	14	21.886	21.957	4.40352	J-99	J-100	233.85	-10,145.27	7,067.45	140	0.29	0.66	4.40352	HDPE	145	0.01
P-101	72.5	21.957	22.246	2.40335	J-100	J-101	233.77	-10,159.30	7,069.82	110	0.25	0.7	2.40335	uPVC	145	0.05
P-102	35	22.246	22.187	2.07059	J-101	J-102	233.43	-10,230.44	7,083.45	110	0.22	0.53	2.07059	uPVC	145	0.02
P-103	15.5	22.187	22.258	4.14721	J-102	J-103	233.47	-10,235.58	7,118.03	140	0.27	0.59	4.14721	HDPE	145	0.01
P-104	66.5	22.258	22.551	2.11029	J-103	J-104	233.39	-10,251.00	7,116.26	110	0.22	0.55	2.11029	uPVC	145	0.04
P-105	132	22.551	22.403	1.49593	J-104	J-105	233.06	-10,317.39	7,109.54	110	0.16	0.29	1.49593	uPVC	145	0.04
P-106	61	22.403	22.265	-2.38505	J-105	J-106	233.17	-10,332.22	7,240.75	110	0.25	0.69	2.38505	uPVC	145	0.04
P-107	12.5	22.265	22.289	-1.64957	J-106	J-107	233.35	-10,271.39	7,247.23	110	0.17	0.35	1.64957	uPVC	145	0
P-108	59.5	22.289	22.177	-2.28415	J-107	J-108	233.33	-10,272.01	7,259.89	110	0.24	0.64	2.28415	uPVC	145	0.04
P-109	22	22.177	21.994	-1.48562	J-108	J-109	233.48	-10,212.73	7,260.51	110	0.16	0.29	1.48562	uPVC	145	0.01
P-11	71	20.419	20.337	-7.60704	J-12	J-13	236.03	-9,402.71	7,442.75	180	0.3	0.54	7.60704	HDPE	145	0.04
P-110	36	21.994	21.702	-1.99952	J-109	J-110	233.67	-10,190.50	7,260.82	110	0.21	0.5	1.99952	uPVC	145	0.02
P-111	52.5	21.702	21.676	-2.27349	J-110	J-111	233.98	-10,154.37	7,260.82	110	0.24	0.63	2.27349	uPVC	145	0.03
P-112	37	21.676	21.365	-1.32005	J-111	J-112	234.04	-10,154.06	7,208.33	110	0.14	0.23	1.32005	uPVC	145	0.01
P-113	58.5	21.365	21.125	0.18113	J-112	J-113	234.36	-10,119.79	7,195.98	110	0.02	0.01	0.18113	uPVC	145	0
P-114	35.5	21.365	20.935	0.10996	J-112	J-114	234.36	-10,119.79	7,195.98	110	0.01	0	0.10996	uPVC	145	0
P-115	48.5	21.676	21.488	-1.38058	J-111	J-115	234.04	-10,154.06	7,208.33	110	0.15	0.25	1.38058	uPVC	145	0.01
P-116	24.5	21.488	21.245	-4.39273	J-115	J-116	234.24	-10,151.59	7,159.85	140	0.29	0.66	4.39273	HDPE	145	0.02
P-117	35.5	21.245	21.365	2.12648	J-116	J-112	234.5	-10,127.20	7,161.08	110	0.22	0.56	2.12648	uPVC	145	0.02
P-118	132.5	22.265	22.258	-1.37305	J-106	J-103	233.35	-10,271.39	7,247.23	110	0.14	0.25	1.37305	uPVC	145	0.03
P-119	37.5	22.187	22.042	-2.34904	J-102	J-117	233.47	-10,235.58	7,118.03	110	0.25	0.67	2.34904	uPVC	145	0.03
P-12	20	20.337	20.467	1.22544	J-13	J-14	236.15	-9,350.09	7,412.61	200	0.04	0.01	1.22544	uPVC	145	0
P-120	33.5	22.042	21.995	-0.64751	J-117	J-118	233.64	-10,198.22	7,120.33	110	0.07	0.06	0.64751	uPVC	145	0
P-121	107.5	21.995	22.177	1.38348	J-118	J-108	233.69	-10,202.85	7,153.37	110	0.15	0.25	1.38348	uPVC	145	0.03
P-122	51.5	21.995	21.488	-2.62678	J-118	J-115	233.69	-10,202.85	7,153.37	110	0.28	0.82	2.62678	uPVC	145	0.04
P-123	78.5	22.042	21.698	-2.16426	J-117	J-119	233.64	-10,198.22	7,120.33	110	0.23	0.57	2.16426	uPVC	145	0.05
P-124	50.5	21.698	21.245	-1.53977	J-119	J-116	234.03	-10,135.84	7,111.37	110	0.16	0.31	1.53977	uPVC	145	0.02
P-125	48.5	21.245	20.848	-8.5511	J-116	J-94	234.5	-10,127.20	7,161.08	180	0.34	0.67	8.5511	HDPE	145	0.03

P-126	45	21.698	21.886	-1.16304	J-119	J-99	234.03	-10,135.84	7,111.37	110	0.12	0.18	1.16304	uPVC	145	0.01
P-127	95	22.403	22.649	2.98968	J-105	J-120	233.17	-10,332.22	7,240.75	125	0.24	0.56	2.98968	HDPE	145	0.05
P-128	74.5	22.649	22.522	1.3231	J-120	J-121	232.87	-10,388.12	7,182.19	110	0.14	0.23	1.3231	uPVC	145	0.02
P-129	176.5	22.522	22.704	0.54628	J-121	J-122	232.98	-10,372.40	7,109.53	110	0.06	0.04	0.54628	uPVC	145	0.01
P-13	18	20.467	20.597	0.9065	J-14	J-10	236.02	-9,347.37	7,432.37	200	0.03	0.01	0.9065	uPVC	145	0
P-130	184.5	22.649	22.84	0.57103	J-120	J-123	232.87	-10,388.12	7,182.19	110	0.06	0.05	0.57103	uPVC	145	0.01
P-131	29	21.391	21.354	-2.33418	J-82	J-124	234.57	-9,856.21	7,031.82	160	0.12	0.11	2.33418	uPVC	145	0
P-132	60	21.354	21.384	0.22329	J-124	J-125	234.61	-9,857.10	7,061.02	110	0.02	0.01	0.22329	HDPE	145	0
P-133	35.5	21.384	21.324	-0.07233	J-125	J-126	234.58	-9,915.79	7,048.76	110	0.01	0	0.07233	HDPE	145	0
P-134	54.5	21.324	21.315	-0.35094	J-126	J-127	234.64	-9,917.96	7,084.33	110	0.04	0.02	0.35094	HDPE	145	0
P-135	31	21.315	21.354	0.93091	J-127	J-124	234.65	-9,864.01	7,091.05	160	0.05	0.02	0.93091	uPVC	145	0
P-136	18.5	21.354	21.344	-2.05526	J-124	J-128	234.61	-9,857.10	7,061.02	110	0.22	0.52	2.05526	HDPE	145	0.01
P-137	28.5	21.344	21.346	-3.54529	J-128	J-129	234.63	-9,838.92	7,063.39	125	0.29	0.77	3.54529	HDPE	145	0.02
P-138	10.5	21.315	21.296	-1.57903	J-127	J-130	234.65	-9,864.01	7,091.05	160	0.08	0.05	1.57903	uPVC	145	0
P-139	37	21.296	21.177	-1.23326	J-130	J-131	234.67	-9,866.39	7,101.33	160	0.06	0.03	1.23326	uPVC	145	0
P-14	32.5	20.427	20.467	-0.10068	J-15	J-14	236.06	-9,314.77	7,429.66	110	0.01	0	0.10068	HDPE	145	0
P-140	49	21.177	20.195	5.36693	J-131	J-132	234.79	-9,868.56	7,138.28	180	0.21	0.28	5.36693	HDPE	145	0.01
P-141	79.5	21.177	21.136	-7.2456	J-131	J-133	234.79	-9,868.56	7,138.28	180	0.28	0.49	7.2456	HDPE	145	0.04
P-142	17	21.136	21.242	-5.38521	J-133	J-134	234.87	-9,789.91	7,148.16	140	0.35	0.96	5.38521	HDPE	145	0.02
P-143	38.5	21.242	21.386	-1.70844	J-134	J-135	234.78	-9,788.53	7,131.37	110	0.18	0.37	1.70844	uPVC	145	0.01
P-144	18	21.386	21.389	5.29029	J-135	J-136	234.65	-9,785.17	7,092.83	140	0.34	0.93	5.29029	HDPE	145	0.02
P-145	50	21.389	21.449	1.27288	J-136	J-81	234.63	-9,784.18	7,074.65	110	0.13	0.22	1.27288	uPVC	145	0.01
P-146	36	21.386	21.414	-7.28507	J-135	J-137	234.65	-9,785.17	7,092.83	180	0.29	0.49	7.28507	HDPE	145	0.02
P-147	30.5	21.414	21.395	-3.18714	J-137	J-138	234.64	-9,749.20	7,095.40	140	0.21	0.36	3.18714	HDPE	145	0.01
P-148	19	21.395	21.389	-1.31544	J-138	J-139	234.67	-9,737.15	7,123.26	110	0.14	0.23	1.31544	HDPE	145	0
P-149	105	21.389	21.132	-5.12384	J-139	J-140	234.68	-9,727.66	7,137.49	140	0.33	0.88	5.12384	HDPE	145	0.09
P-15	6.5	20.337	20.37	-9.1343	J-13	J-16	236.15	-9,350.09	7,412.61	200	0.29	0.45	9.1343	uPVC	145	0
P-150	28.5	21.132	21.22	-5.53706	J-140	J-141	235.03	-9,681.62	7,229.38	180	0.22	0.3	5.53706	HDPE	145	0.01
P-151	35.5	21.22	21.291	-4.09558	J-141	J-69	234.95	-9,654.15	7,221.28	140	0.27	0.58	4.09558	HDPE	145	0.02
P-152	34	21.302	21.421	0.10532	J-70	J-142	234.88	-9,625.56	7,195.92	110	0.01	0	0.10532	uPVC	145	0
P-153	95.5	21.22	20.536	-1.93515	J-141	J-143	234.95	-9,654.15	7,221.28	110	0.2	0.47	1.93515	HDPE	145	0.04
P-154	40.5	20.536	21.078	-12.56743	J-143	J-63	235.68	-9,626.68	7,312.77	200	0.4	0.81	12.56743	HDPE	145	0.03
P-155	31	20.536	20.059	10.1154	J-143	J-144	235.68	-9,626.68	7,312.77	180	0.4	0.91	10.1154	HDPE	145	0.03
P-156	32	20.059	20.56	9.92034	J-144	J-145	236.13	-9,657.71	7,311.98	180	0.39	0.88	9.92034	HDPE	145	0.03
P-157	86.5	21.136	20.959	-2.42679	J-133	J-146	234.87	-9,789.91	7,148.16	125	0.2	0.38	2.42679	HDPE	145	0.03
P-158	42.5	20.959	20.854	-0.8184	J-146	J-147	235.08	-9,777.01	7,233.51	110	0.09	0.09	0.8184	uPVC	145	0

P-159	25.5	21.356	21.385	4.95633	J-83	J-148	234.57	-9,899.05	7,035.46	160	0.25	0.43	4.95633	uPVC	145	0.01
P-16	36.5	20.37	20.747	-9.45633	J-16	J-17	236.12	-9,350.09	7,406.19	200	0.3	0.48	9.45633	uPVC	145	0.02
P-160	35.5	21.385	21.433	1.76272	J-148	J-149	234.53	-9,893.71	7,010.32	160	0.09	0.06	1.76272	uPVC	145	0
P-161	29.5	21.433	21.472	0.79441	J-149	J-150	234.48	-9,889.02	6,975.25	160	0.04	0.01	0.79441	uPVC	145	0
P-162	21.5	21.431	21.38	0.47842	J-79	J-151	234.65	-9,678.20	7,048.11	110	0.05	0.03	0.47842	HDPE	145	0
P-163	48	21.38	21.37	0.14864	J-151	J-152	234.7	-9,657.01	7,047.30	110	0.02	0	0.14864	HDPE	145	0
P-164	10	20.57	20.611	18.08324	J-46	J-153	235.75	-9,489.70	7,228.62	225	0.45	0.9	18.08324	HDPE	145	0.01
P-165	21	20.611	20.743	8.36669	J-153	J-154	235.7	-9,485.41	7,219.61	200	0.27	0.38	8.36669	HDPE	145	0.01
P-166	19.5	20.743	20.884	5.10614	J-154	J-155	235.56	-9,478.46	7,199.93	160	0.25	0.45	5.10614	HDPE	145	0.01
P-167	11.5	20.884	20.878	2.76031	J-155	J-156	235.41	-9,473.06	7,181.40	125	0.22	0.48	2.76031	HDPE	145	0.01
P-168	137	20.878	21.127	-0.01023	J-156	J-157	235.41	-9,468.81	7,170.60	110	0	0	0.01023	HDPE	145	0
P-169	45	21.047	20.797	0.13936	J-67	J-158	235.17	-9,602.79	7,252.67	110	0.01	0	0.13936	uPVC	145	0
P-17	45	20.747	20.923	0.70925	J-17	J-18	235.76	-9,342.43	7,371.36	110	0.07	0.07	0.70925	HDPE	145	0
P-170	56	21.745	21.723	26.67855	J-1	J-159	235	-9,125.80	7,282.93	250	0.54	1.1	26.67855	HDPE	145	0.06
P-171	85	21.723	21.689	12.07441	J-159	J-160	234.96	-9,099.64	7,233.59	200	0.38	0.75	12.07441	HDPE	145	0.06
P-172	60.5	21.486	21.416	1.09958	J-161	J-162	235.1	-9,022.54	7,313.65	200	0.04	0.01	1.09958	uPVC	145	0
P-173	55	21.416	21.448	-2.70102	J-162	J-163	235.17	-9,032.11	7,373.24	200	0.09	0.05	2.70102	uPVC	145	0
P-174	58	21.448	21.342	-3.22111	J-163	J-164	235.14	-9,078.43	7,400.41	200	0.1	0.07	3.22111	uPVC	145	0
P-175	13	21.342	21.317	8.47484	J-164	J-165	235.25	-9,120.42	7,440.24	200	0.27	0.39	8.47484	uPVC	145	0.01
P-176	57	21.317	21.094	6.48836	J-165	J-166	235.27	-9,129.68	7,449.50	200	0.21	0.24	6.48836	uPVC	145	0.01
P-177	38	21.094	20.943	1.81744	J-166	J-167	235.48	-9,180.32	7,475.75	200	0.06	0.02	1.81744	uPVC	145	0
P-178	95	20.943	20.625	9.82235	J-167	J-168	235.63	-9,217.06	7,485.01	200	0.31	0.51	9.82235	uPVC	145	0.05
P-179	40.5	20.625	20.336	0.12543	J-168	J-169	235.9	-9,309.69	7,505.70	110	0.01	0	0.12543	uPVC	145	0
P-18	36.5	20.747	20.625	-25.70247	J-17	J-19	235.76	-9,342.43	7,371.36	250	0.52	1.03	25.70247	HDPE	145	0.04
P-180	59.5	20.943	20.813	0.18423	J-167	J-170	235.63	-9,217.06	7,485.01	110	0.02	0.01	0.18423	HDPE	145	0
P-181	56	21.094	21.314	4.20356	J-166	J-171	235.48	-9,180.32	7,475.75	180	0.17	0.18	4.20356	HDPE	145	0.01
P-182	26.5	21.314	21.329	3.94816	J-171	J-172	235.25	-9,162.72	7,512.18	140	0.26	0.54	3.94816	HDPE	145	0.01
P-183	73	21.329	20.61	0.226	J-172	J-173	235.22	-9,164.57	7,538.74	110	0.02	0.01	0.226	HDPE	145	0
P-184	27	21.329	21.368	3.3306	J-172	J-174	235.22	-9,164.57	7,538.74	140	0.22	0.39	3.3306	HDPE	145	0.01
P-185	75.5	21.368	21.272	2.7347	J-174	J-175	235.17	-9,137.40	7,538.74	110	0.29	0.89	2.7347	HDPE	145	0.07
P-186	70	21.015	20.412	0.7125	J-176	J-177	235.4	-9,155.93	7,575.17	110	0.07	0.07	0.7125	HDPE	145	0.01
P-187	29.5	20.412	20.141	1.70155	J-177	J-178	236	-9,226.02	7,574.55	110	0.18	0.37	1.70155	HDPE	145	0.01
P-188	157.5	20.141	21.362	-0.75644	J-178	J-179	236.26	-9,225.71	7,603.89	110	0.08	0.08	0.75644	HDPE	145	0.01
P-189	45	19.999	19.772	1.7538	J-180	J-181	236.41	-9,302.13	7,633.90	110	0.18	0.39	1.7538	HDPE	145	0.02
P-19	29	20.625	20.785	-26.17459	J-19	J-20	235.92	-9,307.36	7,361.73	250	0.53	1.07	26.17459	HDPE	145	0.03
P-190	31	19.772	19.899	2.09499	J-181	J-182	236.62	-9,257.36	7,635.14	160	0.1	0.09	2.09499	uPVC	145	0

P-191	31.5	19.899	20.141	-1.78175	J-182	J-178	236.49	-9,226.48	7,635.45	110	0.19	0.4	1.78175	HDPE	145	0.01
P-192	31	19.899	20.205	2.39947	J-182	J-183	236.49	-9,226.48	7,635.45	160	0.12	0.11	2.39947	uPVC	145	0
P-193	29.5	20.205	20.553	1.2809	J-183	J-184	236.18	-9,195.61	7,637.61	160	0.06	0.03	1.2809	uPVC	145	0
P-194	40.5	20.553	20.962	0.12414	J-184	J-185	235.83	-9,165.96	7,637.61	160	0.01	0	0.12414	uPVC	145	0
P-195	46.5	20.962	21.403	-1.08169	J-185	J-186	235.42	-9,125.52	7,638.84	160	0.05	0.03	1.08169	uPVC	145	0
P-196	49.5	19.772	19.605	1.03801	J-181	J-187	236.62	-9,257.36	7,635.14	110	0.11	0.15	1.03801	HDPE	145	0.01
P-197	30.5	19.605	19.832	0.79034	J-187	J-188	236.78	-9,256.43	7,684.85	110	0.08	0.09	0.79034	HDPE	145	0
P-198	50	19.832	19.899	-1.03311	J-188	J-182	236.55	-9,226.17	7,685.47	110	0.11	0.15	1.03311	HDPE	145	0.01
P-199	39.5	21.386	20.928	-0.31794	J-189	J-190	234.99	-9,086.61	7,698.13	110	0.03	0.02	0.31794	HDPE	145	0
P-2	78	21.745	21.567	54.29679	J-1	J-2	235	-9,125.80	7,282.93	355	0.55	0.75	54.29679	HDPE	145	0.06
P-20	71.5	20.785	21.39	-18.32799	J-20	J-21	235.79	-9,279.20	7,354.56	225	0.46	0.92	18.32799	HDPE	145	0.07
P-200	40.5	20.928	20.289	0.00576	J-190	J-191	235.45	-9,126.13	7,697.82	160	0	0	0.00576	uPVC	145	0
P-201	12	20.289	20.299	0.42118	J-191	J-192	236.09	-9,166.58	7,696.27	110	0.04	0.03	0.42118	HDPE	145	0
P-202	27	20.299	20.081	-0.71626	J-192	J-193	236.08	-9,178.31	7,695.35	110	0.08	0.07	0.71626	HDPE	145	0
P-203	31.5	20.081	19.832	-0.26321	J-193	J-188	236.3	-9,194.68	7,685.78	110	0.03	0.01	0.26321	HDPE	145	0
P-204	26.5	19.832	20.037	1.13155	J-188	J-194	236.55	-9,226.17	7,685.47	110	0.12	0.17	1.13155	HDPE	145	0
P-205	47	20.037	20.127	0.05254	J-194	J-195	236.34	-9,226.79	7,711.71	110	0.01	0	0.05254	HDPE	145	0
P-206	17.5	20.127	20.299	-0.96249	J-195	J-192	236.25	-9,179.86	7,712.64	110	0.1	0.13	0.96249	HDPE	145	0
P-207	38.5	20.037	19.836	0.44752	J-194	J-196	236.34	-9,226.79	7,711.71	110	0.05	0.03	0.44752	HDPE	145	0
P-208	48	20.081	20.205	-0.78272	J-193	J-183	236.3	-9,194.68	7,685.78	110	0.08	0.09	0.78272	HDPE	145	0
P-209	58.5	20.289	20.553	-0.75901	J-191	J-184	236.09	-9,166.58	7,696.27	110	0.08	0.08	0.75901	HDPE	145	0
P-21	78.5	21.39	21.747	-33.78241	J-21	J-22	235.25	-9,219.92	7,314.79	280	0.55	0.98	33.78241	HDPE	145	0.08
P-210	59	20.928	20.962	-0.75393	J-190	J-185	235.45	-9,126.13	7,697.82	110	0.08	0.08	0.75393	HDPE	145	0
P-22	9	20.747	20.803	15.14377	J-17	J-23	235.76	-9,342.43	7,371.36	250	0.31	0.39	15.14377	HDPE	145	0
P-23	41.5	20.803	21.002	0.28604	J-23	J-24	235.7	-9,338.23	7,363.21	110	0.03	0.01	0.28604	HDPE	145	0
P-24	11.5	20.803	20.859	14.66577	J-23	J-25	235.7	-9,338.23	7,363.21	250	0.3	0.37	14.66577	HDPE	145	0
P-25	18	20.859	20.963	7.7258	J-25	J-26	235.64	-9,333.05	7,353.08	200	0.25	0.33	7.7258	uPVC	145	0.01
P-26	19	20.963	21.086	10.99212	J-26	J-27	235.53	-9,325.39	7,336.78	225	0.28	0.36	10.99212	HDPE	145	0.01
P-27	34.5	21.086	21.215	-6.97142	J-27	J-28	235.4	-9,316.99	7,319.49	200	0.22	0.27	6.97142	uPVC	145	0.01
P-28	13	21.215	21.306	-3.24239	J-28	J-29	235.28	-9,311.31	7,285.40	200	0.1	0.07	3.24239	uPVC	145	0
P-29	15	21.306	21.378	-5.2294	J-29	J-30	235.19	-9,309.09	7,272.55	200	0.17	0.16	5.2294	uPVC	145	0
P-3	19	21.567	21.502	41.22957	J-2	J-3	235.12	-9,165.08	7,350.36	315	0.53	0.8	41.22957	HDPE	145	0.02
P-30	60	21.378	21.265	-18.56989	J-30	J-31	235.12	-9,306.12	7,257.98	225	0.47	0.94	18.56989	HDPE	145	0.06
P-31	35.5	21.265	21.131	8.56499	J-31	J-32	235.29	-9,253.76	7,236.24	200	0.27	0.4	8.56499	HDPE	145	0.01
P-32	16.5	21.131	21.035	8.2708	J-32	J-33	235.41	-9,265.12	7,270.08	200	0.26	0.37	8.2708	HDPE	145	0.01
P-33	34	21.035	20.87	3.98455	J-33	J-34	235.5	-9,270.31	7,285.89	180	0.16	0.16	3.98455	HDPE	145	0.01

Distribution Network Design Output: Zone 11

P-34	18	21.265	21.256	-27.48621	J-31	J-35	235.29	-9,253.76	7,236.24	250	0.56	1.17	27.48621	HDPE	145	0.02
P-35	19	21.256	21.222	-14.29346	J-35	J-36	235.32	-9,236.22	7,231.80	250	0.29	0.35	14.29346	HDPE	145	0.01
P-36	33.5	21.222	21.244	-14.45603	J-36	J-37	235.36	-9,235.48	7,250.57	250	0.29	0.35	14.45603	HDPE	145	0.01
P-37	9	21.244	21.254	0.02796	J-37	J-38	235.35	-9,233.50	7,283.92	110	0	0	0.02796	HDPE	145	0
P-38	40.5	21.256	21.478	-13.43267	J-35	J-39	235.32	-9,236.22	7,231.80	250	0.27	0.31	13.43267	HDPE	145	0.01
P-39	38	21.086	21.116	17.68029	J-27	J-40	235.4	-9,316.99	7,319.49	250	0.36	0.52	17.68029	HDPE	145	0.02
P-4	51	21.502	20.773	40.83636	J-3	J-4	235.17	-9,176.19	7,365.93	315	0.52	0.79	40.83636	HDPE	145	0.04
P-40	22.5	21.116	21.193	18.84859	J-40	J-41	235.35	-9,354.46	7,312.61	250	0.38	0.58	18.84859	HDPE	145	0.01
P-41	30.5	21.193	20.88	16.35036	J-41	J-42	235.26	-9,376.69	7,308.90	250	0.33	0.45	16.35036	HDPE	145	0.01
P-42	20.5	20.88	21.021	16.19243	J-42	J-43	235.56	-9,406.64	7,304.27	250	0.33	0.44	16.19243	HDPE	145	0.01
P-43	59.5	21.021	21.426	8.61924	J-43	J-44	235.41	-9,402.01	7,284.51	200	0.27	0.4	8.61924	HDPE	145	0.02
P-44	28	21.426	21.117	20.98022	J-44	J-45	234.98	-9,389.35	7,226.46	250	0.43	0.71	20.98022	HDPE	145	0.02
P-45	72.5	21.117	20.57	24.39277	J-45	J-46	235.27	-9,417.45	7,227.08	250	0.5	0.94	24.39277	HDPE	145	0.07
P-46	55	20.57	20.103	5.88393	J-46	J-47	235.75	-9,489.70	7,228.62	180	0.23	0.33	5.88393	HDPE	145	0.02
P-47	57.5	20.103	20.401	-13.34905	J-47	J-48	236.2	-9,499.58	7,280.19	225	0.34	0.51	13.34905	HDPE	145	0.03
P-48	18	20.401	20.103	-19.04319	J-48	J-49	235.93	-9,511.63	7,332.99	250	0.39	0.59	19.04319	HDPE	145	0.01
P-49	21	20.103	20.282	-24.37038	J-49	J-50	236.24	-9,502.05	7,348.12	250	0.5	0.93	24.37038	HDPE	145	0.02
P-5	65	20.773	20.701	22.47945	J-4	J-5	235.86	-9,206.82	7,406.68	250	0.46	0.8	22.47945	HDPE	145	0.05
P-50	25.5	20.282	20.372	-22.04208	J-50	J-51	236.08	-9,489.39	7,365.10	250	0.45	0.78	22.04208	HDPE	145	0.02
P-51	19	20.372	20.298	-23.22315	J-51	J-52	236.01	-9,476.73	7,387.33	250	0.47	0.85	23.22315	HDPE	145	0.02
P-52	70.5	20.298	20.234	-17.5708	J-52	J-53	236.1	-9,467.16	7,404.00	250	0.36	0.51	17.5708	HDPE	145	0.04
P-53	6.5	20.234	20.208	-10.53027	J-53	J-54	236.2	-9,417.14	7,452.48	200	0.34	0.59	10.53027	HDPE	145	0
P-54	9.5	20.208	20.067	1.04545	J-54	J-55	236.23	-9,413.44	7,458.04	110	0.11	0.15	1.04545	HDPE	145	0
P-55	73.5	20.372	20.471	0.22755	J-51	J-56	236.01	-9,476.73	7,387.33	110	0.02	0.01	0.22755	HDPE	145	0
P-56	52.5	20.372	19.722	0.28026	J-51	J-57	236.01	-9,476.73	7,387.33	110	0.03	0.01	0.28026	HDPE	145	0
P-57	114	20.298	20.993	-6.28218	J-52	J-58	236.1	-9,467.16	7,404.00	160	0.31	0.67	6.28218	HDPE	145	0.08
P-58	23	19.9	20.544	1.14317	J-59	J-60	236.38	-9,587.04	7,402.73	110	0.12	0.18	1.14317	HDPE	145	0
P-59	40	20.544	20.881	0.7283	J-60	J-61	235.73	-9,587.09	7,379.62	110	0.08	0.08	0.7283	HDPE	145	0
P-6	89.5	20.701	20.623	21.92069	J-5	J-6	235.88	-9,258.45	7,446.45	250	0.45	0.77	21.92069	HDPE	145	0.07
P-60	20.5	20.881	21.051	5.21512	J-61	J-62	235.39	-9,587.09	7,339.56	160	0.26	0.47	5.21512	HDPE	145	0.01
P-61	14	21.051	21.078	10.09521	J-62	J-63	235.21	-9,586.67	7,319.07	180	0.4	0.9	10.09521	HDPE	145	0.01
P-62	4.5	21.078	21.079	-2.6549	J-63	J-64	235.17	-9,586.98	7,305.32	140	0.17	0.26	2.6549	HDPE	145	0
P-63	49	21.079	20.678	-14.15589	J-64	J-65	235.17	-9,586.98	7,300.73	225	0.36	0.57	14.15589	HDPE	145	0.03
P-64	41	20.678	20.103	-18.75788	J-65	J-47	235.6	-9,539.40	7,289.35	250	0.38	0.57	18.75788	HDPE	145	0.02
P-65	18	21.079	21.067	11.27962	J-64	J-66	235.17	-9,586.98	7,300.73	200	0.36	0.66	11.27962	HDPE	145	0.01
P-66	32.5	21.067	21.047	15.02269	J-66	J-67	235.17	-9,592.36	7,283.50	225	0.38	0.64	15.02269	HDPE	145	0.02

P-67	22	21.047	21.123	14.57532	J-67	J-68	235.17	-9,602.79	7,252.67	225	0.37	0.6	14.57532	HDPE	145	0.01
P-68	21.5	21.123	21.291	14.13404	J-68	J-69	235.08	-9,611.80	7,232.76	225	0.36	0.57	14.13404	HDPE	145	0.01
P-69	18	21.291	21.302	9.68238	J-69	J-70	234.9	-9,620.50	7,212.99	200	0.31	0.5	9.68238	HDPE	145	0.01
P-7	34.5	20.616	20.622	11.71414	J-7	J-8	235.89	-9,340.89	7,492.83	225	0.29	0.4	11.71414	HDPE	145	0.01
P-70	22	21.302	21.298	14.54188	J-70	J-71	234.88	-9,625.56	7,195.92	225	0.37	0.6	14.54188	HDPE	145	0.01
P-71	38	21.298	21.063	-8.31493	J-71	J-72	234.87	-9,631.41	7,174.74	180	0.33	0.63	8.31493	HDPE	145	0.02
P-72	32	21.063	20.805	-8.72361	J-72	J-73	235.13	-9,595.20	7,163.20	180	0.34	0.69	8.72361	HDPE	145	0.02
P-73	29.5	21.298	21.356	6.69267	J-71	J-74	234.87	-9,631.41	7,174.74	180	0.26	0.42	6.69267	HDPE	145	0.01
P-74	18	21.356	21.406	0.05581	J-74	J-75	234.8	-9,659.55	7,171.89	110	0.01	0	0.05581	HDPE	145	0
P-75	61.5	21.298	21.386	15.69678	J-71	J-76	234.87	-9,631.41	7,174.74	225	0.39	0.69	15.69678	HDPE	145	0.04
P-76	31	21.386	21.426	15.06065	J-76	J-77	234.74	-9,638.99	7,113.87	225	0.38	0.64	15.06065	HDPE	145	0.02
P-77	21	21.426	21.405	13.44496	J-77	J-78	234.68	-9,647.85	7,084.15	225	0.34	0.52	13.44496	HDPE	145	0.01
P-78	27.5	21.405	21.431	13.29477	J-78	J-79	234.69	-9,656.70	7,065.34	225	0.33	0.51	13.29477	HDPE	145	0.01
P-79	57	21.431	21.475	12.48824	J-79	J-80	234.65	-9,678.20	7,048.11	200	0.4	0.8	12.48824	HDPE	145	0.05
P-8	58	20.622	20.532	0.17959	J-8	J-9	235.87	-9,343.92	7,458.56	110	0.02	0.01	0.17959	HDPE	145	0
P-80	50	21.475	21.449	9.99704	J-80	J-81	234.56	-9,728.47	7,021.23	200	0.32	0.53	9.99704	uPVC	145	0.03
P-81	78.5	21.449	21.391	10.71745	J-81	J-82	234.56	-9,778.11	7,024.87	200	0.34	0.6	10.71745	uPVC	145	0.05
P-82	43	21.391	21.356	12.58581	J-82	J-83	234.57	-9,856.21	7,031.82	200	0.4	0.81	12.58581	HDPE	145	0.04
P-83	79	21.356	21.258	7.17294	J-83	J-84	234.57	-9,899.05	7,035.46	180	0.28	0.48	7.17294	HDPE	145	0.04
P-84	29.5	21.258	21.203	7.44952	J-84	J-85	234.63	-9,970.98	7,062.02	180	0.29	0.52	7.44952	HDPE	145	0.02
P-85	22	21.203	21.183	7.07322	J-85	J-86	234.67	-9,977.90	7,090.76	180	0.28	0.47	7.07322	HDPE	145	0.01
P-86	11.5	21.183	21.146	8.18341	J-86	J-87	234.68	-9,982.92	7,112.44	180	0.32	0.61	8.18341	HDPE	145	0.01
P-87	14	21.146	21.124	1.93586	J-87	J-88	234.71	-9,988.49	7,120.40	140	0.13	0.14	1.93586	HDPE	145	0
P-88	19	21.124	21.141	-9.83168	J-88	J-89	234.73	-9,987.84	7,134.38	180	0.39	0.86	9.83168	HDPE	145	0.02
P-89	36.5	21.141	21.004	-6.17211	J-89	J-90	234.73	-9,984.54	7,153.18	180	0.24	0.36	6.17211	HDPE	145	0.01
P-9	8.5	20.622	20.597	11.2219	J-8	J-10	235.87	-9,343.92	7,458.56	200	0.36	0.66	11.2219	HDPE	145	0.01
P-90	87.5	21.146	21.356	5.89777	J-87	J-91	234.71	-9,988.49	7,120.40	180	0.23	0.33	5.89777	HDPE	145	0.03
P-91	30.5	21.356	21.467	5.46433	J-91	J-92	234.47	-10,045.02	7,059.76	180	0.21	0.29	5.46433	HDPE	145	0.01
P-92	74.5	21.467	21.651	5.13931	J-92	J-93	234.35	-10,054.31	7,030.91	140	0.33	0.88	5.13931	HDPE	145	0.07
P-93	95	21.651	20.848	-1.40996	J-93	J-94	234.1	-10,101.34	7,058.97	110	0.15	0.26	1.40996	uPVC	145	0.02
P-94	24	20.848	20.871	-10.47949	J-94	J-95	234.93	-10,079.67	7,151.63	180	0.41	0.97	10.47949	HDPE	145	0.02
P-95	17.5	20.871	20.889	-10.7876	J-95	J-96	234.93	-10,056.15	7,148.27	180	0.42	1.02	10.7876	HDPE	145	0.02
P-96	52	20.889	21.124	-11.5044	J-96	J-88	234.93	-10,038.96	7,144.12	200	0.37	0.69	11.5044	HDPE	145	0.04
P-97	35	20.889	21.107	0.39332	J-96	J-97	234.93	-10,038.96	7,144.12	110	0.04	0.02	0.39332	uPVC	145	0
P-98	27	21.107	21.367	0.08366	J-97	J-98	234.71	-10,047.85	7,112.11	110	0.01	0	0.08366	uPVC	145	0
P-99	44.5	21.651	21.886	5.88695	J-93	J-99	234.1	-10,101.34	7,058.97	180	0.23	0.33	5.88695	HDPE	145	0.01

PP-211	66.5	22.289	22.399	0.20589	J-107	PJ-197	233.33	-10,272.01	7,259.89	110	0.02	0.01	0.20589	HDPE	145	0
PP-212	54	21.994	21.315	0.16721	J-109	PJ-198	233.67	-10,190.50	7,260.82	110	0.02	0.01	0.16721	HDPE	145	0
PP-213	29	20.871	20.871	0.08985	J-95	PJ-199	234.93	-10,056.15	7,148.27	110	0.01	0	0.08985	HDPE	145	0
PP-214	19	21.107	21.167	0.0589	J-97	PJ-200	234.71	-10,047.85	7,112.11	110	0.01	0	0.0589	HDPE	145	0
PP-215	33	21.141	21.128	-3.93354	J-89	PJ-201	234.73	-9,984.54	7,153.18	140	0.26	0.54	3.93354	HDPE	145	0.02
PP-216	16	21.128	21.102	-6.15694	PJ-201	PJ-202	234.76	-9,951.69	7,154.22	200	0.2	0.22	6.15694	HDPE	145	0
PP-217	31	21.102	20.999	-6.42946	PJ-202	PJ-203	234.79	-9,935.95	7,152.36	200	0.2	0.23	6.42946	HDPE	145	0.01
PP-218	20.5	21.102	21.082	0.06354	PJ-202	PJ-204	234.79	-9,935.95	7,152.36	110	0.01	0	0.06354	HDPE	145	0
PP-219	35.5	21.183	21.191	-1.32381	J-86	PJ-205	234.68	-9,982.92	7,112.44	110	0.14	0.23	1.32381	HDPE	145	0.01
PP-220	35	21.191	21.128	-1.96336	PJ-205	PJ-201	234.68	-9,951.08	7,119.33	110	0.21	0.48	1.96336	HDPE	145	0.02
PP-221	21	21.191	21.191	0.35629	PJ-205	PJ-206	234.68	-9,951.08	7,119.33	110	0.04	0.02	0.35629	HDPE	145	0
PP-222	20	21.191	21.181	0.062	PJ-206	PJ-207	234.68	-9,931.62	7,115.31	110	0.01	0	0.062	HDPE	145	0
PP-223	9.5	21.191	21.201	0.13792	PJ-206	PJ-208	234.68	-9,931.62	7,115.31	110	0.01	0	0.13792	HDPE	145	0
PP-224	17.5	21.201	21.201	0.05426	PJ-208	PJ-209	234.67	-9,929.77	7,105.74	110	0.01	0	0.05426	HDPE	145	0
PP-225	11	21.193	21.203	-0.03415	PJ-210	J-85	234.68	-9,989.06	7,089.68	110	0	0	0.03415	HDPE	145	0
PP-226	24	21.203	21.233	0.07437	J-85	PJ-211	234.67	-9,977.90	7,090.76	110	0.01	0	0.07437	HDPE	145	0
PP-227	11	21.356	21.426	0.03415	J-91	PJ-212	234.47	-10,045.02	7,059.76	110	0	0	0.03415	HDPE	145	0
PP-228	52	21.258	21.293	-0.77335	J-84	PJ-213	234.63	-9,970.98	7,062.02	110	0.08	0.09	0.77335	HDPE	145	0
PP-229	58.5	21.293	21.376	-3.5872	PJ-213	PJ-214	234.6	-9,970.84	7,010.02	160	0.18	0.24	3.5872	HDPE	145	0.01
PP-230	19	21.376	21.385	-3.61324	PJ-214	J-148	234.53	-9,912.48	7,010.02	140	0.23	0.46	3.61324	HDPE	145	0.01
PP-231	29.5	21.385	21.378	-0.75858	J-148	PJ-215	234.53	-9,893.71	7,010.32	110	0.08	0.08	0.75858	HDPE	145	0
PP-232	14.5	21.378	21.368	0.04498	PJ-215	PJ-216	234.54	-9,864.00	7,008.79	110	0	0	0.04498	HDPE	145	0
PP-233	33	21.378	21.412	-1.04194	PJ-215	PJ-217	234.54	-9,864.00	7,008.79	110	0.11	0.15	1.04194	HDPE	145	0
PP-234	33.5	21.412	21.479	-2.78726	PJ-217	PJ-218	234.51	-9,852.89	6,977.91	125	0.23	0.49	2.78726	HDPE	145	0.02
PP-235	49	21.479	21.472	2.9319	PJ-218	J-150	234.46	-9,840.54	6,946.73	125	0.24	0.54	2.9319	HDPE	145	0.03
PP-236	17	21.472	21.46	3.43068	J-150	PJ-219	234.44	-9,889.76	6,945.61	125	0.28	0.72	3.43068	HDPE	145	0.01
PP-237	26	21.46	21.437	-1.4272	PJ-219	PJ-220	234.44	-9,906.61	6,947.03	110	0.15	0.27	1.4272	HDPE	145	0.01
PP-238	21.5	21.437	21.433	-2.01716	PJ-220	J-149	234.47	-9,910.32	6,972.97	125	0.16	0.27	2.01716	HDPE	145	0.01
PP-239	36	21.433	21.412	-1.42803	J-149	PJ-217	234.48	-9,889.02	6,975.25	110	0.15	0.27	1.42803	HDPE	145	0.01
PP-240	37	21.437	21.376	0.32838	PJ-220	PJ-214	234.47	-9,910.32	6,972.97	110	0.03	0.02	0.32838	HDPE	145	0
PP-241	62	21.293	21.334	2.27995	PJ-213	PJ-221	234.6	-9,970.84	7,010.02	110	0.24	0.63	2.27995	HDPE	145	0.04
PP-242	67.5	21.334	21.46	-4.51583	PJ-221	PJ-219	234.52	-9,974.23	6,948.27	140	0.29	0.69	4.51583	HDPE	145	0.05
PP-243	121	21.334	21.798	6.02051	PJ-221	PJ-222	234.52	-9,974.23	6,948.27	160	0.3	0.62	6.02051	HDPE	145	0.07
PP-244	38	21.798	21.758	0.1177	PJ-222	PJ-223	233.98	-10,095.27	6,944.87	110	0.01	0	0.1177	HDPE	145	0
PP-245	149	21.798	22.123	4.94961	PJ-222	PJ-224	233.98	-10,095.27	6,944.87	160	0.25	0.43	4.94961	HDPE	145	0.06
PP-246	46	22.123	22.231	0.52091	PJ-224	PJ-225	233.59	-10,244.10	6,935.92	110	0.05	0.04	0.52091	HDPE	145	0

PP-247	46.5	22.231	22.341	0.10351	PJ-225	PJ-226	233.48	-10,246.49	6,982.03	110	0.01	0	0.10351	HDPE	145	0
PP-248	26.5	22.341	22.401	0.08211	PJ-226	PJ-227	233.37	-10,247.65	7,028.34	110	0.01	0	0.08211	HDPE	145	0
PP-249	90	22.341	21.965	-0.48311	PJ-226	PJ-228	233.37	-10,247.65	7,028.34	110	0.05	0.04	0.48311	HDPE	145	0
PP-250	34.5	21.965	21.957	-1.62564	PJ-228	J-100	233.75	-10,157.72	7,035.29	110	0.17	0.34	1.62564	HDPE	145	0.01
PP-251	51	21.965	21.992	0.59934	PJ-228	PJ-229	233.75	-10,157.72	7,035.29	110	0.06	0.05	0.59934	HDPE	145	0
PP-252	92.5	21.992	22.231	0.15518	PJ-229	PJ-225	233.72	-10,154.25	6,984.35	110	0.02	0	0.15518	HDPE	145	0
PP-254	227	22.425	22.449	0.70255	PJ-230	PJ-231	233.09	-10,571.08	6,919.12	110	0.07	0.07	0.70255	HDPE	145	0.02
PP-255	96.5	21.479	21.473	-6.27317	PJ-218	PJ-232	234.46	-9,840.54	6,946.73	160	0.31	0.67	6.27317	HDPE	145	0.06
PP-256	67.5	21.473	21.475	-1.9511	PJ-232	J-80	234.53	-9,744.42	6,955.91	110	0.21	0.47	1.9511	HDPE	145	0.03
PP-257	204.5	21.473	21.345	-5.46249	PJ-232	PJ-233	234.53	-9,744.42	6,955.91	140	0.35	0.99	5.46249	HDPE	145	0.2
PP-258	119	21.345	21.169	-6.46365	PJ-233	PJ-234	234.86	-9,540.96	6,976.30	160	0.32	0.7	6.46365	HDPE	145	0.08
PP-259	36.5	21.169	21.127	0.54723	PJ-234	J-157	235.12	-9,426.38	7,002.23	110	0.06	0.04	0.54723	HDPE	145	0
PP-260	149	21.169	21.752	-7.95325	PJ-234	PJ-235	235.12	-9,426.38	7,002.23	160	0.4	1.03	7.95325	HDPE	145	0.15
PP-261	176	21.752	21.455	-1.17339	PJ-235	PJ-236	234.69	-9,289.48	7,061.33	110	0.12	0.18	1.17339	HDPE	145	0.03
PP-262	26.5	21.455	21.378	-13.0263	PJ-236	J-30	235.02	-9,319.66	7,234.96	200	0.41	0.87	13.0263	HDPE	145	0.02
PP-263	28.5	21.426	21.509	-12.72004	J-44	PJ-237	234.98	-9,389.35	7,226.46	200	0.4	0.83	12.72004	HDPE	145	0.02
PP-264	42	21.509	21.455	-11.09621	PJ-237	PJ-236	234.92	-9,361.41	7,230.76	180	0.44	1.08	11.09621	HDPE	145	0.05
PP-265	79.5	21.509	21.193	-2.08811	PJ-237	J-41	234.92	-9,361.41	7,230.76	125	0.17	0.29	2.08811	HDPE	145	0.02
PP-266	88	21.116	21.306	-1.62794	J-40	J-29	235.35	-9,354.46	7,312.61	110	0.17	0.34	1.62794	HDPE	145	0.03
PP-267	41	21.215	21.035	-4.003	J-28	J-33	235.28	-9,311.31	7,285.40	125	0.33	0.96	4.003	HDPE	145	0.04
PP-268	48	20.963	20.87	-3.52945	J-26	J-34	235.53	-9,325.39	7,336.78	125	0.29	0.76	3.52945	HDPE	145	0.04
PP-269	32.5	20.87	21.049	0.10068	J-34	PJ-238	235.66	-9,281.17	7,318.00	110	0.01	0	0.10068	HDPE	145	0
PP-270	34.5	20.993	20.859	-6.74181	J-58	J-25	235.48	-9,367.56	7,353.25	160	0.34	0.76	6.74181	HDPE	145	0.03
PP-271	35.5	21.002	20.942	0.04766	J-24	PJ-239	235.5	-9,379.24	7,369.38	110	0.01	0	0.04766	HDPE	145	0
PP-272	62	20.942	20.563	0.19196	PJ-239	PJ-240	235.56	-9,404.14	7,391.07	110	0.02	0.01	0.19196	HDPE	145	0
PP-273	20	20.923	20.942	0.50801	J-18	PJ-239	235.58	-9,384.92	7,385.44	110	0.05	0.04	0.50801	HDPE	145	0
PP-274	17.5	20.419	20.234	7.33307	J-12	J-53	236.03	-9,402.71	7,442.75	160	0.36	0.89	7.33307	HDPE	145	0.02
PP-275	11.5	20.208	20.296	-11.66092	J-54	J-11	236.23	-9,413.44	7,458.04	200	0.37	0.71	11.66092	HDPE	145	0.01
PP-276	30.5	20.37	20.38	0.09449	J-16	PJ-241	236.12	-9,350.09	7,406.19	110	0.01	0	0.09449	HDPE	145	0
PP-277	43.5	20.625	20.495	0.13472	J-19	PJ-242	235.92	-9,307.36	7,361.73	110	0.01	0	0.13472	HDPE	145	0
PP-278	23.5	20.372	20.521	0.07283	J-51	PJ-243	236.01	-9,476.73	7,387.33	110	0.01	0	0.07283	HDPE	145	0
PP-279	19	19.722	19.792	0.0589	J-57	PJ-244	236.66	-9,503.51	7,415.69	110	0.01	0	0.0589	HDPE	145	0
PP-280	89.5	20.785	20.773	-8.43465	J-20	J-4	235.79	-9,279.20	7,354.56	180	0.33	0.65	8.43465	HDPE	145	0.06
PP-281	81	20.773	20.943	9.03559	J-4	J-167	235.86	-9,206.82	7,406.68	180	0.36	0.74	9.03559	HDPE	145	0.06
PP-282	13	20.701	20.771	0.04034	J-5	PJ-245	235.88	-9,258.45	7,446.45	110	0	0	0.04034	HDPE	145	0
PP-283	45	21.368	21.368	0.13936	J-174	PJ-246	235.17	-9,137.40	7,538.74	110	0.01	0	0.13936	HDPE	145	0

PP-284	35.5	20.235	20.544	-0.10996	PJ-247	J-60	236.04	-9,619.92	7,365.51	110	0.01	0	0.10996	HDPE	145	0
PP-285	46.5	20.56	19.568	4.62064	J-145	PJ-248	235.6	-9,689.92	7,310.40	140	0.3	0.72	4.62064	HDPE	145	0.03
PP-286	54	19.568	20.637	11.22028	PJ-248	PJ-249	236.56	-9,731.77	7,325.20	180	0.44	1.1	11.22028	HDPE	145	0.06
PP-287	9.5	20.637	20.637	0.36392	PJ-249	PJ-251	235.43	-9,774.05	7,291.80	110	0.04	0.02	0.36392	HDPE	145	0
PP-288	26.5	20.637	20.487	0.08211	PJ-251	PJ-250	235.43	-9,766.35	7,286.27	110	0.01	0	0.08211	HDPE	145	0
PP-289	27.5	20.637	20.686	0.08521	PJ-251	PJ-252	235.43	-9,766.35	7,286.27	110	0.01	0	0.08521	HDPE	145	0
PP-290	22.5	20.56	20.451	4.98705	J-145	PJ-253	235.6	-9,689.92	7,310.40	140	0.32	0.83	4.98705	HDPE	145	0.02
PP-291	16	20.451	20.62	4.5335	PJ-253	PJ-254	235.69	-9,695.41	7,288.64	140	0.29	0.7	4.5335	HDPE	145	0.01
PP-292	32	20.62	20.559	4.38486	PJ-254	PJ-255	235.51	-9,701.73	7,275.40	140	0.28	0.66	4.38486	HDPE	145	0.02
PP-293	58.5	20.559	21.034	4.1047	PJ-255	PJ-256	235.55	-9,733.35	7,281.13	140	0.27	0.58	4.1047	HDPE	145	0.03
PP-294	14.5	21.034	20.874	2.39007	PJ-256	PJ-257	235.04	-9,739.27	7,234.30	110	0.25	0.69	2.39007	HDPE	145	0.01
PP-295	10.5	20.874	20.745	0.0326	PJ-257	PJ-258	235.19	-9,737.30	7,248.72	110	0	0	0.0326	HDPE	145	0
PP-296	44	20.959	20.874	-2.14384	J-146	PJ-257	235.08	-9,777.01	7,233.51	110	0.23	0.56	2.14384	HDPE	145	0.02
PP-297	23	20.637	20.854	10.58858	PJ-249	J-147	235.43	-9,774.05	7,291.80	180	0.42	0.99	10.58858	HDPE	145	0.02
PP-298	43	20.854	18.384	9.43432	J-147	PJ-259	235.19	-9,789.12	7,274.27	180	0.37	0.8	9.43432	HDPE	145	0.03
PP-299	13	18.384	19.462	0.16422	PJ-259	PJ-260	237.63	-9,819.41	7,243.64	110	0.02	0	0.16422	HDPE	145	0
PP-300	20	19.462	20.779	0.062	PJ-260	PJ-261	236.55	-9,812.49	7,232.77	110	0.01	0	0.062	HDPE	145	0
PP-301	41.5	18.384	18.384	8.96829	PJ-259	PJ-262	237.63	-9,819.41	7,243.64	180	0.35	0.73	8.96829	HDPE	145	0.03
PP-302	48	18.384	20.1	0.14864	PJ-262	PJ-263	237.6	-9,848.56	7,214.24	110	0.02	0	0.14864	HDPE	145	0
PP-303	39	18.384	20.195	8.4219	PJ-262	J-132	237.6	-9,848.56	7,214.24	180	0.33	0.65	8.4219	HDPE	145	0.03
PP-304	24.5	20.195	20.792	13.4406	J-132	PJ-264	235.76	-9,875.77	7,186.55	200	0.43	0.92	13.4406	HDPE	145	0.02
PP-305	36	20.792	20.999	13.16343	PJ-264	PJ-203	235.14	-9,899.94	7,183.12	200	0.42	0.89	13.16343	HDPE	145	0.03
PP-306	39	20.999	21.004	6.40585	PJ-203	J-90	234.9	-9,935.95	7,183.24	180	0.25	0.39	6.40585	HDPE	145	0.02
PP-307	14.5	20.792	21.041	0.04498	PJ-264	PJ-265	235.14	-9,899.94	7,183.12	110	0	0	0.04498	HDPE	145	0
PP-308	21.5	21.177	21.197	0.06664	J-131	PJ-266	234.79	-9,868.56	7,138.28	110	0.01	0	0.06664	HDPE	145	0
PP-309	16	21.296	21.296	-0.54237	J-130	PJ-267	234.67	-9,866.39	7,101.33	110	0.06	0.05	0.54237	HDPE	145	0
PP-310	29.5	21.296	21.177	0.09139	PJ-267	PJ-268	234.67	-9,850.29	7,102.84	110	0.01	0	0.09139	HDPE	145	0
PP-311	5	21.296	21.297	-0.79014	PJ-267	PJ-269	234.67	-9,850.29	7,102.84	110	0.08	0.09	0.79014	HDPE	145	0
PP-312	22	21.297	21.247	0.06819	PJ-269	PJ-270	234.67	-9,845.35	7,102.10	110	0.01	0	0.06819	HDPE	145	0
PP-313	12.5	21.297	21.308	-0.98067	PJ-269	PJ-271	234.67	-9,845.35	7,102.10	110	0.1	0.13	0.98067	HDPE	145	0
PP-314	27	21.308	21.344	-1.26093	PJ-271	J-128	234.66	-9,842.63	7,090.00	110	0.13	0.21	1.26093	HDPE	145	0.01
PP-315	25.5	21.308	21.288	0.07902	PJ-271	PJ-272	234.66	-9,842.63	7,090.00	110	0.01	0	0.07902	HDPE	145	0
PP-316	28	21.346	21.389	-3.72023	J-129	J-136	234.65	-9,810.46	7,065.96	125	0.3	0.84	3.72023	HDPE	145	0.02
PP-317	62.5	21.242	21.287	-4.04202	J-134	PJ-273	234.78	-9,788.53	7,131.37	140	0.26	0.56	4.04202	HDPE	145	0.04
PP-318	31	21.287	21.389	-3.32866	PJ-273	J-139	234.77	-9,743.33	7,155.95	140	0.22	0.39	3.32866	HDPE	145	0.01
PP-319	78.5	21.287	21.034	-1.24572	PJ-273	PJ-256	234.77	-9,743.33	7,155.95	110	0.13	0.21	1.24572	HDPE	145	0.02

PP-320	59.5	21.395	21.45	-2.20911	J-138	PJ-274	234.67	-9,737.15	7,123.26	110	0.23	0.6	2.20911	HDPE	145	0.04
PP-321	11.5	21.45	21.455	3.54097	PJ-274	PJ-275	234.65	-9,691.70	7,095.43	140	0.23	0.44	3.54097	HDPE	145	0.01
PP-322	42	21.455	21.446	4.54839	PJ-275	PJ-276	234.64	-9,693.43	7,084.07	140	0.3	0.7	4.54839	HDPE	145	0.03
PP-323	18.5	21.446	21.414	4.36106	PJ-276	J-137	234.62	-9,735.42	7,085.30	140	0.28	0.65	4.36106	HDPE	145	0.01
PP-324	84	21.45	21.356	-6.22983	PJ-274	J-74	234.65	-9,691.70	7,095.43	160	0.31	0.66	6.22983	HDPE	145	0.06
PP-325	56.5	21.386	21.266	0.17494	J-76	PJ-277	234.74	-9,638.99	7,113.87	110	0.02	0.01	0.17494	HDPE	145	0
PP-326	45.5	21.455	21.426	-1.31387	PJ-275	J-77	234.64	-9,693.43	7,084.07	110	0.14	0.23	1.31387	HDPE	145	0.01
PP-327	18.5	21.38	21.4	0.05735	J-151	PJ-278	234.7	-9,657.01	7,047.30	110	0.01	0	0.05735	HDPE	145	0
PP-328	31	21.063	21.262	0.09604	J-72	PJ-279	235.13	-9,595.20	7,163.20	110	0.01	0	0.09604	HDPE	145	0
PP-329	54	20.451	20.761	0.16721	PJ-253	PJ-280	235.69	-9,695.41	7,288.64	110	0.02	0.01	0.16721	HDPE	145	0
PP-330	13.5	21.103	21.123	-0.04188	PJ-281	J-68	235.1	-9,624.23	7,237.76	110	0	0	0.04188	HDPE	145	0
PP-331	36	21.123	21.023	0.11151	J-68	PJ-282	235.08	-9,611.80	7,232.76	110	0.01	0	0.11151	HDPE	145	0
PP-332	20	21.291	21.161	0.062	J-69	PJ-283	234.9	-9,620.50	7,212.99	110	0.01	0	0.062	HDPE	145	0
PP-333	68.5	21.067	20.678	-4.11141	J-66	J-65	235.17	-9,592.36	7,283.50	140	0.27	0.58	4.11141	HDPE	145	0.04
PP-334	76.5	21.051	20.401	-5.22367	J-62	J-48	235.21	-9,586.67	7,319.07	140	0.34	0.91	5.22367	HDPE	145	0.07
PP-335	86	20.881	20.103	-4.94027	J-61	J-49	235.39	-9,587.09	7,339.56	140	0.32	0.82	4.94027	HDPE	145	0.07
PP-336	110.5	20.282	20.846	-2.81424	J-50	PJ-284	236.08	-9,489.39	7,365.10	125	0.23	0.5	2.81424	HDPE	145	0.06
PP-337	17	20.846	21.021	-7.27292	PJ-284	J-43	235.57	-9,418.90	7,282.22	160	0.36	0.87	7.27292	HDPE	145	0.01
PP-338	55	20.846	21.117	3.89384	PJ-284	J-45	235.57	-9,418.90	7,282.22	140	0.25	0.53	3.89384	HDPE	145	0.03
PP-339	21.5	21.131	21.121	0.06664	J-32	PJ-285	235.41	-9,265.12	7,270.08	110	0.01	0	0.06664	HDPE	145	0
PP-340	19	21.244	21.115	0.0589	J-37	PJ-286	235.35	-9,233.50	7,283.92	110	0.01	0	0.0589	HDPE	145	0
PP-341	41.5	21.244	21.39	-14.86173	J-37	J-21	235.35	-9,233.50	7,283.92	200	0.47	1.11	14.86173	HDPE	145	0.05
PP-342	28.5	21.502	21.382	0.0883	J-3	PJ-287	235.17	-9,176.19	7,365.93	110	0.01	0	0.0883	HDPE	145	0
PP-343	68	21.567	21.512	12.55652	J-2	PJ-288	235.12	-9,165.08	7,350.36	200	0.4	0.81	12.55652	HDPE	145	0.06
PP-344	53.5	21.512	21.342	12.08131	PJ-288	J-164	235.12	-9,131.12	7,387.95	200	0.38	0.75	12.08131	HDPE	145	0.04
PP-345	16	21.512	21.562	0.04962	PJ-288	PJ-289	235.12	-9,131.12	7,387.95	110	0.01	0	0.04962	HDPE	145	0
PP-346	27.5	21.488	21.448	-0.08521	PJ-290	J-163	235.1	-9,097.13	7,380.37	110	0.01	0	0.08521	HDPE	145	0
PP-347	99	21.317	21.36	1.4634	J-165	PJ-291	235.27	-9,129.68	7,449.50	110	0.15	0.28	1.4634	HDPE	145	0.03
PP-348	38.5	21.36	21.416	-3.32395	PJ-291	J-162	235.2	-9,038.48	7,411.35	125	0.27	0.68	3.32395	HDPE	145	0.03
PP-349	47	21.36	21.321	4.21632	PJ-291	PJ-292	235.2	-9,038.48	7,411.35	140	0.27	0.61	4.21632	HDPE	145	0.03
PP-350	64.5	21.321	21.36	0.1997	PJ-292	PJ-293	235.21	-9,046.70	7,457.83	110	0.02	0.01	0.1997	HDPE	145	0
PP-351	82.5	21.321	21.272	3.41618	PJ-292	J-175	235.21	-9,046.70	7,457.83	125	0.28	0.72	3.41618	HDPE	145	0.06
PP-352	39	21.272	21.282	5.54117	J-175	PJ-294	235.2	-9,062.06	7,538.74	140	0.36	1.01	5.54117	HDPE	145	0.04
PP-353	89	21.282	21.015	1.20462	PJ-294	J-176	235.15	-9,067.04	7,577.60	110	0.13	0.19	1.20462	HDPE	145	0.02
PP-354	22.5	21.282	21.362	3.87072	PJ-294	J-179	235.15	-9,067.04	7,577.60	125	0.32	0.91	3.87072	HDPE	145	0.02
PP-355	40.5	21.362	21.403	2.43185	J-179	J-186	235.05	-9,071.82	7,599.43	110	0.26	0.71	2.43185	HDPE	145	0.03

PP-356	59	21.403	21.386	0.89826	J-186	J-189	234.98	-9,078.89	7,639.46	110	0.09	0.11	0.89826	HDPE	145	0.01
PP-357	46	21.386	21.292	0.76894	J-189	PJ-295	234.99	-9,086.61	7,698.13	110	0.08	0.08	0.76894	HDPE	145	0
PP-358	21.5	21.292	21.312	0.24361	PJ-295	PJ-296	235.08	-9,092.51	7,743.95	110	0.03	0.01	0.24361	HDPE	145	0
PP-359	91	21.312	19.476	-0.10462	PJ-296	PJ-297	235.06	-9,094.83	7,765.18	110	0.01	0	0.10462	HDPE	145	0
PP-360	42.5	19.476	19.836	-0.34886	PJ-297	J-196	236.9	-9,185.53	7,756.69	110	0.04	0.02	0.34886	HDPE	145	0
PP-361	22.5	20.127	19.756	0.74571	J-195	PJ-298	236.25	-9,179.86	7,712.64	110	0.08	0.08	0.74571	HDPE	145	0
PP-362	21.5	19.756	19.476	0.23551	PJ-298	PJ-297	236.62	-9,183.21	7,735.07	110	0.02	0.01	0.23551	HDPE	145	0
PP-363	14.5	19.756	19.486	0.32907	PJ-298	PJ-299	236.62	-9,183.21	7,735.07	110	0.03	0.02	0.32907	HDPE	145	0
PP-364	77	19.486	21.292	-0.07807	PJ-299	PJ-295	236.89	-9,169.29	7,738.74	110	0.01	0	0.07807	HDPE	145	0
PP-365	20	19.486	19.805	0.062	PJ-299	PJ-300	236.89	-9,169.29	7,738.74	110	0.01	0	0.062	HDPE	145	0
PP-366	46	20.037	19.697	0.14245	J-194	PJ-301	236.34	-9,226.79	7,711.71	110	0.01	0	0.14245	HDPE	145	0
PP-367	60	19.772	20.09	-1.95333	J-181	PJ-302	236.62	-9,257.36	7,635.14	110	0.21	0.48	1.95333	HDPE	145	0.03
PP-368	30.5	20.09	20.412	1.39145	PJ-302	J-177	236.33	-9,256.67	7,575.23	110	0.15	0.25	1.39145	HDPE	145	0.01
PP-369	64	20.09	20.326	-3.82298	PJ-302	PJ-303	236.33	-9,256.67	7,575.23	125	0.31	0.88	3.82298	HDPE	145	0.06
PP-370	26	20.326	20.298	4.24328	PJ-303	PJ-304	236.15	-9,309.78	7,564.73	125	0.35	1.07	4.24328	HDPE	145	0.03
PP-371	22.5	20.298	20.129	0.06973	PJ-304	PJ-305	236.15	-9,307.62	7,590.67	110	0.01	0	0.06973	HDPE	145	0
PP-372	43.5	20.298	19.999	3.88875	PJ-304	J-180	236.15	-9,307.62	7,590.67	125	0.32	0.91	3.88875	HDPE	145	0.04
PP-373	36	19.999	19.656	1.74959	J-180	PJ-306	236.41	-9,302.13	7,633.90	110	0.18	0.39	1.74959	HDPE	145	0.01
PP-374	28.5	19.656	19.389	1.41672	PJ-306	PJ-307	236.74	-9,311.01	7,668.81	110	0.15	0.26	1.41672	HDPE	145	0.01
PP-375	49	19.389	19.402	1.04053	PJ-307	PJ-308	237	-9,314.10	7,696.90	110	0.11	0.15	1.04053	HDPE	145	0.01
PP-376	62	19.402	20.136	0.69694	PJ-308	PJ-309	236.98	-9,316.57	7,746.00	110	0.07	0.07	0.69694	HDPE	145	0
PP-377	27	20.136	19.836	0.23565	PJ-309	J-196	236.24	-9,254.81	7,752.79	110	0.02	0.01	0.23565	HDPE	145	0
PP-378	30	20.136	20.106	0.09294	PJ-309	PJ-310	236.24	-9,254.81	7,752.79	110	0.01	0	0.09294	HDPE	145	0
PP-379	22	19.389	19.399	0.06819	PJ-307	PJ-311	237	-9,314.10	7,696.90	110	0.01	0	0.06819	HDPE	145	0
PP-380	21.5	19.656	19.656	0.06664	PJ-306	PJ-312	236.74	-9,311.01	7,668.81	110	0.01	0	0.06664	HDPE	145	0
PP-381	18	20.326	20.338	-8.40057	PJ-303	PJ-313	236.15	-9,309.78	7,564.73	180	0.33	0.64	8.40057	HDPE	145	0.01
PP-382	15	20.338	20.338	0.04652	PJ-313	PJ-314	236.15	-9,314.41	7,547.15	110	0	0	0.04652	HDPE	145	0
PP-383	38	20.338	20.523	-8.66691	PJ-313	PJ-315	236.15	-9,314.41	7,547.15	180	0.34	0.68	8.66691	HDPE	145	0.03
PP-384	16	20.523	20.623	0.34437	PJ-315	J-6	235.99	-9,324.90	7,510.72	125	0.03	0.01	0.34437	HDPE	145	0
PP-385	16	20.625	20.523	9.228	J-168	PJ-315	235.9	-9,309.69	7,505.70	180	0.36	0.77	9.228	HDPE	145	0.01
PP-386	102	19.568	19.736	-7.22637	PJ-248	PJ-316	236.56	-9,731.77	7,325.20	160	0.36	0.86	7.22637	HDPE	145	0.09
PP-387	63	19.736	19.9	-7.88571	PJ-316	J-59	236.48	-9,645.23	7,379.21	160	0.39	1.02	7.88571	HDPE	145	0.06
PP-388	140.5	19.9	19.749	-9.72988	J-59	PJ-317	236.38	-9,587.04	7,402.73	180	0.38	0.84	9.72988	HDPE	145	0.12
PP-389	40	19.749	20.067	-10.44646	PJ-317	J-55	236.65	-9,456.26	7,453.93	180	0.41	0.96	10.44646	HDPE	145	0.04
PP-390	82	20.067	20.616	-9.80804	J-55	J-7	236.37	-9,418.38	7,466.07	180	0.39	0.86	9.80804	HDPE	145	0.07
PP-391	9	20.616	20.623	-21.91064	J-7	J-6	235.89	-9,340.89	7,492.83	250	0.45	0.77	21.91064	HDPE	145	0.01

PP-392	25.5	19.749	19.978	0.07902	PJ-317	PJ-318	236.65	-9,456.26	7,453.93	110	0.01	0	0.07902	HDPE	145	0
PP-393	24	19.736	19.976	0.07437	PJ-316	PJ-319	236.48	-9,645.23	7,379.21	110	0.01	0	0.07437	HDPE	145	0
PP-394	98.5	21.478	21.723	-13.86291	J-39	J-159	235.11	-9,196.70	7,223.15	200	0.44	0.97	13.86291	HDPE	145	0.1
PP-395	28.5	21.747	21.745	-34.11363	J-22	J-1	234.97	-9,150.50	7,279.22	280	0.55	1	34.11363	HDPE	145	0.03
PP-396	122	21.486	21.639	-1.66443	J-161	PJ-320	235.1	-9,022.54	7,313.65	125	0.14	0.19	1.66443	HDPE	145	0.02
PP-397	56.5	21.639	21.689	-2.2169	PJ-320	J-160	234.97	-8,998.01	7,194.05	140	0.14	0.19	2.2169	HDPE	145	0.01
PP-398	264	21.689	21.752	8.6026	J-160	PJ-235	234.93	-9,047.62	7,166.65	180	0.34	0.67	8.6026	HDPE	145	0.18
PP-399	49	22.123	22.19	3.67355	PJ-224	PJ-322	233.59	-10,244.10	6,935.92	140	0.24	0.47	3.67355	HDPE	145	0.02
PP-400	278.5	22.19	22.425	2.26691	PJ-322	PJ-230	233.5	-10,292.79	6,932.63	110	0.24	0.63	2.26691	HDPE	145	0.17
PP-401	63.5	22.339	22.19	-0.19661	PJ-321	PJ-322	233.35	-10,295.87	6,995.93	110	0.02	0.01	0.19661	HDPE	145	0
PP-402	59.5	21.302	20.969	-5.37804	J-70	PJ-323	234.88	-9,625.56	7,195.92	140	0.35	0.96	5.37804	HDPE	145	0.06
PP-403	51.5	20.969	20.869	-9.28327	PJ-323	PJ-324	235.27	-9,567.39	7,208.84	180	0.36	0.77	9.28327	HDPE	145	0.04
PP-404	38.5	20.869	20.611	-9.50138	PJ-324	J-153	235.41	-9,523.91	7,218.72	180	0.37	0.81	9.50138	HDPE	145	0.03
PP-405	6	20.969	20.938	3.54307	PJ-323	PJ-325	235.27	-9,567.39	7,208.84	160	0.18	0.23	3.54307	HDPE	145	0
PP-406	40.5	20.938	20.805	4.03037	PJ-325	J-73	235.3	-9,566.65	7,202.91	140	0.26	0.56	4.03037	HDPE	145	0.02
PP-407	36	20.805	20.836	-5.0291	J-73	PJ-326	235.41	-9,564.38	7,162.56	140	0.33	0.85	5.0291	HDPE	145	0.03
PP-408	50	20.836	20.84	0.93157	PJ-326	PJ-327	235.41	-9,536.02	7,155.48	110	0.1	0.12	0.93157	HDPE	145	0.01
PP-409	23.5	20.84	20.938	0.70402	PJ-327	PJ-325	235.4	-9,543.43	7,204.39	110	0.07	0.07	0.70402	HDPE	145	0
PP-410	24.5	20.836	20.852	-6.30272	PJ-326	PJ-328	235.41	-9,536.02	7,155.48	160	0.31	0.67	6.30272	HDPE	145	0.02
PP-411	44.5	20.852	20.878	-2.17321	PJ-328	J-156	235.41	-9,512.55	7,161.90	110	0.23	0.58	2.17321	HDPE	145	0.03
PP-412	17	20.86	20.86	-0.05271	PJ-329	PJ-330	235.41	-9,531.82	7,171.54	110	0.01	0	0.05271	HDPE	145	0
PP-413	12	20.86	20.852	4.38027	PJ-330	PJ-328	235.41	-9,514.77	7,173.51	140	0.28	0.66	4.38027	HDPE	145	0.01
PP-414	42.5	20.884	20.86	2.11828	J-155	PJ-330	235.41	-9,473.06	7,181.40	110	0.22	0.55	2.11828	HDPE	145	0.02
PP-415	21.5	20.86	20.869	-2.6026	PJ-330	PJ-331	235.41	-9,514.77	7,173.51	125	0.21	0.43	2.6026	HDPE	145	0.01
PP-416	25	20.869	20.869	0.13786	PJ-331	PJ-324	235.41	-9,518.73	7,194.51	110	0.01	0	0.13786	HDPE	145	0
PP-417	40.5	20.869	20.743	-3.00979	PJ-331	J-154	235.41	-9,518.73	7,194.51	125	0.25	0.57	3.00979	HDPE	145	0.02
	18683															

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	11.5	110	PVC	450	HDPE	Replacement
P-10	J-10	J-11	56.5	75	PVC	200	HDPE	Replacement
P-100	J-99	J-100	14	110	PVC	140	HDPE	Replacement
P-101	J-100	J-101	72.5	110	PVC	110	uPVC	Retained
P-102	J-101	J-102	35	110	PVC	110	uPVC	Retained
P-103	J-102	J-103	15.5	110	PVC	140	HDPE	Replacement
P-104	J-103	J-104	66.5	110	PVC	110	uPVC	Retained
P-105	J-104	J-105	132	110	PVC	110	uPVC	Retained
P-106	J-105	J-106	61	110	PVC	110	uPVC	Retained
P-107	J-106	J-107	12.5	110	PVC	110	uPVC	Retained
P-108	J-107	J-108	59.5	110	PVC	110	uPVC	Retained
P-109	J-108	J-109	22	110	PVC	110	uPVC	Retained
P-11	J-12	J-13	71	75	PVC	180	HDPE	Replacement
P-110	J-109	J-110	36	110	PVC	110	uPVC	Retained
P-111	J-110	J-111	52.5	110	PVC	110	uPVC	Retained
P-112	J-111	J-112	37	110	PVC	110	uPVC	Retained
P-113	J-112	J-113	58.5	110	PVC	110	uPVC	Retained
P-114	J-112	J-114	35.5	110	PVC	110	uPVC	Retained
P-115	J-111	J-115	48.5	110	PVC	110	uPVC	Retained
P-116	J-115	J-116	24.5	110	PVC	140	HDPE	Replacement
P-117	J-116	J-112	35.5	110	PVC	110	uPVC	Retained
P-118	J-106	J-103	132.5	110	PVC	110	uPVC	Retained
P-119	J-102	J-117	37.5	110	PVC	110	uPVC	Retained
P-12	J-13	J-14	20	200	PVC	200	uPVC	Retained
P-120	J-117	J-118	33.5	110	PVC	110	uPVC	Retained
P-121	J-118	J-108	107.5	110	PVC	110	uPVC	Retained
P-122	J-118	J-115	51.5	110	PVC	110	uPVC	Retained
P-123	J-117	J-119	78.5	110	PVC	110	uPVC	Retained
P-124	J-119	J-116	50.5	110	PVC	110	uPVC	Retained
P-125	J-116	J-94	48.5	110	PVC	180	HDPE	Replacement
P-126	J-119	J-99	45	110	PVC	110	uPVC	Retained
P-127	J-105	J-120	95	110	PVC	125	HDPE	Replacement
P-128	J-120	J-121	74.5	110	PVC	110	uPVC	Retained
P-129	J-121	J-122	176.5	110	PVC	110	uPVC	Retained
P-13	J-14	J-10	18	200	PVC	200	uPVC	Retained
P-130	J-120	J-123	184.5	110	PVC	110	uPVC	Retained
P-131	J-82	J-124	29	160	PVC	160	uPVC	Retained
P-132	J-124	J-125	60	75	PVC	110	HDPE	Replacement
P-133	J-125	J-126	35.5	75	PVC	110	HDPE	Replacement
P-134	J-126	J-127	54.5	75	PVC	110	HDPE	Replacement
P-135	J-127	J-124	31	160	PVC	160	uPVC	Retained
P-136	J-124	J-128	18.5	75	PVC	110	HDPE	Replacement
P-137	J-128	J-129	28.5	75	PVC	125	HDPE	Replacement
P-138	J-127	J-130	10.5	160	PVC	160	uPVC	Retained
P-139	J-130	J-131	37	160	PVC	160	uPVC	Retained
P-14	J-15	J-14	32.5	75	PVC	110	HDPE	Replacement
P-140	J-131	J-132	49	160	PVC	180	HDPE	Replacement
P-141	J-131	J-133	79.5	160	PVC	180	HDPE	Replacement
P-142	J-133	J-134	17	110	PVC	140	HDPE	Replacement
P-143	J-134	J-135	38.5	110	PVC	110	uPVC	Retained
P-144	J-135	J-136	18	110	PVC	140	HDPE	Replacement
P-145	J-136	J-81	50	110	PVC	110	uPVC	Retained
P-146	J-135	J-137	36	75	PVC	180	HDPE	Replacement
P-147	J-137	J-138	30.5	75	PVC	140	HDPE	Replacement
P-148	J-138	J-139	19	75	PVC	110	HDPE	Replacement
P-149	J-139	J-140	105	75	PVC	140	HDPE	Replacement
P-15	J-13	J-16	6.5	200	PVC	200	uPVC	Retained
P-150	J-140	J-141	28.5	75	PVC	180	HDPE	Replacement
P-151	J-141	J-69	35.5	75	PVC	140	HDPE	Replacement

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-70	J-142	34	110	PVC	110	uPVC	Retained
P-153	J-141	J-143	95.5	75	PVC	110	HDPE	Replacement
P-154	J-143	J-63	40.5	75	PVC	200	HDPE	Replacement
P-155	J-143	J-144	31	75	PVC	180	HDPE	Replacement
P-156	J-144	J-145	32	75	PVC	180	HDPE	Replacement
P-157	J-133	J-146	86.5	110	PVC	125	HDPE	Replacement
P-158	J-146	J-147	42.5	110	PVC	110	uPVC	Retained
P-159	J-83	J-148	25.5	160	PVC	160	uPVC	Retained
P-16	J-16	J-17	36.5	200	PVC	200	uPVC	Retained
P-160	J-148	J-149	35.5	160	PVC	160	uPVC	Retained
P-161	J-149	J-150	29.5	160	PVC	160	uPVC	Retained
P-162	J-79	J-151	21.5	75	PVC	110	HDPE	Replacement
P-163	J-151	J-152	48	75	PVC	110	HDPE	Replacement
P-164	J-46	J-153	10	75	PVC	225	HDPE	Replacement
P-165	J-153	J-154	21	75	PVC	200	HDPE	Replacement
P-166	J-154	J-155	19.5	75	PVC	160	HDPE	Replacement
P-167	J-155	J-156	11.5	75	PVC	125	HDPE	Replacement
P-168	J-156	J-157	137	75	PVC	110	HDPE	Replacement
P-169	J-67	J-158	45	110	PVC	110	uPVC	Retained
P-17	J-17	J-18	45	75	PVC	110	HDPE	Replacement
P-170	J-1	J-159	56	160	PVC	250	HDPE	Replacement
P-171	J-159	J-160	85	160	PVC	200	HDPE	Replacement
P-172	J-161	J-162	60.5	200	PVC	200	uPVC	Retained
P-173	J-162	J-163	55	200	PVC	200	uPVC	Retained
P-174	J-163	J-164	58	200	PVC	200	uPVC	Retained
P-175	J-164	J-165	13	200	PVC	200	uPVC	Retained
P-176	J-165	J-166	57	200	PVC	200	uPVC	Retained
P-177	J-166	J-167	38	200	PVC	200	uPVC	Retained
P-178	J-167	J-168	95	200	PVC	200	uPVC	Retained
P-179	J-168	J-169	40.5	110	PVC	110	uPVC	Retained
P-18	J-17	J-19	36.5	75	PVC	250	HDPE	Replacement
P-180	J-167	J-170	59.5	75	PVC	110	HDPE	Replacement
P-181	J-166	J-171	56	75	PVC	180	HDPE	Replacement
P-182	J-171	J-172	26.5	75	PVC	140	HDPE	Replacement
P-183	J-172	J-173	73	75	PVC	110	HDPE	Replacement
P-184	J-172	J-174	27	75	PVC	140	HDPE	Replacement
P-185	J-174	J-175	75.5	75	PVC	110	HDPE	Replacement
P-186	J-176	J-177	70	75	PVC	110	HDPE	Replacement
P-187	J-177	J-178	29.5	75	PVC	110	HDPE	Replacement
P-188	J-178	J-179	157.5	75	PVC	110	HDPE	Replacement
P-189	J-180	J-181	45	75	PVC	110	HDPE	Replacement
P-19	J-19	J-20	29	75	PVC	250	HDPE	Replacement
P-190	J-181	J-182	31	160	PVC	160	uPVC	Retained
P-191	J-182	J-178	31.5	75	PVC	110	HDPE	Replacement
P-192	J-182	J-183	31	160	PVC	160	uPVC	Retained
P-193	J-183	J-184	29.5	160	PVC	160	uPVC	Retained
P-194	J-184	J-185	40.5	160	PVC	160	uPVC	Retained
P-195	J-185	J-186	46.5	160	PVC	160	uPVC	Retained
P-196	J-181	J-187	49.5	75	PVC	110	HDPE	Replacement
P-197	J-187	J-188	30.5	75	PVC	110	HDPE	Replacement
P-198	J-188	J-182	50	75	PVC	110	HDPE	Replacement
P-199	J-189	J-190	39.5	75	PVC	110	HDPE	Replacement
P-2	J-1	J-2	78	160	PVC	355	HDPE	Replacement
P-20	J-20	J-21	71.5	75	PVC	225	HDPE	Replacement
P-200	J-190	J-191	40.5	160	PVC	160	uPVC	Retained
P-201	J-191	J-192	12	75	PVC	110	HDPE	Replacement
P-202	J-192	J-193	27	75	PVC	110	HDPE	Replacement
P-203	J-193	J-188	31.5	75	PVC	110	HDPE	Replacement
P-204	J-188	J-194	26.5	75	PVC	110	HDPE	Replacement
P-205	J-194	J-195	47	75	PVC	110	HDPE	Replacement

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-206	J-195	J-192	17.5	75	PVC	110	HDPE	Replacement
P-207	J-194	J-196	38.5	75	PVC	110	HDPE	Replacement
P-208	J-193	J-183	48	75	PVC	110	HDPE	Replacement
P-209	J-191	J-184	58.5	75	PVC	110	HDPE	Replacement
P-21	J-21	J-22	78.5	75	PVC	280	HDPE	Replacement
P-210	J-190	J-185	59	75	PVC	110	HDPE	Replacement
P-22	J-17	J-23	9	200	PVC	250	HDPE	Replacement
P-23	J-23	J-24	41.5	75	PVC	110	HDPE	Replacement
P-24	J-23	J-25	11.5	200	PVC	250	HDPE	Replacement
P-25	J-25	J-26	18	200	PVC	200	uPVC	Retained
P-26	J-26	J-27	19	200	PVC	225	HDPE	Replacement
P-27	J-27	J-28	34.5	200	PVC	200	uPVC	Retained
P-28	J-28	J-29	13	200	PVC	200	uPVC	Retained
P-29	J-29	J-30	15	200	PVC	200	uPVC	Retained
P-3	J-2	J-3	19	160	PVC	315	HDPE	Replacement
P-30	J-30	J-31	60	50	PVC	225	HDPE	Replacement
P-31	J-31	J-32	35.5	50	PVC	200	HDPE	Replacement
P-32	J-32	J-33	16.5	50	PVC	200	HDPE	Replacement
P-33	J-33	J-34	34	50	PVC	180	HDPE	Replacement
P-34	J-31	J-35	18	50	PVC	250	HDPE	Replacement
P-35	J-35	J-36	19	50	PVC	250	HDPE	Replacement
P-36	J-36	J-37	33.5	50	PVC	250	HDPE	Replacement
P-37	J-37	J-38	9	50	PVC	110	HDPE	Replacement
P-38	J-35	J-39	40.5	50	PVC	250	HDPE	Replacement
P-39	J-27	J-40	38	200	PVC	250	HDPE	Replacement
P-4	J-3	J-4	51	160	PVC	315	HDPE	Replacement
P-40	J-40	J-41	22.5	160	PVC	250	HDPE	Replacement
P-41	J-41	J-42	30.5	160	PVC	250	HDPE	Replacement
P-42	J-42	J-43	20.5	160	PVC	250	HDPE	Replacement
P-43	J-43	J-44	59.5	160	PVC	200	HDPE	Replacement
P-44	J-44	J-45	28	160	PVC	250	HDPE	Replacement
P-45	J-45	J-46	72.5	160	PVC	250	HDPE	Replacement
P-46	J-46	J-47	55	160	PVC	180	HDPE	Replacement
P-47	J-47	J-48	57.5	160	PVC	225	HDPE	Replacement
P-48	J-48	J-49	18	160	PVC	250	HDPE	Replacement
P-49	J-49	J-50	21	160	PVC	250	HDPE	Replacement
P-5	J-4	J-5	65	160	PVC	250	HDPE	Replacement
P-50	J-50	J-51	25.5	160	PVC	250	HDPE	Replacement
P-51	J-51	J-52	19	160	PVC	250	HDPE	Replacement
P-52	J-52	J-53	70.5	160	PVC	250	HDPE	Replacement
P-53	J-53	J-54	6.5	160	PVC	200	HDPE	Replacement
P-54	J-54	J-55	9.5	110	PVC	110	uPVC	Retained
P-55	J-51	J-56	73.5	75	PVC	110	HDPE	Replacement
P-56	J-51	J-57	52.5	75	PVC	110	HDPE	Replacement
P-57	J-52	J-58	114	75	PVC	160	HDPE	Replacement
P-58	J-59	J-60	23	75	PVC	110	HDPE	Replacement
P-59	J-60	J-61	40	75	PVC	110	HDPE	Replacement
P-6	J-5	J-6	89.5	160	PVC	250	HDPE	Replacement
P-60	J-61	J-62	20.5	75	PVC	160	HDPE	Replacement
P-61	J-62	J-63	14	110	PVC	180	HDPE	Replacement
P-62	J-63	J-64	4.5	110	PVC	140	HDPE	Replacement
P-63	J-64	J-65	49	160	PVC	225	HDPE	Replacement
P-64	J-65	J-47	41	160	PVC	250	HDPE	Replacement
P-65	J-64	J-66	18	160	PVC	200	HDPE	Replacement
P-66	J-66	J-67	32.5	160	PVC	225	HDPE	Replacement
P-67	J-67	J-68	22	110	PVC	225	HDPE	Replacement
P-68	J-68	J-69	21.5	110	PVC	225	HDPE	Replacement
P-69	J-69	J-70	18	110	PVC	200	HDPE	Replacement
P-7	J-7	J-8	34.5	75	PVC	225	HDPE	Replacement
P-70	J-70	J-71	22	110	PVC	225	HDPE	Replacement

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-71	J-71	J-72	38	75	PVC	180	HDPE	Replacement
P-72	J-72	J-73	32	75	PVC	180	HDPE	Replacement
P-73	J-71	J-74	29.5	75	PVC	180	HDPE	Replacement
P-74	J-74	J-75	18	75	PVC	110	HDPE	Replacement
P-75	J-71	J-76	61.5	75	PVC	225	HDPE	Replacement
P-76	J-76	J-77	31	75	PVC	225	HDPE	Replacement
P-77	J-77	J-78	21	75	PVC	225	HDPE	Replacement
P-78	J-78	J-79	27.5	75	PVC	225	HDPE	Replacement
P-79	J-79	J-80	57	75	PVC	200	HDPE	Replacement
P-8	J-8	J-9	58	75	PVC	110	HDPE	Replacement
P-80	J-80	J-81	50	200	PVC	200	uPVC	Retained
P-81	J-81	J-82	78.5	200	PVC	200	uPVC	Retained
P-82	J-82	J-83	43	110	PVC	200	HDPE	Replacement
P-83	J-83	J-84	79	110	PVC	180	HDPE	Replacement
P-84	J-84	J-85	29.5	75	PVC	180	HDPE	Replacement
P-85	J-85	J-86	22	75	PVC	180	HDPE	Replacement
P-86	J-86	J-87	11.5	75	PVC	180	HDPE	Replacement
P-87	J-87	J-88	14	75	PVC	140	HDPE	Replacement
P-88	J-88	J-89	19	75	PVC	180	HDPE	Replacement
P-89	J-89	J-90	36.5	75	PVC	180	HDPE	Replacement
P-9	J-8	J-10	8.5	75	PVC	200	HDPE	Replacement
P-90	J-87	J-91	87.5	75	PVC	180	HDPE	Replacement
P-91	J-91	J-92	30.5	75	PVC	180	HDPE	Replacement
P-92	J-92	J-93	74.5	75	PVC	140	HDPE	Replacement
P-93	J-93	J-94	95	110	PVC	110	uPVC	Retained
P-94	J-94	J-95	24	110	PVC	180	HDPE	Replacement
P-95	J-95	J-96	17.5	110	PVC	180	HDPE	Replacement
P-96	J-96	J-88	52	75	PVC	200	HDPE	Replacement
P-97	J-96	J-97	35	110	PVC	110	uPVC	Retained
P-98	J-97	J-98	27	110	PVC	110	uPVC	Retained
P-99	J-93	J-99	44.5	110	PVC	180	HDPE	Replacement
PP-211	J-107	PJ-197	66.5	#N/A	#N/A	110	HDPE	New
PP-212	J-109	PJ-198	54	#N/A	#N/A	110	HDPE	New
PP-213	J-95	PJ-199	29	#N/A	#N/A	110	HDPE	New
PP-214	J-97	PJ-200	19	#N/A	#N/A	110	HDPE	New
PP-215	J-89	PJ-201	33	#N/A	#N/A	140	HDPE	New
PP-216	PJ-201	PJ-202	16	#N/A	#N/A	200	HDPE	New
PP-217	PJ-202	PJ-203	31	#N/A	#N/A	200	HDPE	New
PP-218	PJ-202	PJ-204	20.5	#N/A	#N/A	110	HDPE	New
PP-219	J-86	PJ-205	35.5	#N/A	#N/A	110	HDPE	New
PP-220	PJ-205	PJ-201	35	#N/A	#N/A	110	HDPE	New
PP-221	PJ-205	PJ-206	21	#N/A	#N/A	110	HDPE	New
PP-222	PJ-206	PJ-207	20	#N/A	#N/A	110	HDPE	New
PP-223	PJ-206	PJ-208	9.5	#N/A	#N/A	110	HDPE	New
PP-224	PJ-208	PJ-209	17.5	#N/A	#N/A	110	HDPE	New
PP-225	PJ-210	J-85	11	#N/A	#N/A	110	HDPE	New
PP-226	J-85	PJ-211	24	#N/A	#N/A	110	HDPE	New
PP-227	J-91	PJ-212	11	#N/A	#N/A	110	HDPE	New
PP-228	J-84	PJ-213	52	#N/A	#N/A	110	HDPE	New
PP-229	PJ-213	PJ-214	58.5	#N/A	#N/A	160	HDPE	New
PP-230	PJ-214	J-148	19	#N/A	#N/A	140	HDPE	New
PP-231	J-148	PJ-215	29.5	#N/A	#N/A	110	HDPE	New
PP-232	PJ-215	PJ-216	14.5	#N/A	#N/A	110	HDPE	New
PP-233	PJ-215	PJ-217	33	#N/A	#N/A	110	HDPE	New
PP-234	PJ-217	PJ-218	33.5	#N/A	#N/A	125	HDPE	New
PP-235	PJ-218	J-150	49	#N/A	#N/A	125	HDPE	New
PP-236	J-150	PJ-219	17	#N/A	#N/A	125	HDPE	New
PP-237	PJ-219	PJ-220	26	#N/A	#N/A	110	HDPE	New
PP-238	PJ-220	J-149	21.5	#N/A	#N/A	125	HDPE	New
PP-239	J-149	PJ-217	36	#N/A	#N/A	110	HDPE	New

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-240	PJ-220	PJ-214	37	#N/A	#N/A	110	HDPE	New
PP-241	PJ-213	PJ-221	62	#N/A	#N/A	110	HDPE	New
PP-242	PJ-221	PJ-219	67.5	#N/A	#N/A	140	HDPE	New
PP-243	PJ-221	PJ-222	121	#N/A	#N/A	160	HDPE	New
PP-244	PJ-222	PJ-223	38	#N/A	#N/A	110	HDPE	New
PP-245	PJ-222	PJ-224	149	#N/A	#N/A	160	HDPE	New
PP-246	PJ-224	PJ-225	46	#N/A	#N/A	110	HDPE	New
PP-247	PJ-225	PJ-226	46.5	#N/A	#N/A	110	HDPE	New
PP-248	PJ-226	PJ-227	26.5	#N/A	#N/A	110	HDPE	New
PP-249	PJ-226	PJ-228	90	#N/A	#N/A	110	HDPE	New
PP-250	PJ-228	J-100	34.5	#N/A	#N/A	110	HDPE	New
PP-251	PJ-228	PJ-229	51	#N/A	#N/A	110	HDPE	New
PP-252	PJ-229	PJ-225	92.5	#N/A	#N/A	110	HDPE	New
PP-254	PJ-230	PJ-231	227	#N/A	#N/A	110	HDPE	New
PP-255	PJ-218	PJ-232	96.5	#N/A	#N/A	160	HDPE	New
PP-256	PJ-232	J-80	67.5	#N/A	#N/A	110	HDPE	New
PP-257	PJ-232	PJ-233	204.5	#N/A	#N/A	140	HDPE	New
PP-258	PJ-233	PJ-234	119	#N/A	#N/A	160	HDPE	New
PP-259	PJ-234	J-157	36.5	#N/A	#N/A	110	HDPE	New
PP-260	PJ-234	PJ-235	149	#N/A	#N/A	160	HDPE	New
PP-261	PJ-235	PJ-236	176	#N/A	#N/A	110	HDPE	New
PP-262	PJ-236	J-30	26.5	#N/A	#N/A	200	HDPE	New
PP-263	J-44	PJ-237	28.5	#N/A	#N/A	200	HDPE	New
PP-264	PJ-237	PJ-236	42	#N/A	#N/A	180	HDPE	New
PP-265	PJ-237	J-41	79.5	#N/A	#N/A	125	HDPE	New
PP-266	J-40	J-29	88	#N/A	#N/A	110	HDPE	New
PP-267	J-28	J-33	41	#N/A	#N/A	125	HDPE	New
PP-268	J-26	J-34	48	#N/A	#N/A	125	HDPE	New
PP-269	J-34	PJ-238	32.5	#N/A	#N/A	110	HDPE	New
PP-270	J-58	J-25	34.5	#N/A	#N/A	160	HDPE	New
PP-271	J-24	PJ-239	35.5	#N/A	#N/A	110	HDPE	New
PP-272	PJ-239	PJ-240	62	#N/A	#N/A	110	HDPE	New
PP-273	J-18	PJ-239	20	#N/A	#N/A	110	HDPE	New
PP-274	J-12	J-53	17.5	#N/A	#N/A	160	HDPE	New
PP-275	J-54	J-11	11.5	#N/A	#N/A	200	HDPE	New
PP-276	J-16	PJ-241	30.5	#N/A	#N/A	110	HDPE	New
PP-277	J-19	PJ-242	43.5	#N/A	#N/A	110	HDPE	New
PP-278	J-51	PJ-243	23.5	#N/A	#N/A	110	HDPE	New
PP-279	J-57	PJ-244	19	#N/A	#N/A	110	HDPE	New
PP-280	J-20	J-4	89.5	#N/A	#N/A	180	HDPE	New
PP-281	J-4	J-167	81	#N/A	#N/A	180	HDPE	New
PP-282	J-5	PJ-245	13	#N/A	#N/A	110	HDPE	New
PP-283	J-174	PJ-246	45	#N/A	#N/A	110	HDPE	New
PP-284	PJ-247	J-60	35.5	#N/A	#N/A	110	HDPE	New
PP-285	J-145	PJ-248	46.5	#N/A	#N/A	140	HDPE	New
PP-286	PJ-248	PJ-249	54	#N/A	#N/A	180	HDPE	New
PP-287	PJ-249	PJ-251	9.5	#N/A	#N/A	110	HDPE	New
PP-288	PJ-251	PJ-250	26.5	#N/A	#N/A	110	HDPE	New
PP-289	PJ-251	PJ-252	27.5	#N/A	#N/A	110	HDPE	New
PP-290	J-145	PJ-253	22.5	#N/A	#N/A	140	HDPE	New
PP-291	PJ-253	PJ-254	16	#N/A	#N/A	140	HDPE	New
PP-292	PJ-254	PJ-255	32	#N/A	#N/A	140	HDPE	New
PP-293	PJ-255	PJ-256	58.5	#N/A	#N/A	140	HDPE	New
PP-294	PJ-256	PJ-257	14.5	#N/A	#N/A	110	HDPE	New
PP-295	PJ-257	PJ-258	10.5	#N/A	#N/A	110	HDPE	New
PP-296	J-146	PJ-257	44	#N/A	#N/A	110	HDPE	New
PP-297	PJ-249	J-147	23	#N/A	#N/A	180	HDPE	New
PP-298	J-147	PJ-259	43	#N/A	#N/A	180	HDPE	New
PP-299	PJ-259	PJ-260	13	#N/A	#N/A	110	HDPE	New
PP-300	PJ-260	PJ-261	20	#N/A	#N/A	110	HDPE	New

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-301	PJ-259	PJ-262	41.5	#N/A	#N/A	180	HDPE	New
PP-302	PJ-262	PJ-263	48	#N/A	#N/A	110	HDPE	New
PP-303	PJ-262	J-132	39	#N/A	#N/A	180	HDPE	New
PP-304	J-132	PJ-264	24.5	#N/A	#N/A	200	HDPE	New
PP-305	PJ-264	PJ-203	36	#N/A	#N/A	200	HDPE	New
PP-306	PJ-203	J-90	39	#N/A	#N/A	180	HDPE	New
PP-307	PJ-264	PJ-265	14.5	#N/A	#N/A	110	HDPE	New
PP-308	J-131	PJ-266	21.5	#N/A	#N/A	110	HDPE	New
PP-309	J-130	PJ-267	16	#N/A	#N/A	110	HDPE	New
PP-310	PJ-267	PJ-268	29.5	#N/A	#N/A	110	HDPE	New
PP-311	PJ-267	PJ-269	5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-269	PJ-270	22	#N/A	#N/A	110	HDPE	New
PP-313	PJ-269	PJ-271	12.5	#N/A	#N/A	110	HDPE	New
PP-314	PJ-271	J-128	27	#N/A	#N/A	110	HDPE	New
PP-315	PJ-271	PJ-272	25.5	#N/A	#N/A	110	HDPE	New
PP-316	J-129	J-136	28	#N/A	#N/A	125	HDPE	New
PP-317	J-134	PJ-273	62.5	#N/A	#N/A	140	HDPE	New
PP-318	PJ-273	J-139	31	#N/A	#N/A	140	HDPE	New
PP-319	PJ-273	PJ-256	78.5	#N/A	#N/A	110	HDPE	New
PP-320	J-138	PJ-274	59.5	#N/A	#N/A	110	HDPE	New
PP-321	PJ-274	PJ-275	11.5	#N/A	#N/A	140	HDPE	New
PP-322	PJ-275	PJ-276	42	#N/A	#N/A	140	HDPE	New
PP-323	PJ-276	J-137	18.5	#N/A	#N/A	140	HDPE	New
PP-324	PJ-274	J-74	84	#N/A	#N/A	160	HDPE	New
PP-325	J-76	PJ-277	56.5	#N/A	#N/A	110	HDPE	New
PP-326	PJ-275	J-77	45.5	#N/A	#N/A	110	HDPE	New
PP-327	J-151	PJ-278	18.5	#N/A	#N/A	110	HDPE	New
PP-328	J-72	PJ-279	31	#N/A	#N/A	110	HDPE	New
PP-329	PJ-253	PJ-280	54	#N/A	#N/A	110	HDPE	New
PP-330	PJ-281	J-68	13.5	#N/A	#N/A	110	HDPE	New
PP-331	J-68	PJ-282	36	#N/A	#N/A	110	HDPE	New
PP-332	J-69	PJ-283	20	#N/A	#N/A	110	HDPE	New
PP-333	J-66	J-65	68.5	#N/A	#N/A	140	HDPE	New
PP-334	J-62	J-48	76.5	#N/A	#N/A	140	HDPE	New
PP-335	J-61	J-49	86	#N/A	#N/A	140	HDPE	New
PP-336	J-50	PJ-284	110.5	#N/A	#N/A	125	HDPE	New
PP-337	PJ-284	J-43	17	#N/A	#N/A	160	HDPE	New
PP-338	PJ-284	J-45	55	#N/A	#N/A	140	HDPE	New
PP-339	J-32	PJ-285	21.5	#N/A	#N/A	110	HDPE	New
PP-340	J-37	PJ-286	19	#N/A	#N/A	110	HDPE	New
PP-341	J-37	J-21	41.5	#N/A	#N/A	200	HDPE	New
PP-342	J-3	PJ-287	28.5	#N/A	#N/A	110	HDPE	New
PP-343	J-2	PJ-288	68	#N/A	#N/A	200	HDPE	New
PP-344	PJ-288	J-164	53.5	#N/A	#N/A	200	HDPE	New
PP-345	PJ-288	PJ-289	16	#N/A	#N/A	110	HDPE	New
PP-346	PJ-290	J-163	27.5	#N/A	#N/A	110	HDPE	New
PP-347	J-165	PJ-291	99	#N/A	#N/A	110	HDPE	New
PP-348	PJ-291	J-162	38.5	#N/A	#N/A	125	HDPE	New
PP-349	PJ-291	PJ-292	47	#N/A	#N/A	140	HDPE	New
PP-350	PJ-292	PJ-293	64.5	#N/A	#N/A	110	HDPE	New
PP-351	PJ-292	J-175	82.5	#N/A	#N/A	125	HDPE	New
PP-352	J-175	PJ-294	39	#N/A	#N/A	140	HDPE	New
PP-353	PJ-294	J-176	89	#N/A	#N/A	110	HDPE	New
PP-354	PJ-294	J-179	22.5	#N/A	#N/A	125	HDPE	New
PP-355	J-179	J-186	40.5	#N/A	#N/A	110	HDPE	New
PP-356	J-186	J-189	59	#N/A	#N/A	110	HDPE	New
PP-357	J-189	PJ-295	46	#N/A	#N/A	110	HDPE	New
PP-358	PJ-295	PJ-296	21.5	#N/A	#N/A	110	HDPE	New
PP-359	PJ-296	PJ-297	91	#N/A	#N/A	110	HDPE	New
PP-360	PJ-297	J-196	42.5	#N/A	#N/A	110	HDPE	New

BOQ for Z11								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-361	J-195	PJ-298	22.5	#N/A	#N/A	110	HDPE	New
PP-362	PJ-298	PJ-297	21.5	#N/A	#N/A	110	HDPE	New
PP-363	PJ-298	PJ-299	14.5	#N/A	#N/A	110	HDPE	New
PP-364	PJ-299	PJ-295	77	#N/A	#N/A	110	HDPE	New
PP-365	PJ-299	PJ-300	20	#N/A	#N/A	110	HDPE	New
PP-366	J-194	PJ-301	46	#N/A	#N/A	110	HDPE	New
PP-367	J-181	PJ-302	60	#N/A	#N/A	110	HDPE	New
PP-368	PJ-302	J-177	30.5	#N/A	#N/A	110	HDPE	New
PP-369	PJ-302	PJ-303	64	#N/A	#N/A	125	HDPE	New
PP-370	PJ-303	PJ-304	26	#N/A	#N/A	125	HDPE	New
PP-371	PJ-304	PJ-305	22.5	#N/A	#N/A	110	HDPE	New
PP-372	PJ-304	J-180	43.5	#N/A	#N/A	125	HDPE	New
PP-373	J-180	PJ-306	36	#N/A	#N/A	110	HDPE	New
PP-374	PJ-306	PJ-307	28.5	#N/A	#N/A	110	HDPE	New
PP-375	PJ-307	PJ-308	49	#N/A	#N/A	110	HDPE	New
PP-376	PJ-308	PJ-309	62	#N/A	#N/A	110	HDPE	New
PP-377	PJ-309	J-196	27	#N/A	#N/A	110	HDPE	New
PP-378	PJ-309	PJ-310	30	#N/A	#N/A	110	HDPE	New
PP-379	PJ-307	PJ-311	22	#N/A	#N/A	110	HDPE	New
PP-380	PJ-306	PJ-312	21.5	#N/A	#N/A	110	HDPE	New
PP-381	PJ-303	PJ-313	18	#N/A	#N/A	180	HDPE	New
PP-382	PJ-313	PJ-314	15	#N/A	#N/A	110	HDPE	New
PP-383	PJ-313	PJ-315	38	#N/A	#N/A	180	HDPE	New
PP-384	PJ-315	J-6	16	#N/A	#N/A	125	HDPE	New
PP-385	J-168	PJ-315	16	#N/A	#N/A	180	HDPE	New
PP-386	PJ-248	PJ-316	102	#N/A	#N/A	160	HDPE	New
PP-387	PJ-316	J-59	63	#N/A	#N/A	160	HDPE	New
PP-388	J-59	PJ-317	140.5	#N/A	#N/A	180	HDPE	New
PP-389	PJ-317	J-55	40	#N/A	#N/A	180	HDPE	New
PP-390	J-55	J-7	82	#N/A	#N/A	180	HDPE	New
PP-391	J-7	J-6	9	#N/A	#N/A	250	HDPE	New
PP-392	PJ-317	PJ-318	25.5	#N/A	#N/A	110	HDPE	New
PP-393	PJ-316	PJ-319	24	#N/A	#N/A	110	HDPE	New
PP-394	J-39	J-159	98.5	#N/A	#N/A	200	HDPE	New
PP-395	J-22	J-1	28.5	#N/A	#N/A	280	HDPE	New
PP-396	J-161	PJ-320	122	#N/A	#N/A	125	HDPE	New
PP-397	PJ-320	J-160	56.5	#N/A	#N/A	140	HDPE	New
PP-398	J-160	PJ-235	264	#N/A	#N/A	180	HDPE	New
PP-399	PJ-224	PJ-322	49	#N/A	#N/A	140	HDPE	New
PP-400	PJ-322	PJ-230	278.5	#N/A	#N/A	110	HDPE	New
PP-401	PJ-321	PJ-322	63.5	#N/A	#N/A	110	HDPE	New
PP-402	J-70	PJ-323	59.5	#N/A	#N/A	140	HDPE	New
PP-403	PJ-323	PJ-324	51.5	#N/A	#N/A	180	HDPE	New
PP-404	PJ-324	J-153	38.5	#N/A	#N/A	180	HDPE	New
PP-405	PJ-323	PJ-325	6	#N/A	#N/A	160	HDPE	New
PP-406	PJ-325	J-73	40.5	#N/A	#N/A	140	HDPE	New
PP-407	J-73	PJ-326	36	#N/A	#N/A	140	HDPE	New
PP-408	PJ-326	PJ-327	50	#N/A	#N/A	110	HDPE	New
PP-409	PJ-327	PJ-325	23.5	#N/A	#N/A	110	HDPE	New
PP-410	PJ-326	PJ-328	24.5	#N/A	#N/A	160	HDPE	New
PP-411	PJ-328	J-156	44.5	#N/A	#N/A	110	HDPE	New
PP-412	PJ-329	PJ-330	17	#N/A	#N/A	110	HDPE	New
PP-413	PJ-330	PJ-328	12	#N/A	#N/A	140	HDPE	New
PP-414	J-155	PJ-330	42.5	#N/A	#N/A	110	HDPE	New
PP-415	PJ-330	PJ-331	21.5	#N/A	#N/A	125	HDPE	New
PP-416	PJ-331	PJ-324	25	#N/A	#N/A	110	HDPE	New
PP-417	PJ-331	J-154	40.5	#N/A	#N/A	125	HDPE	New
			18683.00					

Zone -12

Distribution Network Design Output: Zone 12

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	30	20.849	20.949	-0.1007	J-1	J-2	233.32	-8,524.04	7,768.47	200	0	0	0.1007	uPVC	145	0
P-10	66.5	19.706	19.666	25.50689	J-10	J-11	234.11	-8,817.68	7,782.05	200	0.81	3.01	25.50689	uPVC	145	0.2
P-100	67.5	16.994	17.376	-6.99772	J-92	J-89	234.43	-8,251.29	7,949.58	125	0.57	2.71	6.99772	uPVC	145	0.18
P-101	147.5	16.994	16.791	3.2843	J-92	J-93	234.43	-8,251.29	7,949.58	110	0.35	1.24	3.2843	uPVC	145	0.18
P-102	50	16.791	16.91	2.62471	J-93	J-94	234.45	-8,184.23	7,860.33	110	0.28	0.82	2.62471	uPVC	145	0.04
P-103	66	16.91	17.01	-5.16647	J-94	J-91	234.29	-8,232.96	7,849.71	110	0.54	2.88	5.16647	uPVC	145	0.19
P-104	87.5	17.166	17.084	4.70489	J-90	J-95	234.26	-8,284.09	7,905.20	110	0.5	2.42	4.70489	uPVC	145	0.21
P-105	41.5	17.084	16.87	4.27386	J-95	J-96	234.13	-8,269.62	7,818.84	110	0.45	2.03	4.27386	uPVC	145	0.08
P-106	23.5	16.87	16.91	-7.32511	J-96	J-94	234.26	-8,229.10	7,826.56	125	0.6	2.95	7.32511	uPVC	145	0.07
P-107	97	16.87	16.658	11.05784	J-96	J-97	234.26	-8,229.10	7,826.56	140	0.72	3.64	11.05784	uPVC	145	0.35
P-108	51.5	16.658	16.493	0.85098	J-97	J-98	234.12	-8,213.17	7,731.03	110	0.09	0.1	0.85098	uPVC	145	0.01
P-109	25	16.493	16.423	0.08402	J-98	J-99	234.28	-8,163.00	7,741.64	110	0.01	0	0.08402	uPVC	145	0
P-11	66.5	19.666	19.546	19.36944	J-11	J-12	233.95	-8,884.38	7,782.05	200	0.62	1.81	19.36944	uPVC	145	0.12
P-110	76.5	16.382	16.493	-0.25585	J-100	J-98	234.39	-8,176.03	7,816.91	110	0.03	0.01	0.25585	uPVC	145	0
P-111	112	16.658	17.412	-5.92522	J-97	J-101	234.12	-8,213.17	7,731.03	110	0.62	3.71	5.92522	uPVC	145	0.42
P-112	23.5	17.412	17.382	0.07901	J-101	J-102	233.78	-8,323.66	7,711.73	110	0.01	0	0.07901	uPVC	145	0
P-113	89.5	18.276	18.923	-10.6567	J-84	J-103	233.82	-8,402.29	7,847.30	125	0.87	5.91	10.65666	uPVC	145	0.53
P-114	108.5	18.923	17.895	23.31237	J-103	J-104	233.7	-8,389.27	7,758.53	160	1.16	7.56	23.31237	uPVC	145	0.82
P-115	57	17.895	17.54	39.47821	J-104	J-105	233.91	-8,370.45	7,651.91	200	1.26	6.77	39.47821	uPVC	145	0.39
P-116	50	17.54	17.412	6.62377	J-105	J-101	233.88	-8,314.49	7,662.52	110	0.7	4.56	6.62377	uPVC	145	0.23
P-117	112.5	17.54	16.549	22.74665	J-105	J-106	233.88	-8,314.49	7,662.52	160	1.13	7.23	22.74665	uPVC	145	0.81
P-118	50	16.549	16.658	-15.0955	J-106	J-97	234.06	-8,203.53	7,681.82	160	0.75	3.38	15.09545	uPVC	145	0.17
P-119	14	16.549	16.424	37.25259	J-106	J-107	234.06	-8,203.53	7,681.82	200	1.19	6.08	37.25259	uPVC	145	0.09
P-12	95	19.546	19.087	11.83233	J-12	J-13	233.95	-8,951.07	7,784.22	200	0.38	0.73	11.83233	uPVC	145	0.07
P-120	52	16.424	16.019	44.36608	J-107	J-108	234.1	-8,190.02	7,684.72	225	1.12	4.73	44.36608	uPVC	145	0.25
P-121	29.5	16.019	15.794	43.67586	J-108	J-109	234.26	-8,139.36	7,695.33	225	1.1	4.6	43.67586	uPVC	145	0.14
P-122	62.5	16.019	16.108	0.20914	J-108	J-110	234.26	-8,139.36	7,695.33	110	0.02	0.01	0.20914	uPVC	145	0
P-123	57.5	16.424	16.612	-7.52617	J-107	J-111	234.1	-8,190.02	7,684.72	125	0.61	3.1	7.52617	uPVC	145	0.18
P-124	127.5	16.612	16.999	-8.14405	J-111	J-112	234.09	-8,179.40	7,628.27	125	0.66	3.59	8.14405	uPVC	145	0.46
P-125	58.5	16.999	17.54	-9.1796	J-112	J-105	234.16	-8,304.84	7,604.63	125	0.75	4.48	9.1796	uPVC	145	0.26

Distribution Network Design Output: Zone 12

P-126	62	16.999	16.699	0.20747	J-112	J-113	234.16	-8,304.84	7,604.63	110	0.02	0.01	0.20747	uPVC	145	0
P-129	122.5	15.057	14.314	6.97336	J-116	J-117	234.52	-8,081.78	7,750.60	110	0.73	5.02	6.97336	uPVC	145	0.61
P-13	28.5	19.087	18.802	11.17215	J-13	J-14	234.34	-9,046.17	7,783.29	140	0.73	3.71	11.17215	uPVC	145	0.11
P-130	56.5	14.314	14.243	2.44679	J-117	J-118	234.65	-8,114.20	7,868.95	110	0.26	0.72	2.44679	uPVC	145	0.04
P-131	34	14.243	14.144	2.14422	J-118	J-119	234.68	-8,127.77	7,923.98	110	0.23	0.56	2.14422	uPVC	145	0.02
P-132	53	14.144	14.188	-0.7353	J-119	J-120	234.76	-8,094.60	7,930.77	110	0.08	0.08	0.7353	uPVC	145	0
P-133	31.5	14.188	14.092	2.68398	J-120	J-121	234.72	-8,081.78	7,879.51	110	0.28	0.86	2.68398	uPVC	145	0.03
P-134	53	14.092	14.062	0.13211	J-121	J-122	234.79	-8,051.63	7,888.55	110	0.01	0	0.13211	uPVC	145	0
P-135	30.5	14.062	13.973	2.23467	J-122	J-123	234.82	-8,065.20	7,939.81	110	0.24	0.61	2.23467	uPVC	145	0.02
P-136	55	13.973	14.014	-0.41081	J-123	J-124	234.89	-8,035.80	7,948.11	110	0.04	0.03	0.41081	uPVC	145	0
P-137	25.5	14.014	13.948	1.38911	J-124	J-125	234.85	-8,022.23	7,894.58	110	0.15	0.25	1.38911	uPVC	145	0.01
P-138	53.5	13.948	13.907	1.24712	J-125	J-126	234.91	-7,998.11	7,902.12	110	0.13	0.21	1.24712	uPVC	145	0.01
P-139	77.5	13.907	13.656	2.99885	J-126	J-127	234.94	-8,010.92	7,954.14	110	0.32	1.05	2.99885	uPVC	145	0.08
P-14	119	18.511	19.124	-2.10775	J-15	J-16	234.71	-9,069.95	7,731.72	110	0.22	0.55	2.10775	uPVC	145	0.07
P-140	56	13.656	13.78	-3.86825	J-127	J-128	235.11	-7,936.29	7,975.24	110	0.41	1.69	3.86825	uPVC	145	0.09
P-141	127	13.78	13.928	-5.11884	J-128	J-129	235.08	-7,922.73	7,920.97	160	0.25	0.46	5.11884	uPVC	145	0.06
P-142	28.5	13.928	14.092	-26.8965	J-129	J-130	234.99	-7,893.33	7,797.34	200	0.86	3.32	26.89648	uPVC	145	0.09
P-143	109	14.092	14.683	-26.8607	J-130	J-131	234.92	-7,921.22	7,790.56	200	0.86	3.32	26.86069	uPVC	145	0.36
P-144	56.5	14.683	15.057	-28.2376	J-131	J-116	234.69	-8,027.51	7,765.68	200	0.9	3.64	28.23763	uPVC	145	0.21
P-145	34	14.314	14.188	3.81527	J-117	J-120	234.65	-8,114.20	7,868.95	110	0.4	1.64	3.81527	uPVC	145	0.06
P-146	30	14.092	14.014	2.16922	J-121	J-124	234.79	-8,051.63	7,888.55	110	0.23	0.58	2.16922	uPVC	145	0.02
P-147	77.5	13.948	13.78	-0.3808	J-125	J-128	234.91	-7,998.11	7,902.12	110	0.04	0.02	0.3808	uPVC	145	0
P-148	31	14.144	14.062	2.4852	J-119	J-122	234.76	-8,094.60	7,930.77	110	0.26	0.74	2.4852	uPVC	145	0.02
P-149	25.5	13.973	13.907	2.27451	J-123	J-126	234.89	-8,035.80	7,948.11	110	0.24	0.63	2.27451	uPVC	145	0.02
P-15	51.5	19.124	19.546	-6.26465	J-16	J-12	234.16	-8,950.76	7,732.65	110	0.66	4.12	6.26465	uPVC	145	0.21
P-150	37	13.656	13.57	3.66553	J-127	J-132	235.11	-7,936.29	7,975.24	110	0.39	1.52	3.66553	uPVC	145	0.06
P-151	254	13.57	13.182	2.69397	J-132	J-133	235.14	-7,944.08	8,011.49	110	0.28	0.86	2.69397	uPVC	145	0.22
P-152	247.5	13.182	13.146	1.02004	J-133	J-134	235.31	-7,706.63	8,100.44	110	0.11	0.14	1.02004	uPVC	145	0.04
P-153	92	13.146	13.238	-16.3942	J-134	J-135	235.31	-7,645.57	7,860.72	200	0.52	1.33	16.39419	uPVC	145	0.12
P-154	13.5	13.238	13.285	-15.7072	J-135	J-136	235.34	-7,734.52	7,838.11	200	0.5	1.23	15.70724	uPVC	145	0.02
P-155	82.5	13.285	13.619	-20.4368	J-136	J-137	235.31	-7,747.33	7,834.34	200	0.65	2	20.43681	uPVC	145	0.16
P-156	42	13.619	13.822	-22.805	J-137	J-138	235.14	-7,827.99	7,817.00	200	0.73	2.45	22.80503	uPVC	145	0.1
P-157	26.5	13.822	13.928	-21.1698	J-138	J-129	235.04	-7,867.95	7,804.18	200	0.67	2.13	21.16977	uPVC	145	0.06
P-158	181	13.619	13.406	1.34828	J-137	J-139	235.14	-7,827.99	7,817.00	110	0.14	0.24	1.34828	uPVC	145	0.04
P-159	92	13.406	13.333	2.5817	J-139	J-140	235.31	-7,865.58	7,994.08	110	0.27	0.8	2.5817	uPVC	145	0.07
P-16	48	19.124	18.85	3.42724	J-16	J-17	234.16	-8,950.76	7,732.65	110	0.36	1.35	3.42724	uPVC	145	0.06

Distribution Network Design Output: Zone 12

P-160	185	13.333	13.238	1.65685	J-140	J-135	235.31	-7,776.93	8,018.20	110	0.17	0.35	1.65685	uPVC	145	0.06
P-161	73	13.656	13.406	2.38849	J-127	J-139	235.11	-7,936.29	7,975.24	110	0.25	0.69	2.38849	uPVC	145	0.05
P-162	58	15.154	14.87	6.16519	J-115	J-141	234.34	-8,040.60	7,584.61	125	0.5	2.14	6.16519	uPVC	145	0.12
P-163	111	14.87	14.217	5.2937	J-141	J-142	234.5	-7,984.98	7,601.48	110	0.56	3.01	5.2937	uPVC	145	0.33
P-164	53	14.217	14.047	3.13962	J-142	J-143	234.82	-7,877.64	7,629.83	110	0.33	1.14	3.13962	uPVC	145	0.06
P-165	164.5	14.047	13.822	2.4133	J-143	J-138	234.93	-7,826.98	7,644.90	110	0.25	0.7	2.4133	uPVC	145	0.12
P-166	166.5	14.092	14.217	-1.05072	J-130	J-142	234.92	-7,921.22	7,790.56	110	0.11	0.15	1.05072	uPVC	145	0.03
P-167	169.5	14.87	14.683	-0.25856	J-141	J-131	234.5	-7,984.98	7,601.48	110	0.03	0.01	0.25856	uPVC	145	0
P-168	202	13.285	13.106	3.73465	J-136	J-144	235.31	-7,747.33	7,834.34	110	0.39	1.58	3.73465	uPVC	145	0.32
P-169	344	13.106	12.81	1.91225	J-144	J-145	235.17	-7,700.34	7,637.67	110	0.2	0.46	1.91225	uPVC	145	0.16
P-17	48.5	18.85	18.793	-1.41956	J-17	J-18	234.37	-8,951.07	7,684.48	110	0.15	0.26	1.41956	uPVC	145	0.01
P-170	211.5	12.81	12.909	-1.93757	J-145	J-146	235.31	-7,364.43	7,711.24	110	0.2	0.47	1.93757	uPVC	145	0.1
P-171	124.5	12.909	13.003	-12.1199	J-146	J-147	235.31	-7,413.28	7,916.88	200	0.39	0.76	12.1199	uPVC	145	0.09
P-172	114.5	13.003	13.146	-15.8988	J-147	J-134	235.31	-7,534.50	7,888.54	200	0.51	1.26	15.8988	uPVC	145	0.14
P-173	204	13.003	12.872	2.30017	J-147	J-148	235.31	-7,534.50	7,888.54	110	0.24	0.64	2.30017	uPVC	145	0.13
P-174	137	12.872	12.847	1.16178	J-148	J-149	235.31	-7,581.54	8,086.95	110	0.12	0.18	1.16178	uPVC	145	0.02
P-175	155	12.847	12.909	-8.54344	J-149	J-146	235.31	-7,445.85	8,068.25	200	0.27	0.4	8.54344	uPVC	145	0.06
P-176	121	12.847	12.801	8.32658	J-149	J-150	235.31	-7,445.85	8,068.25	200	0.27	0.38	8.32658	uPVC	145	0.05
P-177	205.5	12.801	12.76	1.22596	J-150	J-151	235.31	-7,327.04	8,044.73	110	0.13	0.2	1.22596	uPVC	145	0.04
P-178	110	12.76	12.773	-0.89735	J-151	J-152	235.31	-7,281.21	7,844.52	110	0.09	0.11	0.89735	uPVC	145	0.01
P-179	109.5	12.773	12.81	-1.63035	J-152	J-145	235.31	-7,258.29	7,737.17	110	0.17	0.34	1.63035	uPVC	145	0.04
P-18	57	18.793	19.367	-5.97513	J-18	J-19	234.44	-8,902.90	7,677.07	110	0.63	3.77	5.97513	uPVC	145	0.21
P-180	61.5	12.76	12.754	0.86479	J-151	J-153	235.31	-7,281.21	7,844.52	110	0.09	0.1	0.86479	uPVC	145	0.01
P-181	63.5	12.754	12.756	-0.45359	J-153	J-154	235.31	-7,221.51	7,859.59	110	0.05	0.03	0.45359	uPVC	145	0
P-182	114	12.756	12.788	-1.47968	J-154	J-155	235.31	-7,235.38	7,921.71	110	0.16	0.28	1.47968	uPVC	145	0.03
P-183	69.5	12.788	12.801	-5.77872	J-155	J-150	235.31	-7,258.29	8,033.27	200	0.18	0.19	5.77872	uPVC	145	0.01
P-184	226.5	12.788	12.776	2.93042	J-155	J-156	235.31	-7,258.29	8,033.27	200	0.09	0.05	2.93042	uPVC	145	0.01
P-185	34	12.776	12.758	2.06063	J-156	J-157	235.31	-7,034.56	7,997.09	110	0.22	0.52	2.06063	uPVC	145	0.02
P-186	64	12.758	12.753	0.74152	J-157	J-158	235.31	-7,026.12	7,963.92	110	0.08	0.08	0.74152	uPVC	145	0
P-187	214	12.753	12.754	-0.18667	J-158	J-153	235.31	-7,011.64	7,901.81	110	0.02	0	0.18667	uPVC	145	0
P-188	213.5	12.756	12.758	-0.27915	J-154	J-157	235.31	-7,235.38	7,921.71	110	0.03	0.01	0.27915	uPVC	145	0
P-189	128	15.154	15.351	-6.78641	J-115	J-159	234.34	-8,040.60	7,584.61	125	0.55	2.56	6.78641	uPVC	145	0.33
P-19	52	19.367	19.666	-5.51957	J-19	J-11	234.08	-8,883.76	7,729.87	110	0.58	3.25	5.51957	uPVC	145	0.17
P-190	43	15.351	15.057	35.95233	J-159	J-116	234.47	-8,071.29	7,708.69	200	1.14	5.69	35.95233	uPVC	145	0.24
P-2	45.5	20.949	20.852	-18.1262	J-2	J-3	233.22	-8,553.07	7,775.57	200	0.58	1.6	18.12617	uPVC	145	0.07
P-20	47	19.367	19.164	-0.97668	J-19	J-20	234.08	-8,883.76	7,729.87	110	0.1	0.13	0.97668	uPVC	145	0.01

P-21	56.5	19.164	19.004	-6.08626	J-20	J-21	234.29	-8,837.13	7,724.62	110	0.64	3.9	6.08626	uPVC	145	0.22
P-22	34.5	19.004	19.446	-12.2946	J-21	J-22	234.67	-8,781.25	7,716.59	140	0.8	4.43	12.29461	uPVC	145	0.15
P-23	20	19.446	19.658	-9.87788	J-22	J-23	234.38	-8,751.91	7,717.21	125	0.8	5.13	9.87788	uPVC	145	0.1
P-24	22	19.658	19.944	-7.17087	J-23	J-24	234.27	-8,751.30	7,737.28	110	0.75	5.29	7.17087	uPVC	145	0.12
P-25	66	19.658	19.441	-3.06797	J-23	J-25	234.27	-8,751.30	7,737.28	110	0.32	1.1	3.06797	uPVC	145	0.07
P-26	55	19.441	20.401	-10.4152	J-25	J-7	234.56	-8,686.76	7,723.70	125	0.85	5.66	10.41524	uPVC	145	0.31
P-266	96	17.895	17.831	-17.039	J-104	J-218	233.91	-8,370.45	7,651.91	160	0.85	4.23	17.03898	uPVC	145	0.41
P-267	73	17.831	17.481	0.24417	J-218	J-114	234.38	-8,355.56	7,557.06	110	0.03	0.01	0.24417	uPVC	145	0
P-268	66	18.102	17.831	18.06786	PJ-216	J-218	234.42	-8,420.12	7,543.84	160	0.9	4.72	18.06786	uPVC	145	0.31
P-27	32.5	19.441	19.716	-6.30035	J-25	J-26	234.56	-8,686.76	7,723.70	110	0.66	4.16	6.30035	uPVC	145	0.14
P-28	62.5	19.716	20.663	-6.79204	J-26	J-5	234.42	-8,654.96	7,716.29	110	0.71	4.78	6.79204	uPVC	145	0.3
P-29	129	20.852	18.62	12.46942	J-3	J-27	233.39	-8,598.46	7,776.50	140	0.81	4.55	12.46942	uPVC	145	0.59
P-3	44	20.852	20.687	-31.3253	J-3	J-4	233.39	-8,598.46	7,776.50	200	1	4.41	31.32525	uPVC	145	0.19
P-30	72.5	19.004	18.438	5.66222	J-21	J-28	234.67	-8,781.25	7,716.59	110	0.6	3.41	5.66222	uPVC	145	0.25
P-31	31.5	18.438	18.11	10.10345	J-28	J-29	234.99	-8,803.84	7,647.78	125	0.82	5.35	10.10345	uPVC	145	0.17
P-32	33	18.11	17.214	10.15884	J-29	J-30	235.15	-8,813.87	7,617.67	125	0.83	5.41	10.15884	uPVC	145	0.18
P-33	30	17.214	17.036	9.11995	J-30	J-31	235.87	-8,820.82	7,585.64	110	0.96	8.25	9.11995	uPVC	145	0.25
P-34	90.5	17.036	17.272	1.08109	J-31	J-32	235.8	-8,828.92	7,556.69	110	0.11	0.16	1.08109	uPVC	145	0.01
P-35	24	17.272	17.438	-6.53591	J-32	J-33	235.55	-8,914.61	7,585.25	110	0.69	4.45	6.53591	uPVC	145	0.11
P-36	49	17.438	18.16	-5.58428	J-33	J-34	235.49	-8,936.61	7,594.90	110	0.59	3.33	5.58428	uPVC	145	0.16
P-37	20	18.16	18.546	-7.20938	J-34	J-35	234.93	-8,918.08	7,640.06	110	0.76	5.34	7.20938	uPVC	145	0.11
P-38	20	18.546	18.793	-4.13622	J-35	J-18	234.65	-8,909.98	7,658.20	110	0.44	1.91	4.13622	uPVC	145	0.04
P-39	44	17.991	17.754	-2.47259	J-36	J-37	234.93	-9,063.97	7,636.58	110	0.26	0.74	2.47259	uPVC	145	0.03
P-4	4.5	20.687	20.663	12.95922	J-4	J-5	233.75	-8,642.61	7,778.04	200	0.41	0.86	12.95922	uPVC	145	0
P-40	52.5	17.754	18.324	-4.59159	J-37	J-38	235.2	-9,021.52	7,624.62	110	0.48	2.31	4.59159	uPVC	145	0.12
P-41	72.5	18.324	18.85	-4.28232	J-38	J-17	234.75	-9,011.48	7,675.95	110	0.45	2.03	4.28232	uPVC	145	0.15
P-42	90	17.754	17.438	1.49611	J-37	J-33	235.2	-9,021.52	7,624.62	110	0.16	0.29	1.49611	uPVC	145	0.03
P-43	63	17.096	17.06	-2.10991	J-39	J-40	235.34	-8,991.03	7,539.32	110	0.22	0.55	2.10991	uPVC	145	0.03
P-44	69.5	17.06	17.272	-7.00247	J-40	J-32	235.41	-8,931.97	7,518.09	110	0.74	5.06	7.00247	uPVC	145	0.35
P-45	142	17.036	16.578	7.16238	J-31	J-41	235.8	-8,828.92	7,556.69	110	0.75	5.27	7.16238	uPVC	145	0.75
P-46	45	16.578	16.594	1.55483	J-41	J-42	235.51	-8,855.17	7,417.36	110	0.16	0.31	1.55483	uPVC	145	0.01
P-47	24.5	16.292	16.342	-0.08235	J-43	J-44	235.67	-8,773.73	7,338.62	110	0.01	0	0.08235	uPVC	145	0
P-48	59	16.342	16.558	-3.99829	J-44	J-45	235.62	-8,778.36	7,314.69	110	0.42	1.79	3.99829	uPVC	145	0.11
P-49	98	16.558	16.872	-3.32553	J-45	J-46	235.51	-8,825.45	7,350.59	110	0.35	1.27	3.32553	uPVC	145	0.12
P-5	20.5	20.663	20.549	5.87463	J-5	J-6	233.77	-8,646.93	7,778.04	200	0.19	0.2	5.87463	uPVC	145	0
P-50	75.5	16.872	16.964	-0.4813	J-46	J-47	235.32	-8,922.71	7,356.38	110	0.05	0.04	0.4813	uPVC	145	0

Distribution Network Design Output: Zone 12

P-51	22	16.964	16.988	1.41504	J-47	J-48	235.23	-8,997.20	7,366.80	110	0.15	0.26	1.41504	uPVC	145	0.01
P-52	16.5	16.872	16.885	-3.47878	J-46	J-49	235.32	-8,922.71	7,356.38	110	0.37	1.38	3.47878	uPVC	145	0.02
P-53	21.5	16.885	16.905	-3.55336	J-49	J-50	235.33	-8,924.64	7,372.97	110	0.37	1.44	3.55336	uPVC	145	0.03
P-54	115.5	19.772	18.806	6.92601	J-51	J-52	233.83	-8,827.29	7,848.96	125	0.56	2.66	6.92601	uPVC	145	0.31
P-55	49	18.806	18.605	5.92822	J-52	J-53	234.49	-8,937.36	7,882.36	110	0.62	3.72	5.92822	uPVC	145	0.18
P-56	22	18.605	18.644	2.82846	J-53	J-54	234.51	-8,981.62	7,903.90	110	0.3	0.94	2.82846	uPVC	145	0.02
P-57	68.5	18.644	18.789	2.31842	J-54	J-55	234.45	-9,003.36	7,906.27	110	0.24	0.65	2.31842	uPVC	145	0.04
P-58	27	18.789	18.805	-1.2684	J-55	J-56	234.26	-9,071.34	7,903.70	110	0.13	0.21	1.2684	uPVC	145	0.01
P-59	115	19.991	19.699	6.51118	J-57	J-58	233.46	-8,836.50	7,967.91	125	0.53	2.37	6.51118	uPVC	145	0.27
P-6	22.5	20.549	20.401	34.48582	J-6	J-7	233.88	-8,667.62	7,778.66	200	1.1	5.27	34.48582	uPVC	145	0.12
P-60	72	19.699	19.588	5.88663	J-58	J-59	233.48	-8,820.10	8,081.77	125	0.48	1.97	5.88663	uPVC	145	0.14
P-61	66.5	19.588	19.641	0.80762	J-59	J-60	233.45	-8,749.18	8,093.35	110	0.08	0.09	0.80762	uPVC	145	0.01
P-62	34.5	19.641	19.57	0.47002	J-60	J-61	233.39	-8,736.15	8,028.22	110	0.05	0.03	0.47002	uPVC	145	0
P-63	21	19.57	19.463	7.01864	J-61	J-62	233.46	-8,702.38	8,034.01	125	0.57	2.72	7.01864	uPVC	145	0.06
P-64	28	19.463	19.357	3.36033	J-62	J-63	233.51	-8,681.63	8,037.39	110	0.35	1.3	3.36033	uPVC	145	0.04
P-65	33	19.357	19.148	8.54491	J-63	J-64	233.58	-8,654.13	8,042.69	125	0.7	3.92	8.54491	uPVC	145	0.13
P-66	42.5	19.148	18.969	13.67993	J-64	J-65	233.66	-8,621.81	8,048.97	160	0.68	2.82	13.67993	uPVC	145	0.12
P-67	44.5	18.969	18.707	7.03392	J-65	J-66	233.72	-8,579.84	8,055.24	125	0.57	2.74	7.03392	uPVC	145	0.12
P-68	42	18.707	18.44	7.75543	J-66	J-67	233.86	-8,535.93	8,062.96	125	0.63	3.28	7.75543	uPVC	145	0.14
P-69	56	18.44	18.095	10.22551	J-67	J-68	233.99	-8,494.93	8,071.64	140	0.66	3.15	10.22551	uPVC	145	0.18
P-7	12	20.401	20.559	23.77136	J-7	J-8	233.91	-8,690.16	7,778.35	200	0.76	2.64	23.77136	uPVC	145	0.03
P-70	17.5	18.095	18.045	0.05899	J-68	J-69	234.16	-8,439.44	8,079.84	110	0.01	0	0.05899	uPVC	145	0
P-71	65	18.44	18.409	-3.01455	J-67	J-70	233.99	-8,494.93	8,071.64	110	0.32	1.06	3.01455	uPVC	145	0.07
P-72	22.5	18.409	18.379	0.07567	J-70	J-71	234.09	-8,503.61	8,136.29	110	0.01	0	0.07567	uPVC	145	0
P-73	28	18.707	18.672	-1.10416	J-66	J-72	233.86	-8,535.93	8,062.96	110	0.12	0.16	1.10416	uPVC	145	0
P-74	40.5	18.672	18.598	1.6308	J-72	J-73	233.9	-8,539.31	8,090.94	110	0.17	0.34	1.6308	uPVC	145	0.01
P-75	42	18.598	18.409	3.52292	J-73	J-70	233.96	-8,545.10	8,130.98	110	0.37	1.42	3.52292	uPVC	145	0.06
P-76	29	18.969	18.865	6.25836	J-65	J-74	233.72	-8,579.84	8,055.24	125	0.51	2.2	6.25836	uPVC	145	0.06
P-77	39.5	18.865	18.77	2.75143	J-74	J-75	233.76	-8,585.63	8,083.70	110	0.29	0.9	2.75143	uPVC	145	0.04
P-78	48	18.77	18.598	2.32815	J-75	J-73	233.82	-8,592.38	8,122.78	110	0.24	0.66	2.32815	uPVC	145	0.03
P-79	19.5	18.75	18.77	-0.06566	J-76	J-75	233.84	-8,595.76	8,142.08	110	0.01	0	0.06566	uPVC	145	0
P-8	49	20.559	20.266	41.62938	J-8	J-9	233.72	-8,701.89	7,779.58	250	0.85	2.52	41.62938	uPVC	145	0.12
P-80	47	18.865	18.672	3.12095	J-74	J-72	233.76	-8,585.63	8,083.70	110	0.33	1.13	3.12095	uPVC	145	0.05
P-81	75.5	19.497	19.588	-0.25252	J-77	J-59	233.54	-8,764.61	8,167.17	110	0.03	0.01	0.25252	uPVC	145	0
P-82	57	19.588	19.35	3.92166	J-59	J-78	233.45	-8,749.18	8,093.35	110	0.41	1.73	3.92166	uPVC	145	0.1
P-83	63	19.35	19.171	2.819	J-78	J-79	233.59	-8,693.21	8,103.48	110	0.3	0.94	2.819	uPVC	145	0.06

P-84	39.5	19.171	19.155	2.34233	J-79	J-80	233.71	-8,630.98	8,114.58	110	0.25	0.67	2.34233	uPVC	145	0.03
P-85	27	19.155	19.148	5.47762	J-80	J-64	233.7	-8,625.67	8,075.50	125	0.45	1.72	5.47762	uPVC	145	0.05
P-86	58	19.387	19.155	3.55131	J-81	J-80	233.55	-8,682.60	8,064.40	110	0.37	1.44	3.55131	uPVC	145	0.08
P-87	20	19.171	19.161	0.06733	J-79	J-82	233.71	-8,630.98	8,114.58	110	0.01	0	0.06733	uPVC	145	0
P-88	55.5	18.095	18.015	9.73549	J-68	J-83	234.16	-8,439.44	8,079.84	140	0.63	2.88	9.73549	uPVC	145	0.16
P-89	180	18.015	18.276	-0.20895	J-83	J-84	234.08	-8,431.24	8,024.84	110	0.02	0.01	0.20895	uPVC	145	0
P-9	67	20.266	19.706	33.86005	J-9	J-10	233.89	-8,750.68	7,779.58	200	1.08	5.09	33.86005	uPVC	145	0.34
P-90	57	18.276	17.832	9.3577	J-84	J-85	233.82	-8,402.29	7,847.30	125	0.76	4.64	9.3577	uPVC	145	0.26
P-91	36.5	17.832	17.624	9.04512	J-85	J-86	234	-8,346.33	7,858.88	125	0.74	4.36	9.04512	uPVC	145	0.16
P-92	35	17.624	17.573	0.4457	J-86	J-87	234.05	-8,352.60	7,895.06	110	0.05	0.03	0.4457	uPVC	145	0
P-93	104.5	17.573	17.615	-3.94947	J-87	J-88	234.1	-8,357.91	7,929.80	110	0.42	1.75	3.94947	uPVC	145	0.18
P-94	56	17.615	18.015	-8.97121	J-88	J-83	234.24	-8,375.76	8,032.56	125	0.73	4.29	8.97121	uPVC	145	0.24
P-95	137.5	17.615	17.376	4.02683	J-88	J-89	234.24	-8,375.76	8,032.56	110	0.42	1.82	4.02683	uPVC	145	0.25
P-96	41	17.376	17.573	-3.7923	J-89	J-87	234.23	-8,317.87	7,939.45	110	0.4	1.62	3.7923	uPVC	145	0.07
P-97	69.5	17.624	17.166	8.12835	J-86	J-90	234.05	-8,352.60	7,895.06	125	0.66	3.58	8.12835	uPVC	145	0.25
P-98	40.5	17.166	17.01	2.76388	J-90	J-91	234.26	-8,284.09	7,905.20	110	0.29	0.9	2.76388	uPVC	145	0.04
P-99	35.5	17.01	16.994	-2.87699	J-91	J-92	234.38	-8,244.53	7,914.84	110	0.3	0.97	2.87699	uPVC	145	0.03
PP-191	40	15.794	15.351	43.44337	J-109	J-159	234.35	-8,110.41	7,700.64	200	1.38	8.08	43.44337	HDPE	145	0.32
PP-192	37	19.087	18.988	0.12406	J-13	PJ-160	234.34	-9,046.17	7,783.29	110	0.01	0	0.12406	HDPE	145	0
PP-193	84	19.546	19.295	0.28088	J-12	PJ-161	233.95	-8,951.07	7,784.22	110	0.03	0.01	0.28088	HDPE	145	0
PP-194	37	19.706	19.863	7.78366	J-10	PJ-162	234.11	-8,817.68	7,782.05	125	0.63	3.3	7.78366	HDPE	145	0.12
PP-195	30.5	19.863	19.772	7.41376	PJ-162	J-51	233.83	-8,820.90	7,819.05	125	0.6	3.02	7.41376	HDPE	145	0.09
PP-196	21.5	19.734	19.863	-0.07234	PJ-163	PJ-162	233.96	-8,842.61	7,820.01	110	0.01	0	0.07234	HDPE	145	0
PP-197	20.5	20.266	19.944	7.31328	J-9	J-24	233.89	-8,750.68	7,779.58	110	0.77	5.48	7.31328	HDPE	145	0.11
PP-198	26	19.716	19.297	0.08735	J-26	PJ-164	234.42	-8,654.96	7,716.29	110	0.01	0	0.08735	HDPE	145	0
PP-199	22.5	19.441	18.871	13.05977	J-25	PJ-165	234.56	-8,686.76	7,723.70	140	0.85	4.96	13.05977	HDPE	145	0.11
PP-200	40.5	18.871	17.925	9.79934	PJ-165	PJ-166	235.02	-8,686.30	7,701.33	140	0.64	2.91	9.79934	HDPE	145	0.12
PP-201	61	17.925	18.222	4.61746	PJ-166	PJ-167	235.85	-8,697.87	7,662.74	110	0.49	2.34	4.61746	HDPE	145	0.14
PP-202	13.5	18.222	18.321	0.04564	PJ-167	PJ-168	235.41	-8,749.01	7,657.43	110	0	0	0.04564	HDPE	145	0
PP-203	74	18.438	18.222	-5.03576	J-28	PJ-167	234.99	-8,803.84	7,647.78	110	0.53	2.75	5.03576	HDPE	145	0.2
PP-204	103.5	18.222	17.447	-1.30538	PJ-167	PJ-169	235.41	-8,749.01	7,657.43	110	0.14	0.23	1.30538	HDPE	145	0.02
PP-205	67	17.447	18.202	-1.78414	PJ-169	PJ-170	236.21	-8,678.09	7,586.51	110	0.19	0.4	1.78414	HDPE	145	0.03
PP-206	38	18.202	17.925	-4.71582	PJ-170	PJ-166	235.48	-8,661.69	7,651.64	110	0.5	2.43	4.71582	HDPE	145	0.09
PP-207	67.5	19.446	18.871	-2.8244	J-22	PJ-165	234.38	-8,751.91	7,717.21	110	0.3	0.94	2.8244	HDPE	145	0.06
PP-208	25.5	18.202	18.542	2.49564	PJ-170	PJ-171	235.48	-8,661.69	7,651.64	110	0.26	0.75	2.49564	HDPE	145	0.02
PP-209	10	18.542	18.62	1.24457	PJ-171	J-27	235.12	-8,637.57	7,643.44	110	0.13	0.21	1.24457	HDPE	145	0

PP-210	44	18.62	18.466	13.10278	J-27	PJ-172	235.04	-8,632.11	7,652.06	160	0.65	2.6	13.10278	HDPE	145	0.11
PP-211	13	18.466	18.23	9.01425	PJ-172	PJ-173	235.08	-8,588.84	7,642.96	125	0.73	4.33	9.01425	HDPE	145	0.06
PP-212	47	18.23	17.736	0.82929	PJ-173	PJ-174	235.26	-8,592.70	7,630.41	110	0.09	0.1	0.82929	HDPE	145	0
PP-213	19	17.736	17.677	0.064	PJ-174	PJ-175	235.75	-8,604.28	7,585.06	110	0.01	0	0.064	HDPE	145	0
PP-214	29	17.447	17.267	-0.1875	PJ-169	PJ-176	236.21	-8,678.09	7,586.51	110	0.02	0.01	0.1875	HDPE	145	0
PP-215	25	17.267	17.317	0.08402	PJ-176	PJ-177	236.39	-8,654.94	7,568.66	110	0.01	0	0.08402	HDPE	145	0
PP-216	13	17.267	17.447	-0.49567	PJ-176	PJ-178	236.39	-8,654.94	7,568.66	110	0.05	0.04	0.49567	HDPE	145	0
PP-217	24	17.447	17.858	-0.69707	PJ-178	PJ-179	236.21	-8,653.01	7,581.68	110	0.07	0.07	0.69707	HDPE	145	0
PP-218	40	17.858	18.542	-0.99856	PJ-179	PJ-171	235.8	-8,647.22	7,604.84	110	0.11	0.14	0.99856	HDPE	145	0.01
PP-219	13	17.858	17.888	0.04398	PJ-179	PJ-180	235.8	-8,647.22	7,604.84	110	0	0	0.04398	HDPE	145	0
PP-220	11.5	17.447	17.427	0.03897	PJ-178	PJ-181	236.21	-8,653.01	7,581.68	110	0	0	0.03897	HDPE	145	0
PP-221	124	17.214	17.051	0.41434	J-30	PJ-182	235.87	-8,820.82	7,585.64	110	0.04	0.03	0.41434	HDPE	145	0
PP-222	100	18.324	18.16	-1.06062	J-38	J-34	234.75	-9,011.48	7,675.95	110	0.11	0.15	1.06062	HDPE	145	0.02
PP-223	50	18.546	18.411	-3.37406	J-35	PJ-183	234.65	-8,909.98	7,658.20	110	0.36	1.31	3.37406	HDPE	145	0.07
PP-224	88	18.411	19.164	-4.47001	PJ-183	J-20	234.85	-8,863.35	7,640.54	110	0.47	2.2	4.47001	HDPE	145	0.19
PP-225	54.5	18.11	18.411	-0.45305	J-29	PJ-183	235.15	-8,813.87	7,617.67	110	0.05	0.03	0.45305	HDPE	145	0
PP-226	31	16.558	16.594	-1.30065	J-45	J-42	235.51	-8,825.45	7,350.59	110	0.14	0.22	1.30065	HDPE	145	0.01
PP-227	123.5	16.905	17.06	-4.03778	J-50	J-40	235.34	-8,926.57	7,394.59	110	0.42	1.82	4.03778	HDPE	145	0.23
PP-228	86.5	16.885	16.976	-0.34143	J-49	PJ-184	235.33	-8,924.64	7,372.97	110	0.04	0.02	0.34143	HDPE	145	0
PP-229	33	16.976	16.964	2.33237	PJ-184	J-47	235.24	-8,996.51	7,399.80	110	0.25	0.66	2.33237	HDPE	145	0.02
PP-230	20	16.976	16.989	-3.13987	PJ-184	PJ-185	235.24	-8,996.51	7,399.80	110	0.33	1.15	3.13987	HDPE	145	0.02
PP-231	140.5	16.989	17.096	-3.50462	PJ-185	J-39	235.25	-8,997.96	7,418.13	110	0.37	1.4	3.50462	HDPE	145	0.2
PP-232	60	17.096	17.243	-2.27452	J-39	PJ-186	235.34	-8,991.03	7,539.32	110	0.24	0.63	2.27452	HDPE	145	0.04
PP-233	135	17.243	17.029	3.93347	PJ-186	PJ-187	235.23	-9,049.58	7,552.26	110	0.41	1.74	3.93347	HDPE	145	0.23
PP-234	30	17.029	16.989	0.27148	PJ-187	PJ-185	235.21	-9,027.87	7,419.10	110	0.03	0.01	0.27148	HDPE	145	0
PP-235	50	17.029	16.988	2.94402	PJ-187	J-48	235.21	-9,027.87	7,419.10	110	0.31	1.02	2.94402	HDPE	145	0.05
PP-236	34	16.988	16.977	4.00477	J-48	PJ-188	235.2	-9,018.82	7,369.88	110	0.42	1.8	4.00477	HDPE	145	0.06
PP-237	34.5	16.977	16.907	0.11571	PJ-188	PJ-189	235.15	-9,015.33	7,336.12	110	0.01	0	0.11571	HDPE	145	0
PP-238	56	16.977	16.97	3.47305	PJ-188	PJ-190	235.15	-9,015.33	7,336.12	110	0.37	1.38	3.47305	HDPE	145	0.08
PP-239	55	16.97	16.85	0.18412	PJ-190	PJ-191	235.08	-9,005.68	7,281.12	110	0.02	0.01	0.18412	HDPE	145	0
PP-240	40.5	16.97	16.983	2.78283	PJ-190	PJ-192	235.08	-9,005.68	7,281.12	110	0.29	0.92	2.78283	HDPE	145	0.04
PP-241	32	16.983	16.913	0.10737	PJ-192	PJ-193	235.03	-8,997.48	7,241.56	110	0.01	0	0.10737	HDPE	145	0
PP-242	274.5	16.983	16.333	1.51704	PJ-192	PJ-194	235.03	-8,997.48	7,241.56	110	0.16	0.3	1.51704	HDPE	145	0.08
PP-243	20.5	16.333	16.342	-3.56833	PJ-194	J-44	235.6	-8,772.53	7,295.23	110	0.38	1.45	3.56833	HDPE	145	0.03
PP-244	230.5	16.333	16.009	3.33137	PJ-194	PJ-195	235.6	-8,772.53	7,295.23	110	0.35	1.28	3.33137	HDPE	145	0.29
PP-245	296.5	16.009	16.56	2.52871	PJ-195	PJ-196	235.63	-8,555.43	7,373.03	110	0.27	0.77	2.52871	HDPE	145	0.23

Distribution Network Design Output: Zone 12

PP-246	230.5	16.56	16.72	0.7697	PJ-196	PJ-197	234.85	-8,274.40	7,462.88	110	0.08	0.08	0.7697	HDPE	145	0.02
PP-247	61.5	16.009	16.06	-1.16155	PJ-195	PJ-198	235.63	-8,555.43	7,373.03	110	0.12	0.18	1.16155	HDPE	145	0.01
PP-248	25	16.06	15.71	0.08402	PJ-198	PJ-199	235.59	-8,603.07	7,405.59	110	0.01	0	0.08402	HDPE	145	0
PP-249	24.5	16.06	16.018	-1.61653	PJ-198	PJ-200	235.59	-8,603.07	7,405.59	110	0.17	0.33	1.61653	HDPE	145	0.01
PP-250	58.5	16.018	15.878	0.19579	PJ-200	PJ-201	235.64	-8,605.22	7,430.05	110	0.02	0.01	0.19579	HDPE	145	0
PP-251	57	16.018	15.665	-2.28006	PJ-200	PJ-202	235.64	-8,605.22	7,430.05	110	0.24	0.63	2.28006	HDPE	145	0.04
PP-252	36	15.665	15.565	0.12072	PJ-202	PJ-203	236.03	-8,661.97	7,433.82	110	0.01	0	0.12072	HDPE	145	0
PP-253	35.5	15.665	15.708	-2.83013	PJ-202	PJ-204	236.03	-8,661.97	7,433.82	110	0.3	0.94	2.83013	HDPE	145	0.03
PP-254	92	15.708	15.454	0.60907	PJ-204	PJ-205	236.02	-8,697.17	7,437.22	110	0.06	0.06	0.60907	HDPE	145	0.01
PP-255	28.5	15.454	15.723	0.09569	PJ-205	PJ-206	236.27	-8,653.94	7,518.34	110	0.01	0	0.09569	HDPE	145	0
PP-256	16.5	15.454	15.454	0.05565	PJ-205	PJ-207	236.27	-8,653.94	7,518.34	110	0.01	0	0.05565	HDPE	145	0
PP-257	167.5	15.708	16.578	-4.42411	PJ-204	J-41	236.02	-8,697.17	7,437.22	110	0.47	2.16	4.42411	HDPE	145	0.36
PP-258	24	17.307	17.636	-0.08068	PJ-208	PJ-209	235.91	-8,617.73	7,539.49	110	0.01	0	0.08068	HDPE	145	0
PP-259	26	17.636	17.906	-0.24811	PJ-209	PJ-210	235.58	-8,594.22	7,544.63	110	0.03	0.01	0.24811	HDPE	145	0
PP-260	26	17.906	17.841	6.66379	PJ-210	PJ-211	235.31	-8,568.92	7,549.77	125	0.54	2.48	6.66379	HDPE	145	0.06
PP-261	27	17.841	17.991	11.73107	PJ-211	PJ-212	235.31	-8,543.43	7,554.51	140	0.76	4.06	11.73107	HDPE	145	0.11
PP-262	25	17.991	18.282	17.28248	PJ-212	PJ-213	235.05	-8,516.75	7,559.25	160	0.86	4.35	17.28248	HDPE	145	0.11
PP-263	26.5	18.282	18.543	16.72239	PJ-213	PJ-214	234.65	-8,492.25	7,564.19	160	0.83	4.09	16.72239	HDPE	145	0.11
PP-264	39.5	18.543	18.43	15.10823	PJ-214	PJ-215	234.28	-8,466.36	7,568.94	160	0.75	3.39	15.10823	HDPE	145	0.13
PP-265	34	18.43	18.102	18.55622	PJ-215	PJ-216	234.26	-8,427.63	7,577.24	160	0.92	4.96	18.55622	HDPE	145	0.17
PP-266	23	18.102	18.082	0.07734	PJ-216	PJ-217	234.42	-8,420.12	7,543.84	110	0.01	0	0.07734	HDPE	145	0
PP-269	68	18.43	18.876	-3.92072	PJ-215	PJ-219	234.26	-8,427.63	7,577.24	110	0.41	1.73	3.92072	HDPE	145	0.12
PP-270	104.5	18.876	19.489	-3.84488	PJ-219	PJ-220	233.93	-8,438.54	7,644.29	110	0.4	1.67	3.84488	HDPE	145	0.17
PP-271	66.5	19.489	18.923	34.85217	PJ-220	J-103	233.49	-8,454.75	7,747.72	200	1.11	5.37	34.85217	HDPE	145	0.36
PP-272	71.5	18.543	18.87	1.15478	PJ-214	PJ-221	234.28	-8,466.36	7,568.94	110	0.12	0.18	1.15478	HDPE	145	0.01
PP-273	39.5	18.87	18.876	0.78381	PJ-221	PJ-219	233.94	-8,477.91	7,639.27	110	0.08	0.09	0.78381	HDPE	145	0
PP-274	58	18.282	18.551	0.19413	PJ-213	PJ-222	234.65	-8,492.25	7,564.19	110	0.02	0.01	0.19413	HDPE	145	0
PP-275	71.5	17.991	18.519	-5.96409	PJ-212	PJ-223	235.05	-8,516.75	7,559.25	110	0.63	3.76	5.96409	HDPE	145	0.27
PP-276	24.5	17.791	17.841	-0.08235	PJ-224	PJ-211	235.36	-8,537.73	7,530.43	110	0.01	0	0.08235	HDPE	145	0
PP-277	82	17.841	18.282	-5.68242	PJ-211	PJ-225	235.31	-8,543.43	7,554.51	110	0.6	3.44	5.68242	HDPE	145	0.28
PP-278	29.5	18.282	18.519	6.30169	PJ-225	PJ-223	235.15	-8,560.12	7,635.02	110	0.66	4.16	6.30169	HDPE	145	0.12
PP-279	49.5	17.816	17.906	-0.16576	PJ-226	PJ-210	235.4	-8,560.50	7,501.09	110	0.02	0	0.16576	HDPE	145	0
PP-280	85	17.906	18.23	-7.70055	PJ-210	PJ-173	235.31	-8,568.92	7,549.77	125	0.63	3.24	7.70055	HDPE	145	0.28
PP-281	81.5	17.736	18.045	0.27254	PJ-174	PJ-227	235.75	-8,604.28	7,585.06	110	0.03	0.01	0.27254	HDPE	145	0
PP-282	23.5	18.466	18.299	15.86214	PJ-172	PJ-228	235.08	-8,588.84	7,642.96	160	0.79	3.71	15.86214	HDPE	145	0.09
PP-283	6	18.299	18.282	12.37677	PJ-228	PJ-225	235.16	-8,565.91	7,636.95	140	0.8	4.49	12.37677	HDPE	145	0.03

Distribution Network Design Output: Zone 12

PP-284	144.5	18.299	19.793	2.9042	PJ-228	PJ-229	235.16	-8,565.91	7,636.95	110	0.31	0.99	2.9042	HDPE	145	0.14
PP-285	49.5	19.793	19.489	39.43338	PJ-229	PJ-220	233.52	-8,504.15	7,743.86	200	1.26	6.75	39.43338	HDPE	145	0.33
PP-286	137.5	18.466	20.949	-12.5016	PJ-172	J-2	235.08	-8,588.84	7,642.96	140	0.81	4.57	12.50159	HDPE	145	0.63
PP-287	21	20.949	20.898	4.7425	J-2	PJ-230	233.22	-8,553.07	7,775.57	110	0.5	2.46	4.7425	HDPE	145	0.05
PP-288	57.5	20.898	20.183	42.99989	PJ-230	PJ-231	233.22	-8,550.47	7,796.35	200	1.37	7.93	42.99989	HDPE	145	0.46
PP-289	57.5	20.183	19.793	37.36894	PJ-231	PJ-229	233.48	-8,492.96	7,799.83	200	1.19	6.11	37.36894	HDPE	145	0.35
PP-290	19.5	20.183	20.067	5.18157	PJ-231	PJ-232	233.48	-8,492.96	7,799.83	110	0.55	2.9	5.18157	HDPE	145	0.06
PP-291	211	20.067	19.315	4.41187	PJ-232	PJ-233	233.54	-8,473.28	7,800.98	110	0.46	2.15	4.41187	HDPE	145	0.45
PP-292	39.5	19.315	19.368	3.57544	PJ-233	PJ-234	233.84	-8,504.84	8,009.51	110	0.38	1.46	3.57544	HDPE	145	0.06
PP-293	89	19.368	19.449	0.82261	PJ-234	PJ-235	233.73	-8,543.92	8,004.69	110	0.09	0.1	0.82261	HDPE	145	0.01
PP-294	46.5	19.449	19.538	0.15575	PJ-235	PJ-236	233.64	-8,531.86	7,916.40	110	0.02	0	0.15575	HDPE	145	0
PP-295	32	19.449	19.559	0.10737	PJ-235	PJ-237	233.64	-8,531.86	7,916.40	110	0.01	0	0.10737	HDPE	145	0
PP-296	39.5	19.368	19.414	2.19167	PJ-234	PJ-238	233.73	-8,543.92	8,004.69	110	0.23	0.59	2.19167	HDPE	145	0.02
PP-297	23	19.414	19.441	0.99898	PJ-238	PJ-239	233.66	-8,582.52	7,996.00	110	0.11	0.14	0.99898	HDPE	145	0
PP-298	29	19.441	19.47	0.41888	PJ-239	PJ-240	233.63	-8,578.66	7,973.33	110	0.04	0.03	0.41888	HDPE	145	0
PP-299	17.5	19.47	19.5	0.05899	PJ-240	PJ-241	233.6	-8,573.35	7,944.86	110	0.01	0	0.05899	HDPE	145	0
PP-300	30.5	19.51	19.47	-0.10237	PJ-242	PJ-240	233.56	-8,600.85	7,957.89	110	0.01	0	0.10237	HDPE	145	0
PP-301	34.5	19.414	19.49	0.86844	PJ-238	PJ-243	233.66	-8,582.52	7,996.00	110	0.09	0.11	0.86844	HDPE	145	0
PP-302	42	19.49	19.441	-0.26586	PJ-243	PJ-239	233.58	-8,616.77	7,991.18	110	0.03	0.01	0.26586	HDPE	145	0
PP-303	27	19.463	19.387	3.40412	J-62	J-81	233.51	-8,681.63	8,037.39	110	0.36	1.33	3.40412	HDPE	145	0.04
PP-304	40.5	19.387	19.35	-0.56653	J-81	J-78	233.55	-8,682.60	8,064.40	110	0.06	0.05	0.56653	HDPE	145	0
PP-305	40	19.49	19.527	0.74498	PJ-243	PJ-244	233.58	-8,616.77	7,991.18	110	0.08	0.08	0.74498	HDPE	145	0
PP-306	40	19.527	19.357	5.52218	PJ-244	J-63	233.54	-8,644.76	8,003.72	110	0.58	3.26	5.52218	HDPE	145	0.13
PP-307	55.5	19.527	19.84	-5.22992	PJ-244	PJ-245	233.54	-8,644.76	8,003.72	110	0.55	2.95	5.22992	HDPE	145	0.16
PP-308	41	19.84	19.57	6.87121	PJ-245	J-61	233.39	-8,699.27	7,993.11	110	0.72	4.88	6.87121	HDPE	145	0.2
PP-309	76.5	19.84	20.178	-12.679	PJ-245	PJ-246	233.39	-8,699.27	7,993.11	140	0.82	4.69	12.67897	HDPE	145	0.36
PP-310	49	20.178	20.382	-13.0983	PJ-246	PJ-247	233.41	-8,775.02	7,981.53	140	0.85	4.98	13.09832	HDPE	145	0.24
PP-311	51.5	20.382	20.052	14.52651	PJ-247	PJ-248	233.45	-8,782.25	7,933.28	140	0.94	6.04	14.52651	HDPE	145	0.31
PP-312	13	20.052	19.991	13.735	PJ-248	J-57	233.47	-8,826.16	7,959.82	140	0.89	5.44	13.735	HDPE	145	0.07
PP-313	52.5	19.991	19.712	6.62095	J-57	PJ-249	233.46	-8,836.50	7,967.91	110	0.7	4.56	6.62095	HDPE	145	0.24
PP-314	11.5	19.712	19.673	6.40681	PJ-249	PJ-250	233.5	-8,880.67	7,996.48	110	0.67	4.29	6.40681	HDPE	145	0.05
PP-315	109	19.673	19.651	0.36429	PJ-250	PJ-251	233.49	-8,889.84	8,003.72	110	0.04	0.02	0.36429	HDPE	145	0
PP-316	60	20.052	19.412	0.3755	PJ-248	PJ-252	233.47	-8,826.16	7,959.82	110	0.04	0.02	0.3755	HDPE	145	0
PP-317	15	19.412	19.551	0.05065	PJ-252	PJ-253	234.11	-8,850.83	7,904.96	110	0.01	0	0.05065	HDPE	145	0
PP-318	11	19.302	19.412	-0.0373	PJ-254	PJ-252	234.22	-8,860.47	7,910.15	110	0	0	0.0373	HDPE	145	0
PP-319	27	19.673	19.415	5.54976	PJ-250	PJ-255	233.49	-8,889.84	8,003.72	110	0.58	3.29	5.54976	HDPE	145	0.09

PP-320	110	19.415	18.988	1.08404	PJ-255	PJ-256	233.66	-8,913.08	8,017.85	110	0.11	0.16	1.08404	HDPE	145	0.02
PP-321	18	18.988	19.118	3.06817	PJ-256	PJ-257	234.07	-8,980.02	7,970.42	110	0.32	1.1	3.06817	HDPE	145	0.02
PP-322	59.5	19.118	19.439	2.62486	PJ-257	PJ-258	233.92	-8,975.08	7,987.96	110	0.28	0.82	2.62486	HDPE	145	0.05
PP-323	52	19.439	19.415	-3.83449	PJ-258	PJ-255	233.55	-8,957.54	8,044.77	110	0.4	1.66	3.83449	HDPE	145	0.09
PP-324	19.5	19.439	19.404	6.02166	PJ-258	PJ-259	233.55	-8,957.54	8,044.77	110	0.63	3.82	6.02166	HDPE	145	0.07
PP-325	61	19.404	19.404	0.20414	PJ-259	PJ-260	233.51	-8,973.85	8,055.15	110	0.02	0.01	0.20414	HDPE	145	0
PP-326	37	19.404	19.367	5.42487	PJ-259	PJ-261	233.51	-8,973.85	8,055.15	110	0.57	3.15	5.42487	HDPE	145	0.12
PP-327	24	19.367	19.188	0.08068	PJ-261	PJ-262	233.43	-9,008.86	8,066.69	110	0.01	0	0.08068	HDPE	145	0
PP-328	27.5	19.008	19.118	-0.09236	PJ-263	PJ-257	234.03	-8,992.65	7,978.31	110	0.01	0	0.09236	HDPE	145	0
PP-329	37.5	19.367	19.425	5.01493	PJ-261	PJ-264	233.43	-9,008.86	8,066.69	110	0.53	2.73	5.01493	HDPE	145	0.1
PP-330	38.5	19.425	19.385	2.55747	PJ-264	PJ-265	233.27	-9,043.21	8,081.74	110	0.27	0.78	2.55747	HDPE	145	0.03
PP-331	97	19.385	19.154	0.32425	PJ-265	PJ-266	233.28	-9,056.72	8,118.02	110	0.03	0.02	0.32425	HDPE	145	0
PP-332	41.5	19.425	19.004	2.0648	PJ-264	PJ-267	233.27	-9,043.21	8,081.74	110	0.22	0.53	2.0648	HDPE	145	0.02
PP-333	21	19.004	18.984	0.07067	PJ-267	PJ-268	233.67	-9,069.45	8,049.71	110	0.01	0	0.07067	HDPE	145	0
PP-334	64	19.004	19.154	1.57145	PJ-267	PJ-269	233.67	-9,069.45	8,049.71	110	0.17	0.32	1.57145	HDPE	145	0.02
PP-335	34	19.154	19.385	-1.66705	PJ-269	PJ-265	233.5	-9,087.21	8,111.08	110	0.18	0.35	1.66705	HDPE	145	0.01
PP-336	25.5	19.154	18.92	2.82583	PJ-269	PJ-270	233.5	-9,087.21	8,111.08	110	0.3	0.94	2.82583	HDPE	145	0.02
PP-338	91.5	18.63	18.978	0.3059	PJ-271	PJ-272	233.71	-9,145.87	8,165.50	110	0.03	0.02	0.3059	HDPE	145	0
PP-339	100.5	18.92	18.712	-2.04298	PJ-270	PJ-273	233.71	-9,112.68	8,110.30	110	0.21	0.52	2.04298	HDPE	145	0.05
PP-340	28.5	18.712	18.404	-0.3877	PJ-273	PJ-274	233.97	-9,089.91	8,012.66	110	0.04	0.02	0.3877	HDPE	145	0
PP-341	17	18.404	18.421	-3.78621	PJ-274	PJ-275	234.28	-9,118.47	8,009.57	110	0.4	1.62	3.78621	HDPE	145	0.03
PP-342	30.5	18.421	18.771	2.29212	PJ-275	PJ-276	234.29	-9,115.38	7,992.97	110	0.24	0.64	2.29212	HDPE	145	0.02
PP-343	15.5	18.771	18.712	2.13803	PJ-276	PJ-273	233.92	-9,085.28	7,997.60	110	0.22	0.56	2.13803	HDPE	145	0.01
PP-344	24.5	18.92	18.679	4.36605	PJ-270	PJ-277	233.71	-9,112.68	8,110.30	110	0.46	2.11	4.36605	HDPE	145	0.05
PP-345	52	18.679	18.63	6.64892	PJ-277	PJ-271	233.9	-9,137.00	8,114.16	110	0.7	4.6	6.64892	HDPE	145	0.24
PP-346	106	18.404	18.679	2.89241	PJ-274	PJ-277	234.28	-9,118.47	8,009.57	110	0.3	0.98	2.89241	HDPE	145	0.1
PP-347	31	18.421	18.621	-6.34085	PJ-275	PJ-278	234.29	-9,115.38	7,992.97	110	0.67	4.21	6.34085	HDPE	145	0.13
PP-348	56.5	18.621	18.79	0.18912	PJ-278	PJ-279	234.22	-9,109.98	7,962.48	110	0.02	0.01	0.18912	HDPE	145	0
PP-349	28	18.621	18.819	-6.91595	PJ-278	PJ-280	234.22	-9,109.98	7,962.48	110	0.73	4.94	6.91595	HDPE	145	0.14
PP-350	35	18.819	18.805	-4.42094	PJ-280	J-56	234.16	-9,105.35	7,935.08	110	0.47	2.16	4.42094	HDPE	145	0.08
PP-351	31	18.819	18.868	-2.80925	PJ-280	PJ-281	234.16	-9,105.35	7,935.08	110	0.3	0.93	2.80925	HDPE	145	0.03
PP-352	17.5	18.868	18.828	0.05899	PJ-281	PJ-282	234.14	-9,074.47	7,938.94	110	0.01	0	0.05899	HDPE	145	0
PP-353	35.5	18.868	18.789	-3.14912	PJ-281	J-55	234.14	-9,074.47	7,938.94	110	0.33	1.15	3.14912	HDPE	145	0.04
PP-354	31	18.644	18.654	0.10404	J-54	PJ-283	234.45	-9,003.36	7,906.27	110	0.01	0	0.10404	HDPE	145	0
PP-355	67.5	18.605	18.988	2.63704	J-53	PJ-256	234.51	-8,981.62	7,903.90	110	0.28	0.83	2.63704	HDPE	145	0.06
PP-356	120	18.805	18.802	-6.29721	J-56	J-14	234.25	-9,098.41	7,900.93	125	0.51	2.23	6.29721	HDPE	145	0.27

Distribution Network Design Output: Zone 12

PP-357	52	18.802	18.511	4.20534	J-14	J-15	234.52	-9,074.58	7,783.29	110	0.44	1.97	4.20534	HDPE	145	0.1
PP-358	95.5	18.511	17.991	5.42327	J-15	J-36	234.71	-9,069.95	7,731.72	110	0.57	3.15	5.42327	HDPE	145	0.3
PP-359	85.5	17.991	17.243	7.14452	J-36	PJ-186	234.93	-9,063.97	7,636.58	110	0.75	5.25	7.14452	HDPE	145	0.45
PP-360	48	18.806	18.616	0.28815	J-52	PJ-284	234.49	-8,937.36	7,882.36	110	0.03	0.01	0.28815	HDPE	145	0
PP-361	19	18.616	18.676	0.064	PJ-284	PJ-285	234.68	-8,917.98	7,912.33	110	0.01	0	0.064	HDPE	145	0
PP-362	122	20.382	21.318	-28.3678	PJ-247	PJ-286	233.45	-8,782.25	7,933.28	180	1.11	6.13	28.36783	HDPE	145	0.75
PP-363	46	21.318	20.934	6.0395	PJ-286	PJ-287	233.26	-8,681.68	7,864.42	125	0.49	2.06	6.0395	HDPE	145	0.09
PP-364	43	20.934	20.559	18.20563	PJ-287	J-8	233.55	-8,700.32	7,822.54	160	0.91	4.78	18.20563	HDPE	145	0.21
PP-365	42	20.934	21.278	-12.6038	PJ-287	PJ-288	233.55	-8,700.32	7,822.54	140	0.82	4.64	12.60383	HDPE	145	0.19
PP-366	39.5	21.278	20.549	28.88707	PJ-288	J-6	233.4	-8,658.64	7,817.14	180	1.14	6.34	28.88707	HDPE	145	0.25
PP-367	41	21.318	21.55	-35.1053	PJ-286	PJ-289	233.26	-8,681.68	7,864.42	200	1.12	5.44	35.10529	HDPE	145	0.22
PP-368	29	21.55	21.278	41.8602	PJ-289	PJ-288	233.25	-8,646.67	7,843.38	225	1.05	4.25	41.8602	HDPE	145	0.12
PP-369	17	21.55	21.49	84.01177	PJ-289	PJ-290	233.25	-8,646.67	7,843.38	280	1.36	5.32	84.01177	HDPE	145	0.09
PP-370	57.5	21.49	20.687	44.63876	PJ-290	J-4	233.22	-8,632.39	7,834.51	225	1.12	4.79	44.63876	HDPE	145	0.28
PP-371	90.5	21.49	20.898	38.82188	PJ-290	PJ-230	233.22	-8,632.39	7,834.51	200	1.24	6.56	38.82188	HDPE	145	0.59
PP-372	53	18.63	18.737	5.68676	PJ-271	PJ-291	233.71	-9,145.87	8,165.50	110	0.6	3.44	5.68676	HDPE	145	0.18
PP-373	71.5	18.737	18.608	2.39211	PJ-291	PJ-292	233.42	-9,157.69	8,216.97	110	0.25	0.69	2.39211	HDPE	145	0.05
PP-374	156	18.608	19.234	1.26145	PJ-292	PJ-293	233.5	-9,110.22	8,264.06	110	0.13	0.21	1.26145	HDPE	145	0.03
PP-375	108.5	19.234	18.737	-2.51662	PJ-293	PJ-291	232.84	-9,176.60	8,323.88	110	0.26	0.76	2.51662	HDPE	145	0.08
PP-376	55.5	18.608	18.648	0.18578	PJ-292	PJ-294	233.5	-9,110.22	8,264.06	110	0.02	0.01	0.18578	HDPE	145	0
PP-377	166	19.234	18.605	2.34105	PJ-293	PJ-295	232.84	-9,176.60	8,323.88	110	0.25	0.66	2.34105	HDPE	145	0.11
PP-378	36.5	18.605	18.505	0.2704	PJ-295	PJ-296	233.36	-9,012.18	8,345.11	110	0.03	0.01	0.2704	HDPE	145	0
PP-379	14	18.505	18.505	0.04731	PJ-296	PJ-297	233.46	-9,009.87	8,308.83	110	0	0	0.04731	HDPE	145	0
PP-380	8	18.505	18.505	-0.02729	PJ-298	PJ-296	233.46	-9,007.17	8,301.49	110	0	0	0.02729	HDPE	145	0
PP-381	29.5	18.605	18.508	1.29595	PJ-295	PJ-299	233.36	-9,012.18	8,345.11	110	0.14	0.22	1.29595	HDPE	145	0.01
PP-382	54.5	18.508	18.467	0.41894	PJ-299	PJ-300	233.45	-8,983.24	8,349.74	110	0.04	0.03	0.41894	HDPE	145	0
PP-383	36.5	18.467	18.437	0.11471	PJ-300	PJ-301	233.49	-8,975.52	8,295.70	110	0.01	0	0.11471	HDPE	145	0
PP-384	42.5	18.437	18.387	-0.21682	PJ-301	PJ-302	233.52	-8,944.25	8,314.62	110	0.02	0.01	0.21682	HDPE	145	0
PP-385	35.5	18.387	18.508	-0.47768	PJ-302	PJ-299	233.57	-8,948.50	8,356.69	110	0.05	0.04	0.47768	HDPE	145	0
PP-386	10	18.437	18.437	0.03397	PJ-301	PJ-303	233.52	-8,944.25	8,314.62	110	0	0	0.03397	HDPE	145	0
PP-387	54.5	1.896	21.55	161.45	T-1	PJ-289	233.25	-8,621.91	7,891.89	355	1.63	5.61	161.45	HDPE	145	0.31
	24193.5															

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	J-1	J-2	30	200	PVC	200	uPVC	Retained
P-10	J-10	J-11	66.5	200	PVC	200	uPVC	Retained
P-100	J-92	J-89	67.5	125	PVC	125	uPVC	Retained
P-101	J-92	J-93	147.5	110	PVC	110	uPVC	Retained
P-102	J-93	J-94	50	110	PVC	110	uPVC	Retained
P-103	J-94	J-91	66	110	PVC	110	uPVC	Retained
P-104	J-90	J-95	87.5	110	PVC	110	uPVC	Retained
P-105	J-95	J-96	41.5	110	PVC	110	uPVC	Retained
P-106	J-96	J-94	23.5	125	PVC	125	uPVC	Retained
P-107	J-96	J-97	97	140	PVC	140	uPVC	Retained
P-108	J-97	J-98	51.5	110	PVC	110	uPVC	Retained
P-109	J-98	J-99	25	110	PVC	110	uPVC	Retained
P-11	J-11	J-12	66.5	200	PVC	200	uPVC	Retained
P-110	J-100	J-98	76.5	110	PVC	110	uPVC	Retained
P-111	J-97	J-101	112	110	PVC	110	uPVC	Retained
P-112	J-101	J-102	23.5	110	PVC	110	uPVC	Retained
P-113	J-84	J-103	89.5	125	PVC	125	uPVC	Retained
P-114	J-103	J-104	108.5	160	PVC	160	uPVC	Retained
P-115	J-104	J-105	57	200	PVC	200	uPVC	Retained
P-116	J-105	J-101	50	110	PVC	110	uPVC	Retained
P-117	J-105	J-106	112.5	160	PVC	160	uPVC	Retained
P-118	J-106	J-97	50	160	PVC	160	uPVC	Retained
P-119	J-106	J-107	14	200	PVC	200	uPVC	Retained
P-12	J-12	J-13	95	200	PVC	200	uPVC	Retained
P-120	J-107	J-108	52	225	PVC	225	uPVC	Retained
P-121	J-108	J-109	29.5	225	PVC	225	uPVC	Retained
P-122	J-108	J-110	62.5	110	PVC	110	uPVC	Retained
P-123	J-107	J-111	57.5	125	PVC	125	uPVC	Retained
P-124	J-111	J-112	127.5	125	PVC	125	uPVC	Retained
P-125	J-112	J-105	58.5	125	PVC	125	uPVC	Retained
P-126	J-112	J-113	62	110	PVC	110	uPVC	Retained
P-129	J-116	J-117	122.5	110	PVC	110	uPVC	Retained
P-13	J-13	J-14	28.5	140	PVC	140	uPVC	Retained
P-130	J-117	J-118	56.5	110	PVC	110	uPVC	Retained
P-131	J-118	J-119	34	110	PVC	110	uPVC	Retained
P-132	J-119	J-120	53	110	PVC	110	uPVC	Retained
P-133	J-120	J-121	31.5	110	PVC	110	uPVC	Retained
P-134	J-121	J-122	53	110	PVC	110	uPVC	Retained
P-135	J-122	J-123	30.5	110	PVC	110	uPVC	Retained
P-136	J-123	J-124	55	110	PVC	110	uPVC	Retained
P-137	J-124	J-125	25.5	110	PVC	110	uPVC	Retained
P-138	J-125	J-126	53.5	110	PVC	110	uPVC	Retained
P-139	J-126	J-127	77.5	110	PVC	110	uPVC	Retained
P-14	J-15	J-16	119	110	PVC	110	uPVC	Retained
P-140	J-127	J-128	56	110	PVC	110	uPVC	Retained
P-141	J-128	J-129	127	160	PVC	160	uPVC	Retained
P-142	J-129	J-130	28.5	200	PVC	200	uPVC	Retained
P-143	J-130	J-131	109	200	PVC	200	uPVC	Retained
P-144	J-131	J-116	56.5	200	PVC	200	uPVC	Retained
P-145	J-117	J-120	34	110	PVC	110	uPVC	Retained
P-146	J-121	J-124	30	110	PVC	110	uPVC	Retained
P-147	J-125	J-128	77.5	110	PVC	110	uPVC	Retained
P-148	J-119	J-122	31	110	PVC	110	uPVC	Retained
P-149	J-123	J-126	25.5	110	PVC	110	uPVC	Retained
P-15	J-16	J-12	51.5	110	PVC	110	uPVC	Retained
P-150	J-127	J-132	37	110	PVC	110	uPVC	Retained
P-151	J-132	J-133	254	110	PVC	110	uPVC	Retained
P-152	J-133	J-134	247.5	110	PVC	110	uPVC	Retained
P-153	J-134	J-135	92	200	PVC	200	uPVC	Retained

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-154	J-135	J-136	13.5	200	PVC	200	uPVC	Retained
P-155	J-136	J-137	82.5	200	PVC	200	uPVC	Retained
P-156	J-137	J-138	42	200	PVC	200	uPVC	Retained
P-157	J-138	J-129	26.5	200	PVC	200	uPVC	Retained
P-158	J-137	J-139	181	110	PVC	110	uPVC	Retained
P-159	J-139	J-140	92	110	PVC	110	uPVC	Retained
P-16	J-16	J-17	48	110	PVC	110	uPVC	Retained
P-160	J-140	J-135	185	110	PVC	110	uPVC	Retained
P-161	J-127	J-139	73	110	PVC	110	uPVC	Retained
P-162	J-115	J-141	58	125	PVC	125	uPVC	Retained
P-163	J-141	J-142	111	110	PVC	110	uPVC	Retained
P-164	J-142	J-143	53	110	PVC	110	uPVC	Retained
P-165	J-143	J-138	164.5	110	PVC	110	uPVC	Retained
P-166	J-130	J-142	166.5	110	PVC	110	uPVC	Retained
P-167	J-141	J-131	169.5	110	PVC	110	uPVC	Retained
P-168	J-136	J-144	202	110	PVC	110	uPVC	Retained
P-169	J-144	J-145	344	110	PVC	110	uPVC	Retained
P-17	J-17	J-18	48.5	110	PVC	110	uPVC	Retained
P-170	J-145	J-146	211.5	110	PVC	110	uPVC	Retained
P-171	J-146	J-147	124.5	200	PVC	200	uPVC	Retained
P-172	J-147	J-134	114.5	200	PVC	200	uPVC	Retained
P-173	J-147	J-148	204	110	PVC	110	uPVC	Retained
P-174	J-148	J-149	137	110	PVC	110	uPVC	Retained
P-175	J-149	J-146	155	200	PVC	200	uPVC	Retained
P-176	J-149	J-150	121	200	PVC	200	uPVC	Retained
P-177	J-150	J-151	205.5	110	PVC	110	uPVC	Retained
P-178	J-151	J-152	110	110	PVC	110	uPVC	Retained
P-179	J-152	J-145	109.5	110	PVC	110	uPVC	Retained
P-18	J-18	J-19	57	110	PVC	110	uPVC	Retained
P-180	J-151	J-153	61.5	110	PVC	110	uPVC	Retained
P-181	J-153	J-154	63.5	110	PVC	110	uPVC	Retained
P-182	J-154	J-155	114	110	PVC	110	uPVC	Retained
P-183	J-155	J-150	69.5	200	PVC	200	uPVC	Retained
P-184	J-155	J-156	226.5	200	PVC	200	uPVC	Retained
P-185	J-156	J-157	34	110	PVC	110	uPVC	Retained
P-186	J-157	J-158	64	110	PVC	110	uPVC	Retained
P-187	J-158	J-153	214	110	PVC	110	uPVC	Retained
P-188	J-154	J-157	213.5	110	PVC	110	uPVC	Retained
P-189	J-115	J-159	128	125	PVC	125	uPVC	Retained
P-19	J-19	J-11	52	110	PVC	110	uPVC	Retained
P-190	J-159	J-116	43	200	PVC	200	uPVC	Retained
P-2	J-2	J-3	45.5	200	PVC	200	uPVC	Retained
P-20	J-19	J-20	47	110	PVC	110	uPVC	Retained
P-21	J-20	J-21	56.5	110	PVC	110	uPVC	Retained
P-22	J-21	J-22	34.5	140	PVC	140	uPVC	Retained
P-23	J-22	J-23	20	125	PVC	125	uPVC	Retained
P-24	J-23	J-24	22	110	PVC	110	uPVC	Retained
P-25	J-23	J-25	66	110	PVC	110	uPVC	Retained
P-26	J-25	J-7	55	125	PVC	125	uPVC	Retained
P-266	J-104	J-218	96	160	PVC	160	uPVC	Retained
P-267	J-218	J-114	73	110	PVC	110	uPVC	Retained
P-268	PJ-216	J-218	66	160	PVC	160	uPVC	Retained
P-27	J-25	J-26	32.5	110	PVC	110	uPVC	Retained
P-28	J-26	J-5	62.5	110	PVC	110	uPVC	Retained
P-29	J-3	J-27	129	140	PVC	140	uPVC	Retained
P-3	J-3	J-4	44	200	PVC	200	uPVC	Retained
P-30	J-21	J-28	72.5	110	PVC	110	uPVC	Retained
P-31	J-28	J-29	31.5	125	PVC	125	uPVC	Retained
P-32	J-29	J-30	33	125	PVC	125	uPVC	Retained
P-33	J-30	J-31	30	110	PVC	110	uPVC	Retained

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-34	J-31	J-32	90.5	110	PVC	110	uPVC	Retained
P-35	J-32	J-33	24	110	PVC	110	uPVC	Retained
P-36	J-33	J-34	49	110	PVC	110	uPVC	Retained
P-37	J-34	J-35	20	110	PVC	110	uPVC	Retained
P-38	J-35	J-18	20	110	PVC	110	uPVC	Retained
P-39	J-36	J-37	44	110	PVC	110	uPVC	Retained
P-4	J-4	J-5	4.5	200	PVC	200	uPVC	Retained
P-40	J-37	J-38	52.5	110	PVC	110	uPVC	Retained
P-41	J-38	J-17	72.5	110	PVC	110	uPVC	Retained
P-42	J-37	J-33	90	110	PVC	110	uPVC	Retained
P-43	J-39	J-40	63	110	PVC	110	uPVC	Retained
P-44	J-40	J-32	69.5	110	PVC	110	uPVC	Retained
P-45	J-31	J-41	142	110	PVC	110	uPVC	Retained
P-46	J-41	J-42	45	110	PVC	110	uPVC	Retained
P-47	J-43	J-44	24.5	110	PVC	110	uPVC	Retained
P-48	J-44	J-45	59	110	PVC	110	uPVC	Retained
P-49	J-45	J-46	98	110	PVC	110	uPVC	Retained
P-5	J-5	J-6	20.5	200	PVC	200	uPVC	Retained
P-50	J-46	J-47	75.5	110	PVC	110	uPVC	Retained
P-51	J-47	J-48	22	110	PVC	110	uPVC	Retained
P-52	J-46	J-49	16.5	110	PVC	110	uPVC	Retained
P-53	J-49	J-50	21.5	110	PVC	110	uPVC	Retained
P-54	J-51	J-52	115.5	125	PVC	125	uPVC	Retained
P-55	J-52	J-53	49	110	PVC	110	uPVC	Retained
P-56	J-53	J-54	22	110	PVC	110	uPVC	Retained
P-57	J-54	J-55	68.5	110	PVC	110	uPVC	Retained
P-58	J-55	J-56	27	110	PVC	110	uPVC	Retained
P-59	J-57	J-58	115	125	PVC	125	uPVC	Retained
P-6	J-6	J-7	22.5	200	PVC	200	uPVC	Retained
P-60	J-58	J-59	72	125	PVC	125	uPVC	Retained
P-61	J-59	J-60	66.5	110	PVC	110	uPVC	Retained
P-62	J-60	J-61	34.5	110	PVC	110	uPVC	Retained
P-63	J-61	J-62	21	125	PVC	125	uPVC	Retained
P-64	J-62	J-63	28	110	PVC	110	uPVC	Retained
P-65	J-63	J-64	33	125	PVC	125	uPVC	Retained
P-66	J-64	J-65	42.5	160	PVC	160	uPVC	Retained
P-67	J-65	J-66	44.5	125	PVC	125	uPVC	Retained
P-68	J-66	J-67	42	125	PVC	125	uPVC	Retained
P-69	J-67	J-68	56	140	PVC	140	uPVC	Retained
P-7	J-7	J-8	12	200	PVC	200	uPVC	Retained
P-70	J-68	J-69	17.5	110	PVC	110	uPVC	Retained
P-71	J-67	J-70	65	110	PVC	110	uPVC	Retained
P-72	J-70	J-71	22.5	110	PVC	110	uPVC	Retained
P-73	J-66	J-72	28	110	PVC	110	uPVC	Retained
P-74	J-72	J-73	40.5	110	PVC	110	uPVC	Retained
P-75	J-73	J-70	42	110	PVC	110	uPVC	Retained
P-76	J-65	J-74	29	125	PVC	125	uPVC	Retained
P-77	J-74	J-75	39.5	110	PVC	110	uPVC	Retained
P-78	J-75	J-73	48	110	PVC	110	uPVC	Retained
P-79	J-76	J-75	19.5	110	PVC	110	uPVC	Retained
P-8	J-8	J-9	49	250	PVC	250	uPVC	Retained
P-80	J-74	J-72	47	110	PVC	110	uPVC	Retained
P-81	J-77	J-59	75.5	110	PVC	110	uPVC	Retained
P-82	J-59	J-78	57	110	PVC	110	uPVC	Retained
P-83	J-78	J-79	63	110	PVC	110	uPVC	Retained
P-84	J-79	J-80	39.5	110	PVC	110	uPVC	Retained
P-85	J-80	J-64	27	125	PVC	125	uPVC	Retained
P-86	J-81	J-80	58	110	PVC	110	uPVC	Retained
P-87	J-79	J-82	20	110	PVC	110	uPVC	Retained
P-88	J-68	J-83	55.5	140	PVC	140	uPVC	Retained

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-89	J-83	J-84	180	110	PVC	110	uPVC	Retained
P-9	J-9	J-10	67	200	PVC	200	uPVC	Retained
P-90	J-84	J-85	57	125	PVC	125	uPVC	Retained
P-91	J-85	J-86	36.5	125	PVC	125	uPVC	Retained
P-92	J-86	J-87	35	110	PVC	110	uPVC	Retained
P-93	J-87	J-88	104.5	110	PVC	110	uPVC	Retained
P-94	J-88	J-83	56	125	PVC	125	uPVC	Retained
P-95	J-88	J-89	137.5	110	PVC	110	uPVC	Retained
P-96	J-89	J-87	41	110	PVC	110	uPVC	Retained
P-97	J-86	J-90	69.5	125	PVC	125	uPVC	Retained
P-98	J-90	J-91	40.5	110	PVC	110	uPVC	Retained
P-99	J-91	J-92	35.5	110	PVC	110	uPVC	Retained
PP-191	J-109	J-159	40	#N/A	#N/A	200	HDPE	New
PP-192	J-13	PJ-160	37	#N/A	#N/A	110	HDPE	New
PP-193	J-12	PJ-161	84	#N/A	#N/A	110	HDPE	New
PP-194	J-10	PJ-162	37	#N/A	#N/A	125	HDPE	New
PP-195	PJ-162	J-51	30.5	#N/A	#N/A	125	HDPE	New
PP-196	PJ-163	PJ-162	21.5	#N/A	#N/A	110	HDPE	New
PP-197	J-9	J-24	20.5	#N/A	#N/A	110	HDPE	New
PP-198	J-26	PJ-164	26	#N/A	#N/A	110	HDPE	New
PP-199	J-25	PJ-165	22.5	#N/A	#N/A	140	HDPE	New
PP-200	PJ-165	PJ-166	40.5	#N/A	#N/A	140	HDPE	New
PP-201	PJ-166	PJ-167	61	#N/A	#N/A	110	HDPE	New
PP-202	PJ-167	PJ-168	13.5	#N/A	#N/A	110	HDPE	New
PP-203	J-28	PJ-167	74	#N/A	#N/A	110	HDPE	New
PP-204	PJ-167	PJ-169	103.5	#N/A	#N/A	110	HDPE	New
PP-205	PJ-169	PJ-170	67	#N/A	#N/A	110	HDPE	New
PP-206	PJ-170	PJ-166	38	#N/A	#N/A	110	HDPE	New
PP-207	J-22	PJ-165	67.5	#N/A	#N/A	110	HDPE	New
PP-208	PJ-170	PJ-171	25.5	#N/A	#N/A	110	HDPE	New
PP-209	PJ-171	J-27	10	#N/A	#N/A	110	HDPE	New
PP-210	J-27	PJ-172	44	#N/A	#N/A	160	HDPE	New
PP-211	PJ-172	PJ-173	13	#N/A	#N/A	125	HDPE	New
PP-212	PJ-173	PJ-174	47	#N/A	#N/A	110	HDPE	New
PP-213	PJ-174	PJ-175	19	#N/A	#N/A	110	HDPE	New
PP-214	PJ-169	PJ-176	29	#N/A	#N/A	110	HDPE	New
PP-215	PJ-176	PJ-177	25	#N/A	#N/A	110	HDPE	New
PP-216	PJ-176	PJ-178	13	#N/A	#N/A	110	HDPE	New
PP-217	PJ-178	PJ-179	24	#N/A	#N/A	110	HDPE	New
PP-218	PJ-179	PJ-171	40	#N/A	#N/A	110	HDPE	New
PP-219	PJ-179	PJ-180	13	#N/A	#N/A	110	HDPE	New
PP-220	PJ-178	PJ-181	11.5	#N/A	#N/A	110	HDPE	New
PP-221	J-30	PJ-182	124	#N/A	#N/A	110	HDPE	New
PP-222	J-38	J-34	100	#N/A	#N/A	110	HDPE	New
PP-223	J-35	PJ-183	50	#N/A	#N/A	110	HDPE	New
PP-224	PJ-183	J-20	88	#N/A	#N/A	110	HDPE	New
PP-225	J-29	PJ-183	54.5	#N/A	#N/A	110	HDPE	New
PP-226	J-45	J-42	31	#N/A	#N/A	110	HDPE	New
PP-227	J-50	J-40	123.5	#N/A	#N/A	110	HDPE	New
PP-228	J-49	PJ-184	86.5	#N/A	#N/A	110	HDPE	New
PP-229	PJ-184	J-47	33	#N/A	#N/A	110	HDPE	New
PP-230	PJ-184	PJ-185	20	#N/A	#N/A	110	HDPE	New
PP-231	PJ-185	J-39	140.5	#N/A	#N/A	110	HDPE	New
PP-232	J-39	PJ-186	60	#N/A	#N/A	110	HDPE	New
PP-233	PJ-186	PJ-187	135	#N/A	#N/A	110	HDPE	New
PP-234	PJ-187	PJ-185	30	#N/A	#N/A	110	HDPE	New
PP-235	PJ-187	J-48	50	#N/A	#N/A	110	HDPE	New
PP-236	J-48	PJ-188	34	#N/A	#N/A	110	HDPE	New
PP-237	PJ-188	PJ-189	34.5	#N/A	#N/A	110	HDPE	New
PP-238	PJ-188	PJ-190	56	#N/A	#N/A	110	HDPE	New

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-239	PJ-190	PJ-191	55	#N/A	#N/A	110	HDPE	New
PP-240	PJ-190	PJ-192	40.5	#N/A	#N/A	110	HDPE	New
PP-241	PJ-192	PJ-193	32	#N/A	#N/A	110	HDPE	New
PP-242	PJ-192	PJ-194	274.5	#N/A	#N/A	110	HDPE	New
PP-243	PJ-194	J-44	20.5	#N/A	#N/A	110	HDPE	New
PP-244	PJ-194	PJ-195	230.5	#N/A	#N/A	110	HDPE	New
PP-245	PJ-195	PJ-196	296.5	#N/A	#N/A	110	HDPE	New
PP-246	PJ-196	PJ-197	230.5	#N/A	#N/A	110	HDPE	New
PP-247	PJ-195	PJ-198	61.5	#N/A	#N/A	110	HDPE	New
PP-248	PJ-198	PJ-199	25	#N/A	#N/A	110	HDPE	New
PP-249	PJ-198	PJ-200	24.5	#N/A	#N/A	110	HDPE	New
PP-250	PJ-200	PJ-201	58.5	#N/A	#N/A	110	HDPE	New
PP-251	PJ-200	PJ-202	57	#N/A	#N/A	110	HDPE	New
PP-252	PJ-202	PJ-203	36	#N/A	#N/A	110	HDPE	New
PP-253	PJ-202	PJ-204	35.5	#N/A	#N/A	110	HDPE	New
PP-254	PJ-204	PJ-205	92	#N/A	#N/A	110	HDPE	New
PP-255	PJ-205	PJ-206	28.5	#N/A	#N/A	110	HDPE	New
PP-256	PJ-205	PJ-207	16.5	#N/A	#N/A	110	HDPE	New
PP-257	PJ-204	J-41	167.5	#N/A	#N/A	110	HDPE	New
PP-258	PJ-208	PJ-209	24	#N/A	#N/A	110	HDPE	New
PP-259	PJ-209	PJ-210	26	#N/A	#N/A	110	HDPE	New
PP-260	PJ-210	PJ-211	26	#N/A	#N/A	125	HDPE	New
PP-261	PJ-211	PJ-212	27	#N/A	#N/A	140	HDPE	New
PP-262	PJ-212	PJ-213	25	#N/A	#N/A	160	HDPE	New
PP-263	PJ-213	PJ-214	26.5	#N/A	#N/A	160	HDPE	New
PP-264	PJ-214	PJ-215	39.5	#N/A	#N/A	160	HDPE	New
PP-265	PJ-215	PJ-216	34	#N/A	#N/A	160	HDPE	New
PP-266	PJ-216	PJ-217	23	#N/A	#N/A	110	HDPE	New
PP-269	PJ-215	PJ-219	68	#N/A	#N/A	110	HDPE	New
PP-270	PJ-219	PJ-220	104.5	#N/A	#N/A	110	HDPE	New
PP-271	PJ-220	J-103	66.5	#N/A	#N/A	200	HDPE	New
PP-272	PJ-214	PJ-221	71.5	#N/A	#N/A	110	HDPE	New
PP-273	PJ-221	PJ-219	39.5	#N/A	#N/A	110	HDPE	New
PP-274	PJ-213	PJ-222	58	#N/A	#N/A	110	HDPE	New
PP-275	PJ-212	PJ-223	71.5	#N/A	#N/A	110	HDPE	New
PP-276	PJ-224	PJ-211	24.5	#N/A	#N/A	110	HDPE	New
PP-277	PJ-211	PJ-225	82	#N/A	#N/A	110	HDPE	New
PP-278	PJ-225	PJ-223	29.5	#N/A	#N/A	110	HDPE	New
PP-279	PJ-226	PJ-210	49.5	#N/A	#N/A	110	HDPE	New
PP-280	PJ-210	PJ-173	85	#N/A	#N/A	125	HDPE	New
PP-281	PJ-174	PJ-227	81.5	#N/A	#N/A	110	HDPE	New
PP-282	PJ-172	PJ-228	23.5	#N/A	#N/A	160	HDPE	New
PP-283	PJ-228	PJ-225	6	#N/A	#N/A	140	HDPE	New
PP-284	PJ-228	PJ-229	144.5	#N/A	#N/A	110	HDPE	New
PP-285	PJ-229	PJ-220	49.5	#N/A	#N/A	200	HDPE	New
PP-286	PJ-172	J-2	137.5	#N/A	#N/A	140	HDPE	New
PP-287	J-2	PJ-230	21	#N/A	#N/A	110	HDPE	New
PP-288	PJ-230	PJ-231	57.5	#N/A	#N/A	200	HDPE	New
PP-289	PJ-231	PJ-229	57.5	#N/A	#N/A	200	HDPE	New
PP-290	PJ-231	PJ-232	19.5	#N/A	#N/A	110	HDPE	New
PP-291	PJ-232	PJ-233	211	#N/A	#N/A	110	HDPE	New
PP-292	PJ-233	PJ-234	39.5	#N/A	#N/A	110	HDPE	New
PP-293	PJ-234	PJ-235	89	#N/A	#N/A	110	HDPE	New
PP-294	PJ-235	PJ-236	46.5	#N/A	#N/A	110	HDPE	New
PP-295	PJ-235	PJ-237	32	#N/A	#N/A	110	HDPE	New
PP-296	PJ-234	PJ-238	39.5	#N/A	#N/A	110	HDPE	New
PP-297	PJ-238	PJ-239	23	#N/A	#N/A	110	HDPE	New
PP-298	PJ-239	PJ-240	29	#N/A	#N/A	110	HDPE	New
PP-299	PJ-240	PJ-241	17.5	#N/A	#N/A	110	HDPE	New
PP-300	PJ-242	PJ-240	30.5	#N/A	#N/A	110	HDPE	New

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-301	PJ-238	PJ-243	34.5	#N/A	#N/A	110	HDPE	New
PP-302	PJ-243	PJ-239	42	#N/A	#N/A	110	HDPE	New
PP-303	J-62	J-81	27	#N/A	#N/A	110	HDPE	New
PP-304	J-81	J-78	40.5	#N/A	#N/A	110	HDPE	New
PP-305	PJ-243	PJ-244	40	#N/A	#N/A	110	HDPE	New
PP-306	PJ-244	J-63	40	#N/A	#N/A	110	HDPE	New
PP-307	PJ-244	PJ-245	55.5	#N/A	#N/A	110	HDPE	New
PP-308	PJ-245	J-61	41	#N/A	#N/A	110	HDPE	New
PP-309	PJ-245	PJ-246	76.5	#N/A	#N/A	140	HDPE	New
PP-310	PJ-246	PJ-247	49	#N/A	#N/A	140	HDPE	New
PP-311	PJ-247	PJ-248	51.5	#N/A	#N/A	140	HDPE	New
PP-312	PJ-248	J-57	13	#N/A	#N/A	140	HDPE	New
PP-313	J-57	PJ-249	52.5	#N/A	#N/A	110	HDPE	New
PP-314	PJ-249	PJ-250	11.5	#N/A	#N/A	110	HDPE	New
PP-315	PJ-250	PJ-251	109	#N/A	#N/A	110	HDPE	New
PP-316	PJ-248	PJ-252	60	#N/A	#N/A	110	HDPE	New
PP-317	PJ-252	PJ-253	15	#N/A	#N/A	110	HDPE	New
PP-318	PJ-254	PJ-252	11	#N/A	#N/A	110	HDPE	New
PP-319	PJ-250	PJ-255	27	#N/A	#N/A	110	HDPE	New
PP-320	PJ-255	PJ-256	110	#N/A	#N/A	110	HDPE	New
PP-321	PJ-256	PJ-257	18	#N/A	#N/A	110	HDPE	New
PP-322	PJ-257	PJ-258	59.5	#N/A	#N/A	110	HDPE	New
PP-323	PJ-258	PJ-255	52	#N/A	#N/A	110	HDPE	New
PP-324	PJ-258	PJ-259	19.5	#N/A	#N/A	110	HDPE	New
PP-325	PJ-259	PJ-260	61	#N/A	#N/A	110	HDPE	New
PP-326	PJ-259	PJ-261	37	#N/A	#N/A	110	HDPE	New
PP-327	PJ-261	PJ-262	24	#N/A	#N/A	110	HDPE	New
PP-328	PJ-263	PJ-257	27.5	#N/A	#N/A	110	HDPE	New
PP-329	PJ-261	PJ-264	37.5	#N/A	#N/A	110	HDPE	New
PP-330	PJ-264	PJ-265	38.5	#N/A	#N/A	110	HDPE	New
PP-331	PJ-265	PJ-266	97	#N/A	#N/A	110	HDPE	New
PP-332	PJ-264	PJ-267	41.5	#N/A	#N/A	110	HDPE	New
PP-333	PJ-267	PJ-268	21	#N/A	#N/A	110	HDPE	New
PP-334	PJ-267	PJ-269	64	#N/A	#N/A	110	HDPE	New
PP-335	PJ-269	PJ-265	34	#N/A	#N/A	110	HDPE	New
PP-336	PJ-269	PJ-270	25.5	#N/A	#N/A	110	HDPE	New

BOQ for Z12								
				Existing		Proposal to meet 2041 requirements		
Label	**From Node**	**To Node**	**Length (m)**	**Diameter (mm)**	**Material**	**Diameter (mm)**	**Material**	**Status**
PP-338	PJ-271	PJ-272	91.5	#N/A	#N/A	110	HDPE	New
PP-339	PJ-270	PJ-273	100.5	#N/A	#N/A	110	HDPE	New
PP-340	PJ-273	PJ-274	28.5	#N/A	#N/A	110	HDPE	New
PP-341	PJ-274	PJ-275	17	#N/A	#N/A	110	HDPE	New
PP-342	PJ-275	PJ-276	30.5	#N/A	#N/A	110	HDPE	New
PP-343	PJ-276	PJ-273	15.5	#N/A	#N/A	110	HDPE	New
PP-344	PJ-270	PJ-277	24.5	#N/A	#N/A	110	HDPE	New
PP-345	PJ-277	PJ-271	52	#N/A	#N/A	110	HDPE	New
PP-346	PJ-274	PJ-277	106	#N/A	#N/A	110	HDPE	New
PP-347	PJ-275	PJ-278	31	#N/A	#N/A	110	HDPE	New
PP-348	PJ-278	PJ-279	56.5	#N/A	#N/A	110	HDPE	New
PP-349	PJ-278	PJ-280	28	#N/A	#N/A	110	HDPE	New
PP-350	PJ-280	J-56	35	#N/A	#N/A	110	HDPE	New
PP-351	PJ-280	PJ-281	31	#N/A	#N/A	110	HDPE	New
PP-352	PJ-281	PJ-282	17.5	#N/A	#N/A	110	HDPE	New
PP-353	PJ-281	J-55	35.5	#N/A	#N/A	110	HDPE	New
PP-354	J-54	PJ-283	31	#N/A	#N/A	110	HDPE	New
PP-355	J-53	PJ-256	67.5	#N/A	#N/A	110	HDPE	New
PP-356	J-56	J-14	120	#N/A	#N/A	125	HDPE	New
PP-357	J-14	J-15	52	#N/A	#N/A	110	HDPE	New
PP-358	J-15	J-36	95.5	#N/A	#N/A	110	HDPE	New
PP-359	J-36	PJ-186	85.5	#N/A	#N/A	110	HDPE	New
PP-360	J-52	PJ-284	48	#N/A	#N/A	110	HDPE	New
PP-361	PJ-284	PJ-285	19	#N/A	#N/A	110	HDPE	New
PP-362	PJ-247	PJ-286	122	#N/A	#N/A	180	HDPE	New
PP-363	PJ-286	PJ-287	46	#N/A	#N/A	125	HDPE	New
PP-364	PJ-287	J-8	43	#N/A	#N/A	160	HDPE	New
PP-365	PJ-287	PJ-288	42	#N/A	#N/A	140	HDPE	New
PP-366	PJ-288	J-6	39.5	#N/A	#N/A	180	HDPE	New
PP-367	PJ-286	PJ-289	41	#N/A	#N/A	200	HDPE	New
PP-368	PJ-289	PJ-288	29	#N/A	#N/A	225	HDPE	New
PP-369	PJ-289	PJ-290	17	#N/A	#N/A	280	HDPE	New
PP-370	PJ-290	J-4	57.5	#N/A	#N/A	225	HDPE	New
PP-371	PJ-290	PJ-230	90.5	#N/A	#N/A	200	HDPE	New
PP-372	PJ-271	PJ-291	53	#N/A	#N/A	110	HDPE	New
PP-373	PJ-291	PJ-292	71.5	#N/A	#N/A	110	HDPE	New
PP-374	PJ-292	PJ-293	156	#N/A	#N/A	110	HDPE	New
PP-375	PJ-293	PJ-291	108.5	#N/A	#N/A	110	HDPE	New
PP-376	PJ-292	PJ-294	55.5	#N/A	#N/A	110	HDPE	New
PP-377	PJ-293	PJ-295	166	#N/A	#N/A	110	HDPE	New
PP-378	PJ-295	PJ-296	36.5	#N/A	#N/A	110	HDPE	New
PP-379	PJ-296	PJ-297	14	#N/A	#N/A	110	HDPE	New
PP-380	PJ-298	PJ-296	8	#N/A	#N/A	110	HDPE	New
PP-381	PJ-295	PJ-299	29.5	#N/A	#N/A	110	HDPE	New
PP-382	PJ-299	PJ-300	54.5	#N/A	#N/A	110	HDPE	New
PP-383	PJ-300	PJ-301	36.5	#N/A	#N/A	110	HDPE	New
PP-384	PJ-301	PJ-302	42.5	#N/A	#N/A	110	HDPE	New
PP-385	PJ-302	PJ-299	35.5	#N/A	#N/A	110	HDPE	New
PP-386	PJ-301	PJ-303	10	#N/A	#N/A	110	HDPE	New
PP-387	**T-1**	**PJ-289**	**54.5**	#N/A	#N/A	**355**	HDPE	New
			24193.50					

Zone -13

Distribution Network Design Output: Zone 13

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	31	1.796	21.671	150.74999	T-1	J-1	236.11	-8,120.57	6,652.89	400	1.2	2.76	150.74999	HDPE	145	0.09
P-10	65	20.52	20.806	6.25577	J-9	J-10	237.06	-8,057.56	6,625.44	125	0.51	2.2	6.25577	HDPE	145	0.14
P-100	139.5	19.015	18.888	-0.80169	J-88	J-89	237.62	-7,536.69	6,666.52	110	0.08	0.09	0.80169	uPVC	145	0.01
P-101	21.5	18.888	18.944	-1.53235	J-89	J-77	237.76	-7,652.87	6,743.32	110	0.16	0.3	1.53235	uPVC	145	0.01
P-102	49.5	18.888	18.818	0.02882	J-89	J-90	237.76	-7,652.87	6,743.32	110	0	0	0.02882	HDPE	145	0
P-103	46.5	18.818	18.835	1.99887	J-90	J-91	237.83	-7,629.32	6,786.94	110	0.21	0.5	1.99887	HDPE	145	0.02
P-104	75	18.941	18.83	0.28002	J-75	J-92	237.74	-7,696.48	6,741.39	110	0.03	0.01	0.28002	HDPE	145	0
P-105	43.5	18.83	18.868	-2.70545	J-92	J-93	237.85	-7,667.53	6,810.48	110	0.28	0.87	2.70545	HDPE	145	0.04
P-106	47.5	19.615	19.451	6.55789	J-68	J-94	237.4	-7,887.53	6,763.01	125	0.53	2.4	6.55789	HDPE	145	0.11
P-107	63.5	19.451	19.243	3.89393	J-94	J-72	237.45	-7,843.76	6,744.57	110	0.41	1.71	3.89393	HDPE	145	0.11
P-108	46	19.451	19.32	4.23469	J-94	J-95	237.45	-7,843.76	6,744.57	110	0.45	1.99	4.23469	HDPE	145	0.09
P-109	43	19.32	19.26	3.1575	J-95	J-96	237.49	-7,801.52	6,726.78	110	0.33	1.16	3.1575	HDPE	145	0.05
P-11	48	20.52	20.313	7.49397	J-9	J-11	237.06	-8,057.56	6,625.44	125	0.61	3.08	7.49397	HDPE	145	0.15
P-110	57.5	19.26	19.075	2.23644	J-96	J-74	237.5	-7,762.25	6,709.24	110	0.24	0.61	2.23644	HDPE	145	0.04
P-111	71.5	19.075	19.221	-0.73612	J-74	J-97	237.65	-7,735.46	6,760.30	110	0.08	0.08	0.73612	uPVC	145	0.01
P-112	49	19.221	19.26	-2.22085	J-97	J-96	237.51	-7,716.55	6,691.21	110	0.23	0.6	2.22085	HDPE	145	0.03
P-113	140.5	19.26	19.388	-2.26658	J-96	J-98	237.5	-7,762.25	6,709.24	110	0.24	0.63	2.26658	uPVC	145	0.09
P-114	44.5	19.388	19.327	-3.40819	J-98	J-99	237.46	-7,820.73	6,581.54	110	0.36	1.33	3.40819	HDPE	145	0.06
P-115	139.5	19.327	19.32	2.40568	J-99	J-95	237.58	-7,860.87	6,600.68	110	0.25	0.7	2.40568	HDPE	145	0.1
P-116	32.5	19.502	19.42	7.58991	J-66	J-100	237.61	-7,929.21	6,631.01	125	0.62	3.15	7.58991	HDPE	145	0.1
P-117	42.5	19.42	19.327	6.56903	J-100	J-99	237.59	-7,899.77	6,617.66	125	0.54	2.41	6.56903	HDPE	145	0.1
P-118	129	19.221	19.441	-1.07396	J-97	J-101	237.51	-7,716.55	6,691.21	110	0.11	0.16	1.07396	HDPE	145	0.02
P-119	122	19.221	19.831	1.32028	J-97	J-102	237.51	-7,716.55	6,691.21	110	0.14	0.23	1.32028	HDPE	145	0.03
P-12	58	20.313	20.602	3.71297	J-11	J-12	237.12	-8,014.33	6,604.76	110	0.39	1.56	3.71297	HDPE	145	0.09
P-120	66	19.917	19.42	2.46677	J-103	J-100	237.14	-7,926.53	6,557.56	110	0.26	0.73	2.46677	HDPE	145	0.05
P-121	138.5	19.42	19.451	2.55585	J-100	J-94	237.59	-7,899.77	6,617.66	110	0.27	0.78	2.55585	HDPE	145	0.11
P-122	109.5	18.944	19.308	1.01806	J-76	J-104	237.72	-7,679.88	6,732.52	110	0.11	0.14	1.01806	HDPE	145	0.02
P-123	39	19.308	19.63	-0.7423	J-104	J-105	237.34	-7,653.47	6,626.07	110	0.08	0.08	0.7423	HDPE	145	0
P-124	14	19.63	19.691	-2.48823	J-105	J-106	237.02	-7,645.75	6,587.95	110	0.26	0.74	2.48823	uPVC	145	0.01
P-125	34.5	19.308	19.242	1.15017	J-104	J-107	237.34	-7,653.47	6,626.07	110	0.12	0.18	1.15017	HDPE	145	0.01

P-126	29.5	19.242	19.207	1.1481	J-107	J-108	237.4	-7,618.91	6,626.15	110	0.12	0.18	1.1481	HDPE	145	0.01
P-127	25.5	19.207	19.127	0.21425	J-108	J-109	237.43	-7,589.67	6,625.16	110	0.02	0.01	0.21425	uPVC	145	0
P-128	46	19.127	19.01	-0.68458	J-109	J-79	237.51	-7,590.65	6,650.45	110	0.07	0.07	0.68458	HDPE	145	0
P-129	85	18.996	19.242	0.49481	J-78	J-107	237.65	-7,639.36	6,708.59	110	0.05	0.04	0.49481	HDPE	145	0
P-13	60.5	20.313	20.889	3.22581	J-11	J-13	237.12	-8,014.33	6,604.76	110	0.34	1.2	3.22581	HDPE	145	0.07
P-130	57.5	19.63	19.347	1.37736	J-105	J-110	237.02	-7,645.75	6,587.95	110	0.14	0.25	1.37736	HDPE	145	0.01
P-131	36.5	19.347	19.207	0.15988	J-110	J-108	237.29	-7,588.09	6,588.71	110	0.02	0	0.15988	HDPE	145	0
P-132	67.5	19.373	19.037	-1.18981	J-111	J-112	235.6	-8,901.15	6,884.19	110	0.13	0.19	1.18981	uPVC	145	0.01
P-133	80.5	19.037	19.185	-2.87965	J-112	J-113	235.95	-8,878.96	6,820.50	110	0.3	0.98	2.87965	uPVC	145	0.08
P-134	10.5	18.826	18.826	-0.2989	J-114	J-115	236.15	-8,678.74	6,863.44	110	0.03	0.01	0.2989	uPVC	145	0
P-135	25.5	18.826	18.827	-0.60492	J-115	J-116	236.15	-8,685.49	6,871.16	110	0.06	0.05	0.60492	uPVC	145	0
P-136	33	18.827	19.031	-0.96644	J-116	J-117	236.15	-8,702.38	6,889.98	110	0.1	0.13	0.96644	uPVC	145	0
P-137	26.5	19.031	19.183	-1.93086	J-117	J-118	235.95	-8,702.38	6,920.85	110	0.2	0.46	1.93086	uPVC	145	0.01
P-138	32	19.183	19.402	-3.27443	J-118	J-119	235.81	-8,719.27	6,941.12	110	0.34	1.24	3.27443	uPVC	145	0.04
P-139	44	19.402	19.495	-5.71082	J-119	J-120	235.63	-8,702.86	6,968.62	110	0.6	3.47	5.71082	uPVC	145	0.15
P-14	44.5	20.889	21.861	-16.35561	J-13	J-7	236.47	-7,997.35	6,662.81	160	0.81	3.92	16.35561	HDPE	145	0.17
P-142	37	19.748	19.628	4.4423	J-122	J-123	235.83	-8,573.08	6,893.35	110	0.47	2.18	4.4423	uPVC	145	0.08
P-143	113	19.628	19.519	3.62184	J-123	J-124	235.87	-8,597.69	6,865.86	110	0.38	1.49	3.62184	uPVC	145	0.17
P-144	22.5	19.183	18.99	1.07331	J-118	J-125	235.81	-8,719.27	6,941.12	110	0.11	0.16	1.07331	uPVC	145	0
P-145	61.5	19.031	18.829	0.56086	J-117	J-126	235.95	-8,702.38	6,920.85	110	0.06	0.05	0.56086	uPVC	145	0
P-146	39	18.827	18.827	0.03627	J-116	J-127	236.15	-8,702.38	6,889.98	110	0	0	0.03627	uPVC	145	0
P-147	36.5	18.826	18.826	0.06409	J-115	J-128	236.15	-8,685.49	6,871.16	110	0.01	0	0.06409	uPVC	145	0
P-148	24.5	19.748	19.787	-18.62352	J-122	J-129	235.83	-8,573.08	6,893.35	180	0.73	2.81	18.62352	HDPE	145	0.07
P-149	7.5	19.787	19.79	-19.58428	J-129	J-130	235.86	-8,556.43	6,875.36	180	0.77	3.09	19.58428	HDPE	145	0.02
P-15	18	20.889	20.446	19.17119	J-13	J-14	236.47	-7,997.35	6,662.81	180	0.75	2.97	19.17119	HDPE	145	0.05
P-150	14	19.79	19.808	-13.35751	J-130	J-131	235.88	-8,551.03	6,869.96	160	0.66	2.7	13.35751	uPVC	145	0.04
P-151	28.5	19.808	19.86	-16.43331	J-131	J-132	235.9	-8,541.38	6,859.92	160	0.82	3.96	16.43331	uPVC	145	0.11
P-152	45	19.86	19.87	-11.97843	J-132	J-133	235.96	-8,522.08	6,839.08	160	0.6	2.2	11.97843	uPVC	145	0.1
P-153	23.5	19.87	19.879	-12.88055	J-133	J-134	236.05	-8,492.36	6,805.11	160	0.64	2.52	12.88055	uPVC	145	0.06
P-154	33	19.879	20.009	-9.78622	J-134	J-135	236.1	-8,476.93	6,787.36	160	0.49	1.52	9.78622	uPVC	145	0.05
P-155	29.5	20.009	20.068	-13.37961	J-135	J-136	236.02	-8,454.15	6,763.43	160	0.67	2.7	13.37961	uPVC	145	0.08
P-156	15	20.068	20.083	-12.22908	J-136	J-137	236.04	-8,432.93	6,742.97	160	0.61	2.29	12.22908	uPVC	145	0.03
P-157	19	20.083	20.091	-14.37991	J-137	J-138	236.06	-8,422.89	6,731.78	160	0.72	3.09	14.37991	uPVC	145	0.06
P-158	30.5	20.091	20.122	-14.94132	J-138	J-139	236.11	-8,409.00	6,718.66	160	0.74	3.32	14.94132	uPVC	145	0.1
P-159	20	20.122	20.064	-8.17966	J-139	J-140	236.18	-8,384.68	6,700.52	160	0.41	1.09	8.17966	uPVC	145	0.02

P-16	33.5	20.446	20.563	3.75875	J-14	J-15	236.86	-7,980.98	6,655.39	110	0.4	1.6	3.75875	HDPE	145	0.05
P-160	65	20.064	20.087	-9.99994	J-140	J-141	236.26	-8,368.86	6,688.55	160	0.5	1.58	9.99994	uPVC	145	0.1
P-161	33.5	20.087	19.995	9.90306	J-141	J-142	236.34	-8,317.91	6,648.41	160	0.49	1.55	9.90306	uPVC	145	0.05
P-162	27.5	19.995	19.856	9.48252	J-142	J-143	236.38	-8,330.26	6,617.54	160	0.47	1.43	9.48252	uPVC	145	0.04
P-163	32	19.856	19.817	4.01596	J-143	J-144	236.48	-8,337.21	6,590.91	160	0.2	0.29	4.01596	uPVC	145	0.01
P-164	43	19.817	20.005	3.7657	J-144	J-145	236.51	-8,346.47	6,560.42	160	0.19	0.26	3.7657	uPVC	145	0.01
P-165	28.5	20.005	20.096	4.243	J-145	J-146	236.31	-8,384.29	6,580.87	160	0.21	0.32	4.243	uPVC	145	0.01
P-166	18.5	20.096	20.071	4.70765	J-146	J-147	236.21	-8,410.15	6,592.84	110	0.5	2.42	4.70765	uPVC	145	0.04
P-167	19.5	20.071	20.131	0.20558	J-147	J-148	236.19	-8,415.94	6,575.47	110	0.02	0.01	0.20558	uPVC	145	0
P-168	70	20.071	19.977	4.14182	J-147	J-149	236.19	-8,415.94	6,575.47	110	0.44	1.91	4.14182	uPVC	145	0.13
P-169	37	20.096	20.019	-0.74491	J-146	J-150	236.21	-8,410.15	6,592.84	110	0.08	0.08	0.74491	uPVC	145	0
P-17	42.5	20.563	20.472	3.22823	J-15	J-16	236.69	-7,972.34	6,687.51	110	0.34	1.21	3.22823	HDPE	145	0.05
P-170	32	20.019	19.968	-3.98519	J-150	J-151	236.29	-8,397.03	6,627.19	160	0.2	0.29	3.98519	uPVC	145	0.01
P-171	38	19.968	19.856	-5.14131	J-151	J-143	236.35	-8,370.79	6,608.66	160	0.26	0.46	5.14131	uPVC	145	0.02
P-172	67.5	20.019	20.064	-1.31173	J-150	J-140	236.29	-8,397.03	6,627.19	110	0.14	0.23	1.31173	uPVC	145	0.02
P-173	74	19.795	19.435	-6.97983	J-152	J-153	236.37	-8,368.71	6,840.70	125	0.57	2.7	6.97983	HDPE	145	0.2
P-174	129.5	19.763	19.466	-5.72858	J-154	J-155	236.3	-8,437.80	6,868.49	125	0.47	1.87	5.72858	HDPE	145	0.24
P-175	126	19.661	19.655	-7.44882	J-156	J-157	236.28	-8,447.83	6,906.31	125	0.61	3.04	7.44882	HDPE	145	0.38
P-176	32.5	19.655	19.619	-27.67016	J-157	J-52	236.67	-8,328.96	6,948.00	200	0.88	3.5	27.67016	HDPE	145	0.11
P-177	29.5	19.655	19.614	16.73268	J-157	J-158	236.67	-8,328.96	6,948.00	160	0.83	4.09	16.73268	HDPE	145	0.12
P-178	93	19.614	19.445	8.34561	J-158	J-159	236.59	-8,339.38	6,975.40	125	0.68	3.76	8.34561	HDPE	145	0.35
P-179	106.5	19.445	19.253	5.93282	J-159	J-160	236.41	-8,371.80	7,062.63	125	0.48	2	5.93282	HDPE	145	0.21
P-18	40.5	20.472	19.848	2.68105	J-16	J-17	236.73	-7,961.22	6,728.57	110	0.28	0.85	2.68105	HDPE	145	0.03
P-180	67.5	19.445	19.595	1.52266	J-159	J-161	236.41	-8,371.80	7,062.63	110	0.16	0.3	1.52266	uPVC	145	0.02
P-181	72	18.55	18.814	-1.19451	J-162	J-163	236.91	-8,528.50	7,070.35	110	0.13	0.19	1.19451	uPVC	145	0.01
P-182	39	18.814	19.347	-1.6917	J-163	J-164	236.66	-8,486.81	7,127.47	110	0.18	0.36	1.6917	uPVC	145	0.01
P-183	48.5	19.347	19.464	-7.44325	J-164	J-165	236.14	-8,474.46	7,164.52	125	0.61	3.04	7.44325	HDPE	145	0.15
P-184	206	19.464	19.584	3.76012	J-165	J-166	236.17	-8,428.92	7,148.31	110	0.4	1.6	3.76012	uPVC	145	0.33
P-185	101	19.42	19.564	-1.37823	J-167	J-168	235.66	-8,812.67	7,161.61	160	0.07	0.04	1.37823	uPVC	145	0
P-186	27.5	19.564	19.633	-6.49665	J-168	J-169	235.52	-8,747.64	7,084.39	160	0.32	0.71	6.49665	uPVC	145	0.02
P-19	24	19.848	19.535	4.88665	J-17	J-18	237.32	-7,950.72	6,767.48	125	0.4	1.39	4.88665	HDPE	145	0.03
P-2	52.5	21.671	21.248	66.87783	J-1	J-2	236.11	-8,091.32	6,663.74	280	1.09	3.49	66.87783	HDPE	145	0.18
P-20	6.5	19.535	19.529	-2.10874	J-18	J-19	237.6	-7,943.93	6,790.33	110	0.22	0.55	2.10874	HDPE	145	0
P-21	28.5	19.529	19.645	-6.97271	J-19	J-20	237.61	-7,949.49	6,794.03	125	0.57	2.69	6.97271	HDPE	145	0.08
P-22	17.5	19.645	19.817	-9.93045	J-20	J-6	237.57	-7,977.28	6,799.90	140	0.65	2.98	9.93045	HDPE	145	0.05

P-23	22	20.446	19.902	15.16717	J-14	J-21	236.86	-7,980.98	6,655.39	160	0.75	3.41	15.16717	HDPE	145	0.08
P-24	155	19.902	19.529	3.19907	J-21	J-22	237.33	-7,960.60	6,646.75	110	0.34	1.19	3.19907	HDPE	145	0.18
P-25	13	19.529	19.513	-1.5485	J-22	J-23	237.52	-7,903.87	6,770.26	110	0.16	0.31	1.5485	HDPE	145	0
P-26	32	19.513	19.535	-6.78679	J-23	J-18	237.54	-7,915.06	6,776.43	125	0.55	2.56	6.78679	HDPE	145	0.08
P-264	35	19.633	19.639	-5.15581	J-169	J-226	235.47	-8,728.95	7,063.89	160	0.26	0.46	5.15581	uPVC	145	0.02
P-265	40.5	19.639	19.495	-10.12228	J-226	J-120	235.48	-8,705.99	7,037.20	160	0.5	1.61	10.12228	uPVC	145	0.07
P-266	23.5	19.495	19.54	-14.62112	J-120	J-227	235.69	-8,680.19	7,006.25	160	0.73	3.19	14.62112	uPVC	145	0.07
P-267	88.5	19.54	19.67	-12.49356	J-227	J-121	235.72	-8,664.45	6,988.68	160	0.62	2.38	12.49356	uPVC	145	0.21
P-268	29.5	19.54	19.623	-2.59944	J-227	J-228	235.72	-8,664.45	6,988.68	110	0.27	0.81	2.59944	uPVC	145	0.02
P-269	41	19.623	19.519	-3.10829	J-228	J-124	235.66	-8,677.73	6,962.13	110	0.33	1.12	3.10829	uPVC	145	0.05
P-27	75	19.529	19.362	4.49706	J-19	J-24	237.61	-7,949.49	6,794.03	110	0.47	2.23	4.49706	HDPE	145	0.17
P-270	41	19.623	19.603	0.13695	J-228	J-229	235.66	-8,677.73	6,962.13	110	0.01	0	0.13695	uPVC	145	0
P-274	26.5	19.67	19.727	-11.85443	J-121	J-233	235.8	-8,602.51	6,925.68	160	0.59	2.16	11.85443	uPVC	145	0.06
P-275	17.5	19.727	19.748	-13.91763	J-233	J-122	235.8	-8,584.48	6,906.55	160	0.69	2.91	13.91763	uPVC	145	0.05
P-28	30.5	19.362	19.396	-3.06943	J-24	J-25	237.61	-7,918.53	6,862.50	110	0.32	1.1	3.06943	HDPE	145	0.03
P-29	9.5	19.396	19.408	-3.34667	J-25	J-26	237.61	-7,945.94	6,876.01	110	0.35	1.29	3.34667	HDPE	145	0.01
P-3	36	21.671	21.866	63.58449	J-1	J-3	236.11	-8,091.32	6,663.74	280	1.03	3.18	63.58449	HDPE	145	0.11
P-30	40	19.408	19.471	-3.73888	J-26	J-27	237.61	-7,954.04	6,881.03	110	0.39	1.58	3.73888	HDPE	145	0.06
P-31	36	19.471	19.535	-5.59223	J-27	J-28	237.61	-7,988.39	6,901.48	125	0.46	1.79	5.59223	HDPE	145	0.06
P-32	63	19.535	19.894	-6.28	J-28	J-5	237.61	-7,999.97	6,867.52	125	0.51	2.22	6.28	HDPE	145	0.14
P-33	28.5	19.929	19.825	9.90952	J-4	J-29	237.37	-8,026.99	6,809.47	160	0.49	1.55	9.90952	HDPE	145	0.04
P-34	39	19.825	19.556	12.21973	J-29	J-30	237.43	-8,054.39	6,818.12	160	0.61	2.29	12.21973	HDPE	145	0.09
P-35	10.5	19.556	19.523	5.42164	J-30	J-31	237.61	-8,090.29	6,832.78	110	0.57	3.15	5.42164	HDPE	145	0.03
P-36	26.5	19.523	19.501	11.38185	J-31	J-32	237.61	-8,100.32	6,835.87	140	0.74	3.84	11.38185	HDPE	145	0.1
P-37	8	19.501	19.506	7.54444	J-32	J-33	237.53	-8,123.86	6,847.83	125	0.61	3.11	7.54444	HDPE	145	0.02
P-38	34.5	19.506	19.523	11.40047	J-33	J-34	237.5	-8,131.20	6,850.92	140	0.74	3.85	11.40047	HDPE	145	0.13
P-39	7	19.523	19.535	9.21829	J-34	J-35	237.35	-8,162.07	6,866.36	140	0.6	2.6	9.21829	HDPE	145	0.02
P-4	123.5	21.866	19.929	19.30122	J-3	J-4	235.8	-8,076.26	6,696.34	180	0.76	3	19.30122	HDPE	145	0.37
P-40	19.5	19.535	19.578	15.21897	J-35	J-36	237.32	-8,168.64	6,868.68	160	0.76	3.43	15.21897	HDPE	145	0.07
P-41	68	19.578	19.459	1.47394	J-36	J-37	237.21	-8,184.85	6,879.10	110	0.16	0.28	1.47394	HDPE	145	0.02
P-42	28.5	19.459	19.505	-9.33928	J-37	J-38	237.31	-8,155.90	6,940.46	140	0.61	2.66	9.33928	HDPE	145	0.08
P-43	21	19.505	19.546	-7.91758	J-38	J-39	237.34	-8,130.81	6,927.34	140	0.51	1.96	7.91758	HDPE	145	0.04
P-44	19.5	19.546	19.535	-9.03926	J-39	J-40	237.34	-8,111.51	6,919.24	140	0.59	2.51	9.03926	HDPE	145	0.05
P-45	37.5	19.535	19.481	-5.96731	J-40	J-41	237.4	-8,094.14	6,909.97	125	0.49	2.02	5.96731	HDPE	145	0.08
P-46	67.5	19.481	19.556	-6.40785	J-41	J-30	237.53	-8,060.57	6,893.38	125	0.52	2.3	6.40785	HDPE	145	0.16

P-47	68.5	19.523	19.505	1.81527	J-34	J-38	237.35	-8,162.07	6,866.36	110	0.19	0.41	1.81527	HDPE	145	0.03
P-48	69	19.535	19.501	-3.49217	J-40	J-32	237.4	-8,094.14	6,909.97	110	0.37	1.39	3.49217	HDPE	145	0.1
P-49	38.5	19.094	19.155	-0.39153	J-42	J-43	237.67	-7,787.10	6,865.75	110	0.04	0.02	0.39153	uPVC	145	0
P-5	6	19.929	19.894	8.86482	J-4	J-5	237.37	-8,026.99	6,809.47	140	0.58	2.42	8.86482	HDPE	145	0.01
P-50	31	19.155	19.146	1.53183	J-43	J-44	237.61	-7,820.78	6,884.56	110	0.16	0.3	1.53183	uPVC	145	0.01
P-51	125	19.146	19.28	4.0898	J-44	J-45	237.61	-7,847.34	6,900.37	125	0.33	1	4.0898	HDPE	145	0.13
P-52	169.5	19.28	20.017	3.10802	J-45	J-46	237.35	-7,955.72	6,962.95	125	0.25	0.6	3.10802	HDPE	145	0.1
P-53	177.5	20.017	19.63	8.9511	J-46	J-47	236.51	-8,108.56	7,036.67	140	0.58	2.46	8.9511	HDPE	145	0.44
P-54	21.5	19.63	19.622	12.12345	J-47	J-48	236.46	-8,274.91	7,096.11	160	0.6	2.25	12.12345	HDPE	145	0.05
P-55	43	19.54	19.6	-0.14362	J-49	J-50	236.8	-8,229.37	6,983.41	110	0.02	0	0.14362	uPVC	145	0
P-56	37	19.6	19.664	-5.34681	J-50	J-51	236.74	-8,268.35	7,001.93	110	0.56	3.07	5.34681	uPVC	145	0.11
P-57	38	19.664	19.619	2.48103	J-51	J-52	236.79	-8,282.63	6,967.58	125	0.2	0.4	2.48103	HDPE	145	0.02
P-58	38	19.619	19.524	-25.55104	J-52	J-53	236.82	-8,300.00	6,933.62	200	0.81	3.02	25.55104	HDPE	145	0.11
P-59	89.5	19.524	19.578	-13.15483	J-53	J-36	237.03	-8,266.03	6,916.64	160	0.65	2.62	13.15483	HDPE	145	0.23
P-6	27.5	19.894	19.817	2.26291	J-5	J-6	237.39	-8,021.12	6,808.23	110	0.24	0.62	2.26291	HDPE	145	0.02
P-60	86.5	19.664	19.482	-8.36638	J-51	J-54	236.79	-8,282.63	6,967.58	140	0.54	2.17	8.36638	HDPE	145	0.19
P-61	25.5	19.524	19.618	-12.90641	J-53	J-55	237.03	-8,266.03	6,916.64	160	0.64	2.53	12.90641	HDPE	145	0.06
P-62	74	19.618	19.781	-4.895	J-55	J-56	237	-8,274.91	6,892.71	110	0.52	2.61	4.895	HDPE	145	0.19
P-63	99.5	19.618	20.128	-8.67493	J-55	J-57	237	-8,274.91	6,892.71	125	0.71	4.03	8.67493	HDPE	145	0.4
P-64	56	20.128	20.38	-14.78531	J-57	J-58	236.89	-8,240.56	6,799.30	160	0.74	3.25	14.78531	HDPE	145	0.18
P-65	101	19.535	20.098	-6.4259	J-35	J-59	237.32	-8,168.64	6,868.68	125	0.52	2.31	6.4259	HDPE	145	0.23
P-66	45	20.098	20.357	-6.91278	J-59	J-60	236.99	-8,209.80	6,776.62	125	0.56	2.65	6.91278	HDPE	145	0.12
P-67	97.5	20.357	19.506	4.32292	J-60	J-33	236.85	-8,173.73	6,763.04	110	0.45	2.07	4.32292	HDPE	145	0.2
P-68	36.5	20.357	20.846	-11.83256	J-60	J-61	236.85	-8,173.73	6,763.04	140	0.77	4.13	11.83256	HDPE	145	0.15
P-69	98	20.846	19.523	6.41043	J-61	J-31	236.51	-8,141.13	6,746.98	125	0.52	2.3	6.41043	HDPE	145	0.23
P-7	127	19.817	21.861	-8.24108	J-6	J-7	237.45	-7,994.88	6,799.90	140	0.54	2.11	8.24108	HDPE	145	0.27
P-70	35	20.846	21.086	-18.80819	J-61	J-62	236.51	-8,141.13	6,746.98	180	0.74	2.86	18.80819	HDPE	145	0.1
P-71	37	21.086	21.628	-13.57808	J-62	J-63	236.37	-8,133.96	6,719.81	160	0.68	2.78	13.57808	HDPE	145	0.1
P-72	25.5	21.628	21.866	-23.3002	J-63	J-3	235.93	-8,099.63	6,706.47	180	0.92	4.26	23.3002	HDPE	145	0.11
P-73	120.5	21.628	19.825	9.11193	J-63	J-29	235.93	-8,099.63	6,706.47	140	0.59	2.54	9.11193	HDPE	145	0.31
P-74	95.5	19.902	20.259	0.99331	J-21	J-64	237.33	-7,960.60	6,646.75	110	0.1	0.14	0.99331	HDPE	145	0.01
P-75	21.5	19.902	19.558	9.99468	J-21	J-65	237.33	-7,960.60	6,646.75	140	0.65	3.02	9.99468	HDPE	145	0.06
P-76	13.5	19.558	19.502	6.3188	J-65	J-66	237.61	-7,941.18	6,637.57	110	0.66	4.18	6.3188	HDPE	145	0.06
P-77	79.5	19.502	20.08	-1.68967	J-66	J-67	237.61	-7,929.21	6,631.01	110	0.18	0.36	1.68967	HDPE	145	0.03
P-78	136.5	19.558	19.615	3.10401	J-65	J-68	237.61	-7,941.18	6,637.57	110	0.33	1.12	3.10401	HDPE	145	0.15

P-79	18	19.615	19.529	-4.12738	J-68	J-22	237.4	-7,887.53	6,763.01	110	0.43	1.9	4.12738	HDPE	145	0.03
P-8	37.5	21.861	20.454	-5.2006	J-7	J-8	235.67	-8,038.10	6,680.71	110	0.55	2.92	5.2006	HDPE	145	0.11
P-80	72	19.513	19.26	4.84805	J-23	J-69	237.54	-7,915.06	6,776.43	110	0.51	2.56	4.84805	HDPE	145	0.18
P-81	37	19.26	19.362	-7.09128	J-69	J-24	237.61	-7,887.14	6,842.90	125	0.58	2.78	7.09128	HDPE	145	0.1
P-82	6.5	19.26	19.234	11.55409	J-69	J-70	237.61	-7,887.14	6,842.90	140	0.75	3.95	11.55409	HDPE	145	0.03
P-83	31.5	19.234	19.242	7.88239	J-70	J-71	237.61	-7,881.74	6,839.43	160	0.39	1.02	7.88239	uPVC	145	0.03
P-84	42.5	19.242	19.243	5.02359	J-71	J-72	237.57	-7,853.95	6,824.76	160	0.25	0.44	5.02359	uPVC	145	0.02
P-85	43	19.243	19.184	6.36963	J-72	J-73	237.55	-7,818.06	6,802.37	160	0.32	0.68	6.36963	uPVC	145	0.03
P-86	49.5	19.184	19.075	6.85482	J-73	J-74	237.58	-7,779.46	6,783.08	160	0.34	0.78	6.85482	uPVC	145	0.04
P-87	43.5	19.075	18.941	7.9612	J-74	J-75	237.65	-7,735.46	6,760.30	160	0.4	1.03	7.9612	uPVC	145	0.04
P-88	19	18.941	18.944	7.22262	J-75	J-76	237.74	-7,696.48	6,741.39	160	0.36	0.86	7.22262	uPVC	145	0.02
P-89	18.5	18.944	18.944	5.71434	J-76	J-77	237.72	-7,679.88	6,732.52	160	0.28	0.56	5.71434	uPVC	145	0.01
P-9	21	20.454	20.52	14.19664	J-8	J-9	237.19	-8,050.76	6,645.51	160	0.71	3.02	14.19664	HDPE	145	0.06
P-90	29	18.944	18.996	3.95173	J-77	J-78	237.71	-7,663.29	6,724.80	160	0.2	0.28	3.95173	uPVC	145	0.01
P-91	33	18.996	19.01	2.96671	J-78	J-79	237.65	-7,639.36	6,708.59	160	0.15	0.17	2.96671	uPVC	145	0.01
P-92	78.5	19.01	19.075	1.75692	J-79	J-80	237.63	-7,610.80	6,691.60	160	0.09	0.06	1.75692	uPVC	145	0
P-93	42.5	19.075	19.174	1.17141	J-80	J-81	237.56	-7,544.41	6,649.92	160	0.06	0.03	1.17141	uPVC	145	0
P-94	34.5	19.174	19.262	0.48424	J-81	J-82	237.46	-7,515.85	6,623.29	110	0.05	0.04	0.48424	HDPE	145	0
P-95	99	19.262	19.748	0.44968	J-82	J-83	237.37	-7,514.31	6,588.94	110	0.05	0.03	0.44968	HDPE	145	0
P-96	51.5	19.748	19.628	0.17194	J-83	J-84	236.88	-7,415.12	6,588.94	110	0.02	0.01	0.17194	HDPE	145	0
P-97	122.5	19.148	19.544	0.40856	J-85	J-86	237.44	-7,460.27	6,678.87	110	0.04	0.03	0.40856	HDPE	145	0
P-98	75.5	19.81	19.015	-0.49378	J-87	J-88	236.82	-7,473.01	6,625.60	110	0.05	0.04	0.49378	uPVC	145	0
P-99	18.5	19.015	19.075	-0.47058	J-88	J-80	237.62	-7,536.69	6,666.52	110	0.05	0.03	0.47058	uPVC	145	0
PP-188	32.5	19.995	20.075	0.10862	J-142	PJ-170	236.38	-8,330.26	6,617.54	110	0.01	0	0.10862	HDPE	145	0
PP-189	31	19.968	20.005	0.81921	J-151	J-145	236.35	-8,370.79	6,608.66	110	0.09	0.09	0.81921	HDPE	145	0
PP-190	21	20.131	20.201	0.0703	J-148	PJ-171	236.13	-8,419.80	6,556.17	110	0.01	0	0.0703	HDPE	145	0
PP-191	47.5	19.977	19.899	3.83788	J-149	PJ-172	236.15	-8,477.31	6,608.66	110	0.4	1.66	3.83788	HDPE	145	0.08
PP-192	46.5	19.899	20.008	0.3492	PJ-172	PJ-173	236.15	-8,503.05	6,569.00	110	0.04	0.02	0.3492	HDPE	145	0
PP-193	15	20.008	19.938	0.0503	PJ-173	PJ-174	236.04	-8,465.27	6,544.97	110	0.01	0	0.0503	HDPE	145	0
PP-194	14	20.008	20.067	0.04697	PJ-173	PJ-175	236.04	-8,465.27	6,544.97	110	0	0	0.04697	HDPE	145	0
PP-195	11.5	19.899	19.886	3.13677	PJ-172	PJ-176	236.15	-8,503.05	6,569.00	110	0.33	1.14	3.13677	HDPE	145	0.01
PP-196	26.5	19.886	19.886	0.08863	PJ-176	PJ-177	236.15	-8,512.85	6,574.85	110	0.01	0	0.08863	HDPE	145	0
PP-197	14.5	19.886	19.872	2.87287	PJ-176	PJ-178	236.15	-8,512.85	6,574.85	110	0.3	0.97	2.87287	HDPE	145	0.01
PP-198	45.5	19.872	19.949	-3.89371	PJ-178	PJ-179	236.15	-8,525.34	6,582.44	110	0.41	1.71	3.89371	HDPE	145	0.08
PP-199	27	19.949	19.977	-3.00492	PJ-179	J-149	236.15	-8,501.16	6,621.17	110	0.32	1.06	3.00492	HDPE	145	0.03

PP-200	56.5	19.977	20.021	-3.37116	J-149	PJ-180	236.15	-8,477.31	6,608.66	110	0.35	1.31	3.37116	HDPE	145	0.07
PP-201	63.5	20.021	20.019	-3.88516	PJ-180	J-150	236.18	-8,453.10	6,656.58	110	0.41	1.7	3.88516	HDPE	145	0.11
PP-202	76.5	20.021	20.091	-0.14118	PJ-180	J-138	236.18	-8,453.10	6,656.58	110	0.01	0	0.14118	HDPE	145	0
PP-203	136	20.083	19.949	1.58396	J-137	PJ-179	236.06	-8,422.89	6,731.78	110	0.17	0.32	1.58396	HDPE	145	0.04
PP-204	35.5	19.872	19.718	6.448	PJ-178	PJ-181	236.15	-8,525.34	6,582.44	110	0.68	4.34	6.448	HDPE	145	0.15
PP-205	20	19.718	19.707	2.05592	PJ-181	PJ-182	236.15	-8,556.08	6,600.54	110	0.22	0.52	2.05592	HDPE	145	0.01
PP-206	104	19.707	19.543	3.74073	PJ-182	PJ-183	236.15	-8,572.88	6,611.21	110	0.39	1.58	3.74073	HDPE	145	0.16
PP-207	6	19.543	19.526	5.18892	PJ-183	PJ-184	236.15	-8,670.06	6,638.52	110	0.55	2.91	5.18892	HDPE	145	0.02
PP-208	31	19.526	19.975	0.10362	PJ-184	PJ-185	236.15	-8,674.38	6,642.53	110	0.01	0	0.10362	HDPE	145	0
PP-209	41	19.526	19.911	4.82503	PJ-184	PJ-186	236.15	-8,674.38	6,642.53	110	0.51	2.54	4.82503	HDPE	145	0.1
PP-210	256.5	19.911	19.808	-2.07902	PJ-186	J-131	235.66	-8,708.34	6,665.07	110	0.22	0.53	2.07902	HDPE	145	0.14
PP-211	48	19.628	19.388	0.16028	J-123	PJ-187	235.87	-8,597.69	6,865.86	110	0.02	0	0.16028	HDPE	145	0
PP-212	39.5	18.826	18.866	0.13195	J-114	PJ-188	236.15	-8,678.74	6,863.44	110	0.01	0	0.13195	HDPE	145	0
PP-213	5.5	18.826	18.826	-0.07619	J-128	PJ-189	236.15	-8,709.71	6,843.88	110	0.01	0	0.07619	HDPE	145	0
PP-214	19.5	18.826	18.946	0.0653	PJ-189	PJ-190	236.15	-8,712.47	6,838.97	110	0.01	0	0.0653	HDPE	145	0
PP-215	40	18.826	18.826	0.13362	PJ-189	PJ-191	236.15	-8,712.47	6,838.97	110	0.01	0	0.13362	HDPE	145	0
PP-216	27.5	18.826	18.827	-0.5837	PJ-189	J-127	236.15	-8,712.47	6,838.97	110	0.06	0.05	0.5837	HDPE	145	0
PP-217	14.5	18.827	18.829	-0.81768	J-127	J-126	236.15	-8,728.98	6,861.17	110	0.09	0.09	0.81768	HDPE	145	0
PP-218	23	18.829	18.83	-0.58707	J-126	PJ-192	236.15	-8,739.10	6,871.79	110	0.06	0.05	0.58707	HDPE	145	0
PP-219	32.5	18.83	18.899	-1.47417	PJ-192	PJ-193	236.15	-8,756.32	6,887.14	110	0.16	0.28	1.47417	HDPE	145	0.01
PP-220	10.5	18.899	18.99	-0.96302	PJ-193	J-125	236.09	-8,737.17	6,913.38	110	0.1	0.13	0.96302	HDPE	145	0
PP-221	17	18.83	18.829	0.64517	PJ-192	PJ-194	236.15	-8,756.32	6,887.14	110	0.07	0.06	0.64517	HDPE	145	0
PP-222	40	18.829	18.829	0.13362	PJ-194	PJ-195	236.15	-8,765.58	6,872.93	110	0.01	0	0.13362	HDPE	145	0
PP-223	59	18.829	19.008	0.12464	PJ-194	PJ-196	236.15	-8,765.58	6,872.93	110	0.01	0	0.12464	HDPE	145	0
PP-224	67.5	19.008	19.025	-0.85189	PJ-196	PJ-197	235.97	-8,814.37	6,878.49	110	0.09	0.1	0.85189	HDPE	145	0.01
PP-225	10	19.025	18.99	-1.8573	PJ-197	PJ-198	235.96	-8,782.87	6,938.39	110	0.2	0.43	1.8573	HDPE	145	0
PP-226	19	18.99	18.931	-0.57112	PJ-198	PJ-199	236	-8,773.92	6,934.07	110	0.06	0.05	0.57112	HDPE	145	0
PP-227	23	18.931	18.899	0.73142	PJ-199	PJ-193	236.06	-8,757.86	6,923.88	110	0.08	0.08	0.73142	HDPE	145	0
PP-228	23.5	19.008	19.097	0.47632	PJ-196	PJ-200	235.97	-8,814.37	6,878.49	110	0.05	0.03	0.47632	HDPE	145	0
PP-229	27	19.097	18.908	0.15302	PJ-200	PJ-201	235.88	-8,837.83	6,879.11	110	0.02	0	0.15302	HDPE	145	0
PP-230	53	18.908	19.121	-0.70376	PJ-201	PJ-202	236.07	-8,823.94	6,901.03	110	0.07	0.07	0.70376	HDPE	145	0
PP-231	11.5	19.121	19.065	-1.52727	PJ-202	PJ-203	235.86	-8,799.24	6,947.96	110	0.16	0.3	1.52727	HDPE	145	0
PP-232	7.5	19.065	19.025	-0.72183	PJ-203	PJ-197	235.92	-8,789.67	6,941.79	110	0.08	0.07	0.72183	HDPE	145	0
PP-233	28.5	18.908	19.216	0.49487	PJ-201	PJ-204	236.07	-8,823.94	6,901.03	110	0.05	0.04	0.49487	HDPE	145	0
PP-234	17	19.216	19.236	0.34292	PJ-204	PJ-205	235.76	-8,847.10	6,918.01	110	0.04	0.02	0.34292	HDPE	145	0

PP-235	17.5	19.236	19.266	-0.43922	PJ-205	PJ-206	235.74	-8,837.52	6,932.22	110	0.05	0.03	0.43922	HDPE	145	0
PP-236	20.5	19.266	19.11	-1.16907	PJ-206	PJ-207	235.71	-8,829.19	6,947.65	110	0.12	0.18	1.16907	HDPE	145	0
PP-237	20.5	19.11	19.121	-0.53993	PJ-207	PJ-202	235.87	-8,817.15	6,957.53	110	0.06	0.04	0.53993	HDPE	145	0
PP-238	44	19.266	19.404	0.45627	PJ-206	PJ-208	235.71	-8,829.19	6,947.65	110	0.05	0.03	0.45627	HDPE	145	0
PP-239	16	19.404	19.236	-0.61352	PJ-208	PJ-205	235.57	-8,852.04	6,939.32	110	0.06	0.06	0.61352	HDPE	145	0
PP-240	7	19.404	19.354	0.84619	PJ-208	PJ-209	235.57	-8,852.04	6,939.32	110	0.09	0.1	0.84619	HDPE	145	0
PP-241	8	19.354	19.294	0.02697	PJ-209	PJ-210	235.62	-8,852.34	6,932.22	110	0	0	0.02697	HDPE	145	0
PP-242	10.5	19.354	19.423	0.73392	PJ-209	PJ-211	235.62	-8,852.34	6,932.22	110	0.08	0.08	0.73392	HDPE	145	0
PP-243	37	19.423	18.723	0.34266	PJ-211	PJ-212	235.55	-8,862.53	6,930.36	110	0.04	0.02	0.34266	HDPE	145	0
PP-244	13.5	18.723	18.843	0.09561	PJ-212	PJ-213	236.25	-8,867.17	6,966.80	110	0.01	0	0.09561	HDPE	145	0
PP-245	7.5	18.843	18.863	0.02531	PJ-213	PJ-214	236.13	-8,853.58	6,967.11	110	0	0	0.02531	HDPE	145	0
PP-246	114.5	18.723	18.526	-0.30315	PJ-212	PJ-215	236.25	-8,867.17	6,966.80	110	0.03	0.02	0.30315	HDPE	145	0
PP-247	26	18.526	18.845	0.08696	PJ-215	PJ-216	236.45	-8,882.60	7,078.26	110	0.01	0	0.08696	HDPE	145	0
PP-248	39	18.526	19.643	-0.15608	PJ-215	PJ-217	236.45	-8,882.60	7,078.26	110	0.02	0	0.15608	HDPE	145	0
PP-249	91	19.643	19.129	-0.5688	PJ-217	PJ-218	235.33	-8,919.04	7,090.92	110	0.06	0.05	0.5688	HDPE	145	0
PP-250	31.5	19.129	19.103	-0.97736	PJ-218	PJ-219	235.85	-8,840.30	7,136.93	110	0.1	0.13	0.97736	HDPE	145	0
PP-251	17	19.103	18.883	0.36582	PJ-219	PJ-220	235.88	-8,817.45	7,115.01	110	0.04	0.02	0.36582	HDPE	145	0
PP-252	58	18.883	18.526	1.02586	PJ-220	PJ-215	236.1	-8,832.28	7,106.98	110	0.11	0.14	1.02586	HDPE	145	0.01
PP-253	81.5	18.883	19.407	-1.18191	PJ-220	PJ-221	236.1	-8,832.28	7,106.98	110	0.12	0.19	1.18191	HDPE	145	0.02
PP-254	12.5	19.407	19.437	-2.48955	PJ-221	PJ-222	235.59	-8,784.42	7,057.27	110	0.26	0.75	2.48955	HDPE	145	0.01
PP-255	33.5	19.437	19.564	-4.57822	PJ-222	J-168	235.57	-8,775.46	7,065.91	110	0.48	2.3	4.57822	HDPE	145	0.08
PP-256	64.5	19.103	19.437	-1.72009	PJ-219	PJ-222	235.88	-8,817.45	7,115.01	110	0.18	0.38	1.72009	HDPE	145	0.02
PP-257	106	19.407	19.11	1.11936	PJ-221	PJ-207	235.59	-8,784.42	7,057.27	110	0.12	0.17	1.11936	HDPE	145	0.02
PP-258	45.5	19.407	19.44	-0.6302	PJ-221	PJ-223	235.59	-8,784.42	7,057.27	110	0.07	0.06	0.6302	HDPE	145	0
PP-259	89	19.44	19.065	1.16569	PJ-223	PJ-203	235.56	-8,754.16	7,023.30	110	0.12	0.18	1.16569	HDPE	145	0.02
PP-260	80	18.99	19.427	-1.64975	PJ-198	PJ-224	236	-8,773.92	6,934.07	110	0.17	0.35	1.64975	HDPE	145	0.03
PP-261	25	19.427	19.44	2.32776	PJ-224	PJ-223	235.59	-8,737.17	7,005.09	110	0.24	0.66	2.32776	HDPE	145	0.02
PP-262	20.5	19.427	19.407	0.01852	PJ-224	PJ-225	235.59	-8,737.17	7,005.09	110	0	0	0.01852	HDPE	145	0
PP-263	29.5	19.407	19.402	-2.08448	PJ-225	J-119	235.61	-8,723.59	6,989.65	110	0.22	0.54	2.08448	HDPE	145	0.02
PP-264	74	18.931	19.407	-1.68944	PJ-199	PJ-225	236.06	-8,757.86	6,923.88	110	0.18	0.36	1.68944	HDPE	145	0.03
PP-266	45	19.427	19.639	-4.56457	PJ-224	J-226	235.59	-8,737.17	7,005.09	110	0.48	2.29	4.56457	HDPE	145	0.1
PP-271	18	19.76	19.67	-0.0603	PJ-230	J-121	235.71	-8,616.90	6,914.58	110	0.01	0	0.0603	HDPE	145	0
PP-272	21.5	19.67	19.585	-1.21464	J-121	J-231	235.8	-8,602.51	6,925.68	110	0.13	0.2	1.21464	HDPE	145	0
PP-273	25	19.585	19.608	-3.93328	J-231	J-232	235.89	-8,587.26	6,940.51	110	0.41	1.74	3.93328	HDPE	145	0.04
PP-276	22.5	19.608	19.727	-1.84126	J-232	J-233	235.91	-8,569.35	6,923.22	110	0.19	0.43	1.84126	HDPE	145	0.01

PP-277	46	19.373	19.343	0.22788	J-111	PJ-234	235.6	-8,901.15	6,884.19	110	0.02	0.01	0.22788	HDPE	145	0
PP-278	31.5	19.343	19.423	-0.12767	PJ-234	PJ-211	235.63	-8,857.59	6,899.43	110	0.01	0	0.12767	HDPE	145	0
PP-279	14.5	19.343	19.213	0.04864	PJ-234	PJ-235	235.63	-8,857.59	6,899.43	110	0.01	0	0.04864	HDPE	145	0
PP-280	227.5	19.373	19.933	-0.17482	J-111	PJ-236	235.6	-8,901.15	6,884.19	110	0.02	0.01	0.17482	HDPE	145	0
PP-281	52.5	19.933	19.643	0.1958	PJ-236	PJ-217	235.04	-8,970.56	7,101.02	110	0.02	0.01	0.1958	HDPE	145	0
PP-282	49	19.933	20.057	-1.46739	PJ-236	PJ-237	235.04	-8,970.56	7,101.02	110	0.15	0.28	1.46739	HDPE	145	0.01
PP-283	152.5	20.057	19.773	-2.13923	PJ-237	PJ-238	234.93	-8,983.16	7,148.44	110	0.23	0.56	2.13923	HDPE	145	0.09
PP-284	28.5	19.773	19.719	-2.10136	PJ-238	PJ-239	235.3	-8,844.46	7,212.42	110	0.22	0.54	2.10136	HDPE	145	0.02
PP-285	42.5	19.719	19.653	-2.16699	PJ-239	PJ-240	235.37	-8,817.60	7,222.30	110	0.23	0.58	2.16699	HDPE	145	0.02
PP-286	185.5	19.653	19.488	-2.02287	PJ-240	PJ-241	235.46	-8,778.08	7,237.74	110	0.21	0.51	2.02287	HDPE	145	0.09
PP-287	111.5	19.488	19.584	-2.70168	PJ-241	J-166	235.72	-8,604.24	7,302.58	110	0.28	0.87	2.70168	HDPE	145	0.1
PP-288	46	19.464	19.595	-12.20514	J-165	J-161	236.17	-8,428.92	7,148.31	140	0.79	4.37	12.20514	HDPE	145	0.2
PP-289	92	19.595	19.619	-11.36766	J-161	PJ-242	236.24	-8,395.34	7,125.92	160	0.57	2	11.36766	HDPE	145	0.18
PP-290	10.5	19.619	19.622	-12.01649	PJ-242	J-48	236.4	-8,305.64	7,104.84	160	0.6	2.22	12.01649	HDPE	145	0.02
PP-291	46	19.619	19.509	0.15361	PJ-242	PJ-243	236.4	-8,305.64	7,104.84	110	0.02	0	0.15361	HDPE	145	0
PP-292	79.5	19.63	19.65	-4.10081	J-47	PJ-244	236.46	-8,274.91	7,096.11	110	0.43	1.88	4.10081	HDPE	145	0.15
PP-293	40	19.65	19.6	-4.80296	PJ-244	J-50	236.59	-8,302.92	7,021.84	110	0.51	2.52	4.80296	HDPE	145	0.1
PP-294	45.5	19.65	19.609	0.15195	PJ-244	PJ-245	236.59	-8,302.92	7,021.84	110	0.02	0	0.15195	HDPE	145	0
PP-295	70	19.614	19.436	7.74522	J-158	PJ-246	236.59	-8,339.38	6,975.40	125	0.63	3.27	7.74522	HDPE	145	0.23
PP-296	76	19.436	19.564	6.3406	PJ-246	PJ-247	236.54	-8,405.44	6,952.18	125	0.52	2.26	6.3406	HDPE	145	0.17
PP-297	49.5	19.564	19.644	5.49181	PJ-247	PJ-248	236.24	-8,476.82	6,926.00	110	0.58	3.22	5.49181	HDPE	145	0.16
PP-298	47	19.644	19.787	-0.69717	PJ-248	J-129	236	-8,523.26	6,908.46	110	0.07	0.07	0.69717	HDPE	145	0
PP-299	109.5	19.79	19.661	-6.66367	J-130	J-156	235.88	-8,551.03	6,869.96	125	0.54	2.48	6.66367	HDPE	145	0.27
PP-300	89.5	19.86	19.763	-4.99841	J-132	J-154	235.96	-8,522.08	6,839.08	110	0.53	2.71	4.99841	HDPE	145	0.24
PP-301	64.5	19.564	19.394	0.21527	PJ-247	PJ-249	236.24	-8,476.82	6,926.00	110	0.02	0.01	0.21527	HDPE	145	0
PP-302	29	19.436	19.493	0.82109	PJ-246	PJ-250	236.54	-8,405.44	6,952.18	110	0.09	0.09	0.82109	HDPE	145	0
PP-303	14	19.493	19.512	0.31582	PJ-250	PJ-251	236.48	-8,416.55	6,978.86	110	0.03	0.02	0.31582	HDPE	145	0
PP-304	40.5	19.512	19.532	0.13388	PJ-251	PJ-252	236.46	-8,421.74	6,991.95	110	0.01	0	0.13388	HDPE	145	0
PP-305	13.5	19.532	19.512	-0.0464	PJ-252	PJ-253	236.44	-8,459.78	6,978.61	110	0	0	0.0464	HDPE	145	0
PP-306	40.5	19.512	19.493	-0.22667	PJ-253	PJ-250	236.46	-8,455.09	6,965.77	110	0.02	0.01	0.22667	HDPE	145	0
PP-307	23	19.644	19.433	5.79041	PJ-248	PJ-254	236	-8,523.26	6,908.46	110	0.61	3.56	5.79041	HDPE	145	0.08
PP-308	27	19.433	19.295	2.96626	PJ-254	PJ-255	236.13	-8,512.39	6,928.96	110	0.31	1.03	2.96626	HDPE	145	0.03
PP-309	47	19.295	18.916	-0.21849	PJ-255	PJ-256	236.24	-8,512.15	6,955.39	110	0.02	0.01	0.21849	HDPE	145	0
PP-310	65	18.916	19.253	-5.36095	PJ-256	J-160	236.62	-8,530.42	6,996.89	125	0.44	1.65	5.36095	HDPE	145	0.11
PP-311	22.5	18.916	18.313	4.69391	PJ-256	PJ-257	236.62	-8,530.42	6,996.89	110	0.49	2.41	4.69391	HDPE	145	0.05

PP-312	16.5	18.313	17.887	3.81204	PJ-257	PJ-258	237.17	-8,547.96	7,010.72	110	0.4	1.64	3.81204	HDPE	145	0.03
PP-313	57.5	17.887	18.55	-0.76261	PJ-258	J-162	237.57	-8,560.07	7,022.09	110	0.08	0.08	0.76261	HDPE	145	0
PP-314	16	18.326	17.887	-0.05363	PJ-259	PJ-258	237.13	-8,569.21	7,009.24	110	0.01	0	0.05363	HDPE	145	0
PP-315	48.5	17.887	16.57	4.05913	PJ-258	PJ-260	237.57	-8,560.07	7,022.09	110	0.43	1.84	4.05913	HDPE	145	0.09
PP-316	78.5	16.57	18.937	3.63557	PJ-260	PJ-261	238.8	-8,599.84	7,050.25	110	0.38	1.5	3.63557	HDPE	145	0.12
PP-317	15.5	18.937	18.844	7.97047	PJ-261	PJ-262	236.31	-8,652.20	7,011.96	125	0.65	3.45	7.97047	HDPE	145	0.05
PP-318	23.5	18.844	19.495	1.65054	PJ-262	J-120	236.35	-8,663.32	7,022.58	110	0.17	0.35	1.65054	HDPE	145	0.01
PP-319	78.5	18.937	19.462	-4.9101	PJ-261	PJ-263	236.31	-8,652.20	7,011.96	110	0.52	2.62	4.9101	HDPE	145	0.21
PP-320	31	19.462	19.585	-2.46004	PJ-263	J-231	235.99	-8,585.76	6,971.45	110	0.26	0.73	2.46004	HDPE	145	0.02
PP-321	61	19.608	19.433	-2.45392	J-232	PJ-254	235.91	-8,569.35	6,923.22	110	0.26	0.73	2.45392	HDPE	145	0.04
PP-322	27	19.462	19.329	-2.90528	PJ-263	PJ-264	235.99	-8,585.76	6,971.45	110	0.31	0.99	2.90528	HDPE	145	0.03
PP-323	49.5	19.329	19.279	-2.60226	PJ-264	PJ-265	236.15	-8,565.99	6,989.97	110	0.27	0.81	2.60226	HDPE	145	0.04
PP-324	16	19.279	19.295	-2.88449	PJ-265	PJ-255	236.24	-8,524.74	6,965.52	110	0.3	0.98	2.88449	HDPE	145	0.02
PP-325	29	19.329	18.313	-0.65493	PJ-264	PJ-257	236.15	-8,565.99	6,989.97	110	0.07	0.06	0.65493	HDPE	145	0
PP-326	9.5	19.279	19.309	0.03197	PJ-265	PJ-266	236.24	-8,524.74	6,965.52	110	0	0	0.03197	HDPE	145	0
PP-327	41.5	18.844	15.974	2.69964	PJ-262	PJ-267	236.35	-8,663.32	7,022.58	110	0.28	0.87	2.69964	HDPE	145	0.04
PP-328	9	15.974	16.343	0.03031	PJ-267	PJ-268	239.19	-8,630.22	7,047.28	110	0	0	0.03031	HDPE	145	0
PP-329	74	18.844	19.68	3.10508	PJ-262	PJ-269	236.35	-8,663.32	7,022.58	110	0.33	1.12	3.10508	HDPE	145	0.08
PP-330	20	19.68	19.633	1.6161	PJ-269	J-169	235.43	-8,713.46	7,076.68	110	0.17	0.33	1.6161	HDPE	145	0.01
PP-331	38.5	19.68	19.471	-0.34109	PJ-269	PJ-270	235.43	-8,713.46	7,076.68	110	0.04	0.02	0.34109	HDPE	145	0
PP-332	75	19.471	15.974	-2.25077	PJ-270	PJ-267	235.64	-8,682.83	7,100.39	110	0.24	0.62	2.25077	HDPE	145	0.05
PP-333	103	19.68	19.435	1.04492	PJ-269	PJ-271	235.43	-8,713.46	7,076.68	110	0.11	0.15	1.04492	HDPE	145	0.02
PP-334	22	19.435	19.334	0.62803	PJ-271	PJ-272	235.66	-8,772.50	7,160.91	110	0.07	0.06	0.62803	HDPE	145	0
PP-335	23	19.334	19.444	-0.25242	PJ-272	PJ-273	235.76	-8,755.45	7,174.49	110	0.03	0.01	0.25242	HDPE	145	0
PP-336	81	19.444	19.471	-1.26117	PJ-273	PJ-270	235.65	-8,740.63	7,157.20	110	0.13	0.21	1.26117	HDPE	145	0.02
PP-337	21.5	19.444	19.183	0.59018	PJ-273	PJ-274	235.65	-8,740.63	7,157.20	110	0.06	0.05	0.59018	HDPE	145	0
PP-338	30.5	19.183	18.464	0.10196	PJ-274	PJ-275	235.91	-8,724.08	7,170.54	110	0.01	0	0.10196	HDPE	145	0
PP-339	25.5	19.183	19.342	0.22963	PJ-274	PJ-276	235.91	-8,724.08	7,170.54	110	0.02	0.01	0.22963	HDPE	145	0
PP-340	16.5	19.342	19.334	-0.67517	PJ-276	PJ-272	235.75	-8,743.35	7,185.61	110	0.07	0.07	0.67517	HDPE	145	0
PP-341	89	19.342	19.719	0.46791	PJ-276	PJ-239	235.75	-8,743.35	7,185.61	110	0.05	0.03	0.46791	HDPE	145	0
PP-342	60	19.42	19.773	0.84136	J-167	PJ-238	235.66	-8,812.67	7,161.61	110	0.09	0.1	0.84136	HDPE	145	0.01
PP-343	162.5	19.653	19.288	-1.44583	PJ-240	PJ-277	235.46	-8,778.08	7,237.74	110	0.15	0.27	1.44583	HDPE	145	0.04
PP-344	77	19.288	18.03	0.25693	PJ-277	PJ-278	235.87	-8,627.75	7,198.21	110	0.03	0.01	0.25693	HDPE	145	0
PP-345	55.5	19.288	19.316	-2.68621	PJ-277	PJ-279	235.87	-8,627.75	7,198.21	110	0.28	0.86	2.68621	HDPE	145	0.05
PP-346	121	19.316	16.648	0.40357	PJ-279	PJ-280	235.89	-8,572.56	7,190.59	110	0.04	0.03	0.40357	HDPE	145	0

PP-347	19	18.814	18.883	0.06363	J-163	PJ-281	236.66	-8,486.81	7,127.47	110	0.01	0	0.06363	HDPE	145	0
PP-348	7	19.316	19.327	-3.70163	PJ-279	PJ-282	235.89	-8,572.56	7,190.59	110	0.39	1.55	3.70163	HDPE	145	0.01
PP-349	94.5	19.327	19.347	-5.14469	PJ-282	J-164	235.89	-8,565.61	7,189.82	110	0.54	2.86	5.14469	HDPE	145	0.27
PP-350	119	19.327	19.488	0.70789	PJ-282	PJ-241	235.89	-8,565.61	7,189.82	110	0.07	0.07	0.70789	HDPE	145	0.01
PP-351	73.5	19.037	18.828	0.95134	J-112	PJ-283	235.95	-8,878.96	6,820.50	110	0.1	0.13	0.95134	HDPE	145	0.01
PP-352	37	18.828	19.097	-0.03138	PJ-283	PJ-200	236.15	-8,812.44	6,852.07	110	0	0	0.03138	HDPE	145	0
PP-353	35	18.828	18.827	0.4975	PJ-283	PJ-284	236.15	-8,812.44	6,852.07	110	0.05	0.04	0.4975	HDPE	145	0
PP-354	20	18.827	18.827	0.06697	PJ-284	PJ-285	236.15	-8,787.43	6,832.62	110	0.01	0	0.06697	HDPE	145	0
PP-355	37	18.866	18.827	-0.12362	PJ-286	PJ-284	236.11	-8,814.30	6,806.99	110	0.01	0	0.12362	HDPE	145	0
PP-356	120	19.185	19.377	-3.54816	J-113	PJ-287	235.88	-8,848.56	6,745.73	110	0.37	1.44	3.54816	HDPE	145	0.17
PP-357	101	19.377	19.911	-5.57568	PJ-287	PJ-186	235.86	-8,782.63	6,645.44	110	0.59	3.32	5.57568	HDPE	145	0.33
PP-358	123	19.377	19.343	0.88076	PJ-287	PJ-288	235.86	-8,782.63	6,645.44	110	0.09	0.11	0.88076	HDPE	145	0.01
PP-359	39	19.343	18.934	0.13029	PJ-288	PJ-289	235.88	-8,722.32	6,538.09	110	0.01	0	0.13029	HDPE	145	0
PP-360	31.5	19.343	19.284	0.10529	PJ-288	PJ-290	235.88	-8,722.32	6,538.09	110	0.01	0	0.10529	HDPE	145	0
PP-361	32	19.543	19.558	-1.92174	PJ-183	PJ-291	236.15	-8,670.06	6,638.52	110	0.2	0.46	1.92174	HDPE	145	0.01
PP-362	111.5	19.558	19.595	-2.40029	PJ-291	PJ-292	236.15	-8,694.62	6,618.16	110	0.25	0.7	2.40029	HDPE	145	0.08
PP-363	24	19.595	19.402	-1.42179	PJ-292	PJ-293	236.19	-8,604.95	6,552.21	110	0.15	0.26	1.42179	HDPE	145	0.01
PP-364	40	19.402	19.655	-1.6354	PJ-293	PJ-294	236.39	-8,585.44	6,537.88	110	0.17	0.34	1.6354	HDPE	145	0.01
PP-365	33.5	19.655	19.718	-4.09516	PJ-294	PJ-181	236.15	-8,573.34	6,571.97	110	0.43	1.87	4.09516	HDPE	145	0.06
PP-366	33	19.595	19.645	-1.54036	PJ-292	PJ-295	236.19	-8,604.95	6,552.21	110	0.16	0.31	1.54036	HDPE	145	0.01
PP-367	19	19.645	19.655	-2.05422	PJ-295	PJ-294	236.15	-8,589.64	6,581.35	110	0.22	0.52	2.05422	HDPE	145	0.01
PP-368	14.5	19.655	19.655	0.04864	PJ-294	PJ-296	236.15	-8,573.34	6,571.97	110	0.01	0	0.04864	HDPE	145	0
PP-369	51	19.645	19.645	0.17028	PJ-295	PJ-297	236.15	-8,589.64	6,581.35	110	0.02	0.01	0.17028	HDPE	145	0
PP-370	193	19.707	20.009	-2.74158	PJ-182	J-135	236.15	-8,572.88	6,611.21	110	0.29	0.89	2.74158	HDPE	145	0.17
PP-371	101	20.027	19.87	-0.33691	PJ-298	J-133	235.89	-8,559.24	6,730.37	110	0.04	0.02	0.33691	HDPE	145	0
PP-372	120.5	19.879	19.795	-3.68452	J-134	J-152	236.1	-8,476.93	6,787.36	110	0.39	1.54	3.68452	HDPE	145	0.19
PP-373	17.5	19.795	19.805	0.05863	J-152	PJ-299	236.37	-8,368.71	6,840.70	110	0.01	0	0.05863	HDPE	145	0
PP-374	26.5	19.795	19.766	2.44152	J-152	PJ-300	236.37	-8,368.71	6,840.70	110	0.26	0.72	2.44152	HDPE	145	0.02
PP-375	38.5	19.766	19.366	0.12862	PJ-300	PJ-301	236.38	-8,357.18	6,816.58	110	0.01	0	0.12862	HDPE	145	0
PP-376	105.5	20.068	19.766	-1.65074	J-136	PJ-300	236.04	-8,432.93	6,742.97	110	0.17	0.35	1.65074	HDPE	145	0.04
PP-377	14	19.766	19.965	0.04697	PJ-300	PJ-302	236.38	-8,357.18	6,816.58	110	0	0	0.04697	HDPE	145	0
PP-378	55.5	20.122	20.277	-7.11523	J-139	PJ-303	236.18	-8,384.68	6,700.52	125	0.58	2.79	7.11523	HDPE	145	0.16
PP-379	40	20.277	20.34	-7.80405	PJ-303	PJ-304	236.18	-8,346.06	6,740.50	125	0.64	3.32	7.80405	HDPE	145	0.13
PP-380	10.5	20.34	20.34	0.03531	PJ-304	PJ-305	236.25	-8,318.40	6,769.40	110	0	0	0.03531	HDPE	145	0
PP-381	55.5	20.277	20.037	0.18528	PJ-303	PJ-306	236.18	-8,346.06	6,740.50	110	0.02	0.01	0.18528	HDPE	145	0

PP-382	61	20.34	20.262	-8.21126	PJ-304	PJ-307	236.25	-8,318.40	6,769.40	125	0.67	3.64	8.21126	HDPE	145	0.22
PP-383	78	20.262	20.221	0.26026	PJ-307	PJ-308	236.55	-8,304.07	6,709.87	110	0.03	0.01	0.26026	HDPE	145	0
PP-384	66.5	20.262	20.253	-9.1567	PJ-307	PJ-309	236.55	-8,304.07	6,709.87	140	0.59	2.57	9.1567	HDPE	145	0.17
PP-385	156.5	20.253	19.435	11.57022	PJ-309	J-153	236.73	-8,241.08	6,731.36	140	0.75	3.96	11.57022	HDPE	145	0.62
PP-386	38	19.435	19.466	3.69525	J-153	J-155	236.93	-8,302.71	6,874.28	110	0.39	1.55	3.69525	HDPE	145	0.06
PP-387	40.5	19.466	19.655	-2.72683	J-155	J-157	236.84	-8,315.06	6,910.17	125	0.22	0.47	2.72683	HDPE	145	0.02
PP-388	67.5	20.128	19.781	5.36689	J-57	J-56	236.89	-8,240.56	6,799.30	110	0.56	3.09	5.36689	HDPE	145	0.21
PP-389	155.5	20.087	20.31	-20.7498	J-141	PJ-310	236.34	-8,317.91	6,648.41	180	0.82	3.43	20.7498	HDPE	145	0.53
PP-390	35.5	20.31	20.35	0.11862	PJ-310	PJ-311	236.65	-8,182.74	6,573.03	110	0.01	0	0.11862	HDPE	145	0
PP-391	47	20.31	20.495	-21.66191	PJ-310	PJ-312	236.65	-8,182.74	6,573.03	180	0.85	3.72	21.66191	HDPE	145	0.17
PP-392	83.5	20.495	20.613	0.27859	PJ-312	PJ-313	236.64	-8,139.92	6,592.93	110	0.03	0.01	0.27859	HDPE	145	0
PP-393	63.5	20.495	20.67	-22.58735	PJ-312	PJ-314	236.64	-8,139.92	6,592.93	180	0.89	4.02	22.58735	HDPE	145	0.26
PP-394	108	20.67	20.253	21.83034	PJ-314	PJ-309	236.72	-8,178.52	6,643.59	180	0.86	3.77	21.83034	HDPE	145	0.41
PP-395	42	20.67	21.032	-45.12953	PJ-314	PJ-315	236.72	-8,178.52	6,643.59	250	0.92	2.92	45.12953	HDPE	145	0.12
PP-396	15.5	21.032	21.177	-60.89694	PJ-315	PJ-316	236.48	-8,156.81	6,679.77	280	0.99	2.93	60.89694	HDPE	145	0.05
PP-397	30.5	21.177	21.086	5.57202	PJ-316	J-62	236.38	-8,148.97	6,693.04	110	0.59	3.31	5.57202	HDPE	145	0.1
PP-398	90.5	20.38	21.032	-15.27386	J-58	PJ-315	236.82	-8,212.00	6,751.45	160	0.76	3.46	15.27386	HDPE	145	0.31
PP-399	12	21.248	21.177	66.66256	J-2	PJ-316	236.35	-8,138.26	6,687.20	280	1.08	3.47	66.66256	HDPE	145	0.04
PP-400	44.5	21.671	20.454	19.74081	J-1	J-8	236.11	-8,091.32	6,663.74	180	0.78	3.13	19.74081	HDPE	145	0.14
PP-401	41	21.866	21.861	20.22957	J-3	J-7	235.8	-8,076.26	6,696.34	180	0.79	3.28	20.22957	HDPE	145	0.13
PP-402	41.5	21.251	20.563	-0.13862	PJ-317	J-15	236	-8,012.11	6,698.80	110	0.01	0	0.13862	HDPE	145	0
PP-403	40.5	20.611	20.472	-0.13529	PJ-318	J-16	236.59	-8,000.50	6,738.07	110	0.01	0	0.13529	HDPE	145	0
PP-404	57.5	19.848	19.645	-2.6125	J-17	J-20	237.32	-7,950.72	6,767.48	110	0.27	0.81	2.6125	HDPE	145	0.05
PP-405	100	19.825	19.452	5.8416	J-29	PJ-319	237.43	-8,054.39	6,818.12	125	0.48	1.94	5.8416	HDPE	145	0.19
PP-406	85.5	19.452	19.471	-1.31481	PJ-319	J-27	237.61	-8,027.18	6,914.19	110	0.14	0.23	1.31481	HDPE	145	0.02
PP-407	80.5	19.452	19.344	6.26961	PJ-319	PJ-320	237.61	-8,027.18	6,914.19	125	0.51	2.21	6.26961	HDPE	145	0.18
PP-408	25	19.344	19.546	-0.90307	PJ-320	J-39	237.54	-8,102.34	6,942.70	110	0.1	0.11	0.90307	HDPE	145	0
PP-409	48	19.344	19.385	6.6608	PJ-320	PJ-321	237.54	-8,102.34	6,942.70	125	0.54	2.47	6.6608	HDPE	145	0.12
PP-410	81.5	19.385	20.017	7.27145	PJ-321	J-46	237.38	-8,145.18	6,963.92	125	0.59	2.91	7.27145	HDPE	145	0.24
PP-411	26	19.385	19.459	-1.12919	PJ-321	J-37	237.38	-8,145.18	6,963.92	110	0.12	0.17	1.12919	HDPE	145	0
PP-412	40.5	19.459	19.625	9.14049	J-37	PJ-322	237.31	-8,155.90	6,940.46	160	0.45	1.34	9.14049	HDPE	145	0.05
PP-413	30	19.625	19.482	8.90523	PJ-322	J-54	237.09	-8,193.04	6,956.98	140	0.58	2.44	8.90523	HDPE	145	0.07
PP-414	22.5	19.482	19.552	0.0753	J-54	PJ-323	237.16	-8,205.05	6,929.76	110	0.01	0	0.0753	HDPE	145	0
PP-415	13.5	19.481	19.431	0.0453	J-41	PJ-324	237.53	-8,060.57	6,893.38	110	0	0	0.0453	HDPE	145	0
PP-416	15.5	19.535	19.535	-0.05197	PJ-325	J-28	237.61	-8,013.18	6,875.15	110	0.01	0	0.05197	HDPE	145	0

PP-417	16	19.535	19.535	0.05363	J-28	PJ-326	237.61	-7,999.97	6,867.52	110	0.01	0	0.05363	HDPE	145	0
PP-418	22	19.535	19.535	0.07363	J-28	PJ-327	237.61	-7,999.97	6,867.52	110	0.01	0	0.07363	HDPE	145	0
PP-419	34	19.408	19.408	-0.11362	PJ-328	J-26	237.61	-7,970.72	6,851.61	110	0.01	0	0.11362	HDPE	145	0
PP-420	21.5	19.396	19.396	0.07196	J-25	PJ-329	237.61	-7,945.94	6,876.01	110	0.01	0	0.07196	HDPE	145	0
PP-421	70	19.234	19.146	3.31146	J-70	J-44	237.61	-7,881.74	6,839.43	110	0.35	1.26	3.31146	HDPE	145	0.09
PP-422	68.5	19.242	19.155	2.38358	J-71	J-43	237.57	-7,853.95	6,824.76	110	0.25	0.69	2.38358	HDPE	145	0.05
PP-423	70.5	19.243	19.094	1.81606	J-72	J-42	237.55	-7,818.06	6,802.37	110	0.19	0.42	1.81606	HDPE	145	0.03
PP-424	46.5	19.094	18.908	1.68905	J-42	PJ-330	237.67	-7,787.10	6,865.75	110	0.18	0.36	1.68905	HDPE	145	0.02
PP-425	79.5	18.908	19.184	-1.25906	PJ-330	J-73	237.84	-7,743.78	6,853.93	110	0.13	0.21	1.25906	HDPE	145	0.02
PP-426	60.5	19.184	19.32	-2.51941	J-73	J-95	237.58	-7,779.46	6,783.08	110	0.27	0.76	2.51941	HDPE	145	0.05
PP-427	44	18.908	18.868	2.38124	PJ-330	J-93	237.84	-7,743.78	6,853.93	110	0.25	0.69	2.38124	HDPE	145	0.03
PP-428	76.5	18.868	19.075	-0.87108	J-93	J-74	237.85	-7,706.13	6,830.94	110	0.09	0.11	0.87108	HDPE	145	0.01
PP-429	45	18.83	18.818	2.44027	J-92	J-90	237.85	-7,667.53	6,810.48	110	0.26	0.72	2.44027	HDPE	145	0.03
PP-430	154	18.835	19.148	1.33036	J-91	J-85	237.79	-7,589.18	6,763.01	110	0.14	0.23	1.33036	HDPE	145	0.04
PP-431	46.5	19.127	19.075	0.50526	J-109	J-80	237.51	-7,590.65	6,650.45	110	0.05	0.04	0.50526	HDPE	145	0
PP-432	74	19.207	19.174	0.54186	J-108	J-81	237.43	-7,589.67	6,625.16	110	0.06	0.04	0.54186	HDPE	145	0
PP-433	43	19.174	19.81	0.58218	J-81	J-87	237.46	-7,515.85	6,623.29	110	0.06	0.05	0.58218	HDPE	145	0
PP-434	68.5	19.81	19.748	0.45243	J-87	J-83	236.82	-7,473.01	6,625.60	110	0.05	0.03	0.45243	HDPE	145	0
PP-435	74	19.262	19.347	-0.65728	J-82	J-110	237.37	-7,514.31	6,588.94	110	0.07	0.06	0.65728	HDPE	145	0
PP-436	47.5	19.691	19.831	-2.6935	J-106	J-102	236.97	-7,641.89	6,574.44	110	0.28	0.86	2.6935	HDPE	145	0.04
PP-437	81	19.831	19.441	-2.20836	J-102	J-101	236.87	-7,689.17	6,572.51	110	0.23	0.6	2.20836	HDPE	145	0.05
PP-438	50.5	19.441	19.398	-4.15079	J-101	PJ-331	237.31	-7,770.22	6,573.96	110	0.44	1.92	4.15079	HDPE	145	0.1
PP-439	8	19.398	19.388	-0.4981	PJ-331	J-98	237.45	-7,820.59	6,573.33	110	0.05	0.04	0.4981	HDPE	145	0
PP-440	107	19.398	19.917	-4.20456	PJ-331	J-103	237.45	-7,820.59	6,573.33	110	0.44	1.97	4.20456	HDPE	145	0.21
PP-441	28	19.917	20.08	-7.34151	J-103	J-67	237.14	-7,926.53	6,557.56	125	0.6	2.96	7.34151	HDPE	145	0.08
PP-442	29	20.08	20.259	-9.4864	J-67	J-64	237.06	-7,954.30	6,555.36	140	0.62	2.74	9.4864	HDPE	145	0.08
PP-443	49	20.259	20.602	-9.07163	J-64	J-12	236.96	-7,983.25	6,554.20	140	0.59	2.52	9.07163	HDPE	145	0.12
PP-444	48.5	20.602	20.806	-5.8772	J-12	J-10	236.74	-8,032.24	6,549.80	125	0.48	1.96	5.8772	HDPE	145	0.1
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BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	31	110	PVC	400	HDPE	Replacement
P-10	J-9	J-10	65	75	PVC	125	HDPE	Replacement
P-100	J-88	J-89	139.5	110	PVC	110	uPVC	Retained
P-101	J-89	J-77	21.5	110	PVC	110	uPVC	Retained
P-102	J-89	J-90	49.5	75	PVC	110	HDPE	Replacement
P-103	J-90	J-91	46.5	75	PVC	110	HDPE	Replacement
P-104	J-75	J-92	75	75	PVC	110	HDPE	Replacement
P-105	J-92	J-93	43.5	75	PVC	110	HDPE	Replacement
P-106	J-68	J-94	47.5	75	PVC	125	HDPE	Replacement
P-107	J-94	J-72	63.5	75	PVC	110	HDPE	Replacement
P-108	J-94	J-95	46	75	PVC	110	HDPE	Replacement
P-109	J-95	J-96	43	75	PVC	110	HDPE	Replacement
P-11	J-9	J-11	48	75	PVC	125	HDPE	Replacement
P-110	J-96	J-74	57.5	75	PVC	110	HDPE	Replacement
P-111	J-74	J-97	71.5	110	PVC	110	uPVC	Retained
P-112	J-97	J-96	49	75	PVC	110	HDPE	Replacement
P-113	J-96	J-98	140.5	110	PVC	110	uPVC	Retained
P-114	J-98	J-99	44.5	75	PVC	110	HDPE	Replacement
P-115	J-99	J-95	139.5	75	PVC	110	HDPE	Replacement
P-116	J-66	J-100	32.5	75	PVC	125	HDPE	Replacement
P-117	J-100	J-99	42.5	75	PVC	125	HDPE	Replacement
P-118	J-97	J-101	129	75	PVC	110	HDPE	Replacement
P-119	J-97	J-102	122	75	PVC	110	HDPE	Replacement
P-12	J-11	J-12	58	75	PVC	110	HDPE	Replacement
P-120	J-103	J-100	66	75	PVC	110	HDPE	Replacement
P-121	J-100	J-94	138.5	75	PVC	110	HDPE	Replacement
P-122	J-76	J-104	109.5	75	PVC	110	HDPE	Replacement
P-123	J-104	J-105	39	75	PVC	110	HDPE	Replacement
P-124	J-105	J-106	14	110	PVC	110	uPVC	Retained
P-125	J-104	J-107	34.5	75	PVC	110	HDPE	Replacement
P-126	J-107	J-108	29.5	75	PVC	110	HDPE	Replacement
P-127	J-108	J-109	25.5	110	PVC	110	uPVC	Retained
P-128	J-109	J-79	46	75	PVC	110	HDPE	Replacement
P-129	J-78	J-107	85	75	PVC	110	HDPE	Replacement
P-13	J-11	J-13	60.5	75	PVC	110	HDPE	Replacement
P-130	J-105	J-110	57.5	75	PVC	110	HDPE	Replacement
P-131	J-110	J-108	36.5	75	PVC	110	HDPE	Replacement
P-132	J-111	J-112	67.5	110	PVC	110	uPVC	Retained
P-133	J-112	J-113	80.5	110	PVC	110	uPVC	Retained
P-134	J-114	J-115	10.5	110	PVC	110	uPVC	Retained
P-135	J-115	J-116	25.5	110	PVC	110	uPVC	Retained
P-136	J-116	J-117	33	110	PVC	110	uPVC	Retained
P-137	J-117	J-118	26.5	110	PVC	110	uPVC	Retained
P-138	J-118	J-119	32	110	PVC	110	uPVC	Retained
P-139	J-119	J-120	44	110	PVC	110	uPVC	Retained
P-14	J-13	J-7	44.5	75	PVC	160	HDPE	Replacement
P-142	J-122	J-123	37	110	PVC	110	uPVC	Retained
P-143	J-123	J-124	113	110	PVC	110	uPVC	Retained
P-144	J-118	J-125	22.5	110	PVC	110	uPVC	Retained
P-145	J-117	J-126	61.5	110	PVC	110	uPVC	Retained
P-146	J-116	J-127	39	110	PVC	110	uPVC	Retained
P-147	J-115	J-128	36.5	110	PVC	110	uPVC	Retained
P-148	J-122	J-129	24.5	160	PVC	180	HDPE	Replacement
P-149	J-129	J-130	7.5	160	PVC	180	HDPE	Replacement
P-15	J-13	J-14	18	75	PVC	180	HDPE	Replacement
P-150	J-130	J-131	14	160	PVC	160	uPVC	Retained
P-151	J-131	J-132	28.5	160	PVC	160	uPVC	Retained
P-152	J-132	J-133	45	160	PVC	160	uPVC	Retained
P-153	J-133	J-134	23.5	160	PVC	160	uPVC	Retained

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-154	J-134	J-135	33	160	PVC	160	uPVC	Retained
P-155	J-135	J-136	29.5	160	PVC	160	uPVC	Retained
P-156	J-136	J-137	15	160	PVC	160	uPVC	Retained
P-157	J-137	J-138	19	160	PVC	160	uPVC	Retained
P-158	J-138	J-139	30.5	160	PVC	160	uPVC	Retained
P-159	J-139	J-140	20	160	PVC	160	uPVC	Retained
P-16	J-14	J-15	33.5	75	PVC	110	HDPE	Replacement
P-160	J-140	J-141	65	160	PVC	160	uPVC	Retained
P-161	J-141	J-142	33.5	160	PVC	160	uPVC	Retained
P-162	J-142	J-143	27.5	160	PVC	160	uPVC	Retained
P-163	J-143	J-144	32	160	PVC	160	uPVC	Retained
P-164	J-144	J-145	43	160	PVC	160	uPVC	Retained
P-165	J-145	J-146	28.5	160	PVC	160	uPVC	Retained
P-166	J-146	J-147	18.5	110	PVC	110	uPVC	Retained
P-167	J-147	J-148	19.5	110	PVC	110	uPVC	Retained
P-168	J-147	J-149	70	110	PVC	110	uPVC	Retained
P-169	J-146	J-150	37	110	PVC	110	uPVC	Retained
P-17	J-15	J-16	42.5	75	PVC	110	HDPE	Replacement
P-170	J-150	J-151	32	160	PVC	160	uPVC	Retained
P-171	J-151	J-143	38	160	PVC	160	uPVC	Retained
P-172	J-150	J-140	67.5	110	PVC	110	uPVC	Retained
P-173	J-152	J-153	74	110	PVC	125	HDPE	Replacement
P-174	J-154	J-155	129.5	110	PVC	125	HDPE	Replacement
P-175	J-156	J-157	126	110	PVC	125	HDPE	Replacement
P-176	J-157	J-52	32.5	110	PVC	200	HDPE	Replacement
P-177	J-157	J-158	29.5	110	PVC	160	HDPE	Replacement
P-178	J-158	J-159	93	110	PVC	125	HDPE	Replacement
P-179	J-159	J-160	106.5	110	PVC	125	HDPE	Replacement
P-18	J-16	J-17	40.5	75	PVC	110	HDPE	Replacement
P-180	J-159	J-161	67.5	110	PVC	110	uPVC	Retained
P-181	J-162	J-163	72	110	PVC	110	uPVC	Retained
P-182	J-163	J-164	39	110	PVC	110	uPVC	Retained
P-183	J-164	J-165	48.5	110	PVC	125	HDPE	Replacement
P-184	J-165	J-166	206	110	PVC	110	uPVC	Retained
P-185	J-167	J-168	101	160	PVC	160	uPVC	Retained
P-186	J-168	J-169	27.5	160	PVC	160	uPVC	Retained
P-19	J-17	J-18	24	75	PVC	125	HDPE	Replacement
P-2	J-1	J-2	52.5	110	PVC	280	HDPE	Replacement
P-20	J-18	J-19	6.5	75	PVC	110	HDPE	Replacement
P-21	J-19	J-20	28.5	75	PVC	125	HDPE	Replacement
P-22	J-20	J-6	17.5	75	PVC	140	HDPE	Replacement
P-23	J-14	J-21	22	75	PVC	160	HDPE	Replacement
P-24	J-21	J-22	155	75	PVC	110	HDPE	Replacement
P-25	J-22	J-23	13	75	PVC	110	HDPE	Replacement
P-26	J-23	J-18	32	75	PVC	125	HDPE	Replacement
P-264	J-169	J-226	35	160	PVC	160	uPVC	Retained
P-265	J-226	J-120	40.5	160	PVC	160	uPVC	Retained
P-266	J-120	J-227	23.5	160	PVC	160	uPVC	Retained
P-267	J-227	J-121	88.5	160	PVC	160	uPVC	Retained
P-268	J-227	J-228	29.5	110	PVC	110	uPVC	Retained
P-269	J-228	J-124	41	110	PVC	110	uPVC	Retained
P-27	J-19	J-24	75	75	PVC	110	HDPE	Replacement
P-270	J-228	J-229	41	110	PVC	110	uPVC	Retained
P-274	J-121	J-233	26.5	160	PVC	160	uPVC	Retained
P-275	J-233	J-122	17.5	160	PVC	160	uPVC	Retained
P-28	J-24	J-25	30.5	75	PVC	110	HDPE	Replacement
P-29	J-25	J-26	9.5	75	PVC	110	HDPE	Replacement
P-3	J-1	J-3	36	110	PVC	280	HDPE	Replacement
P-30	J-26	J-27	40	75	PVC	110	HDPE	Replacement
P-31	J-27	J-28	36	75	PVC	125	HDPE	Replacement

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-32	J-28	J-5	63	75	PVC	125	HDPE	Replacement
P-33	J-4	J-29	28.5	75	PVC	160	HDPE	Replacement
P-34	J-29	J-30	39	110	PVC	160	HDPE	Replacement
P-35	J-30	J-31	10.5	75	PVC	110	HDPE	Replacement
P-36	J-31	J-32	26.5	75	PVC	140	HDPE	Replacement
P-37	J-32	J-33	8	75	PVC	125	HDPE	Replacement
P-38	J-33	J-34	34.5	75	PVC	140	HDPE	Replacement
P-39	J-34	J-35	7	75	PVC	140	HDPE	Replacement
P-4	J-3	J-4	123.5	75	PVC	180	HDPE	Replacement
P-40	J-35	J-36	19.5	75	PVC	160	HDPE	Replacement
P-41	J-36	J-37	68	75	PVC	110	HDPE	Replacement
P-42	J-37	J-38	28.5	75	PVC	140	HDPE	Replacement
P-43	J-38	J-39	21	75	PVC	140	HDPE	Replacement
P-44	J-39	J-40	19.5	75	PVC	140	HDPE	Replacement
P-45	J-40	J-41	37.5	75	PVC	125	HDPE	Replacement
P-46	J-41	J-30	67.5	75	PVC	125	HDPE	Replacement
P-47	J-34	J-38	68.5	75	PVC	110	HDPE	Replacement
P-48	J-40	J-32	69	75	PVC	110	HDPE	Replacement
P-49	J-42	J-43	38.5	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	6	75	PVC	140	HDPE	Replacement
P-50	J-43	J-44	31	110	PVC	110	uPVC	Retained
P-51	J-44	J-45	125	110	PVC	125	HDPE	Replacement
P-52	J-45	J-46	169.5	110	PVC	125	HDPE	Replacement
P-53	J-46	J-47	177.5	110	PVC	140	HDPE	Replacement
P-54	J-47	J-48	21.5	110	PVC	160	HDPE	Replacement
P-55	J-49	J-50	43	110	PVC	110	uPVC	Retained
P-56	J-50	J-51	37	110	PVC	110	uPVC	Retained
P-57	J-51	J-52	38	110	PVC	125	HDPE	Replacement
P-58	J-52	J-53	38	75	PVC	200	HDPE	Replacement
P-59	J-53	J-36	89.5	75	PVC	160	HDPE	Replacement
P-6	J-5	J-6	27.5	75	PVC	110	HDPE	Replacement
P-60	J-51	J-54	86.5	110	PVC	140	HDPE	Replacement
P-61	J-53	J-55	25.5	75	PVC	160	HDPE	Replacement
P-62	J-55	J-56	74	75	PVC	110	HDPE	Replacement
P-63	J-55	J-57	99.5	75	PVC	125	HDPE	Replacement
P-64	J-57	J-58	56	75	PVC	160	HDPE	Replacement
P-65	J-35	J-59	101	75	PVC	125	HDPE	Replacement
P-66	J-59	J-60	45	75	PVC	125	HDPE	Replacement
P-67	J-60	J-33	97.5	75	PVC	110	HDPE	Replacement
P-68	J-60	J-61	36.5	75	PVC	140	HDPE	Replacement
P-69	J-61	J-31	98	75	PVC	125	HDPE	Replacement
P-7	J-6	J-7	127	75	PVC	140	HDPE	Replacement
P-70	J-61	J-62	35	75	PVC	180	HDPE	Replacement
P-71	J-62	J-63	37	75	PVC	160	HDPE	Replacement
P-72	J-63	J-3	25.5	75	PVC	180	HDPE	Replacement
P-73	J-63	J-29	120.5	75	PVC	140	HDPE	Replacement
P-74	J-21	J-64	95.5	75	PVC	110	HDPE	Replacement
P-75	J-21	J-65	21.5	75	PVC	140	HDPE	Replacement
P-76	J-65	J-66	13.5	75	PVC	110	HDPE	Replacement
P-77	J-66	J-67	79.5	75	PVC	110	HDPE	Replacement
P-78	J-65	J-68	136.5	75	PVC	110	HDPE	Replacement
P-79	J-68	J-22	18	75	PVC	110	HDPE	Replacement
P-8	J-7	J-8	37.5	75	PVC	110	HDPE	Replacement
P-80	J-23	J-69	72	75	PVC	110	HDPE	Replacement
P-81	J-69	J-24	37	75	PVC	125	HDPE	Replacement
P-82	J-69	J-70	6.5	110	PVC	140	HDPE	Replacement
P-83	J-70	J-71	31.5	160	PVC	160	uPVC	Retained
P-84	J-71	J-72	42.5	160	PVC	160	uPVC	Retained
P-85	J-72	J-73	43	160	PVC	160	uPVC	Retained
P-86	J-73	J-74	49.5	160	PVC	160	uPVC	Retained

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
P-87	J-74	J-75	43.5	160	PVC	160	uPVC	Retained
P-88	J-75	J-76	19	160	PVC	160	uPVC	Retained
P-89	J-76	J-77	18.5	160	PVC	160	uPVC	Retained
P-9	J-8	J-9	21	75	PVC	160	HDPE	Replacement
P-90	J-77	J-78	29	160	PVC	160	uPVC	Retained
P-91	J-78	J-79	33	160	PVC	160	uPVC	Retained
P-92	J-79	J-80	78.5	160	PVC	160	uPVC	Retained
P-93	J-80	J-81	42.5	160	PVC	160	uPVC	Retained
P-94	J-81	J-82	34.5	75	PVC	110	HDPE	Replacement
P-95	J-82	J-83	99	75	PVC	110	HDPE	Replacement
P-96	J-83	J-84	51.5	75	PVC	110	HDPE	Replacement
P-97	J-85	J-86	122.5	75	PVC	110	HDPE	Replacement
P-98	J-87	J-88	75.5	110	PVC	110	uPVC	Retained
P-99	J-88	J-80	18.5	110	PVC	110	uPVC	Retained
PP-188	J-142	PJ-170	32.5	#N/A	#N/A	110	HDPE	New
PP-189	J-151	J-145	31	#N/A	#N/A	110	HDPE	New
PP-190	J-148	PJ-171	21	#N/A	#N/A	110	HDPE	New
PP-191	J-149	PJ-172	47.5	#N/A	#N/A	110	HDPE	New
PP-192	PJ-172	PJ-173	46.5	#N/A	#N/A	110	HDPE	New
PP-193	PJ-173	PJ-174	15	#N/A	#N/A	110	HDPE	New
PP-194	PJ-173	PJ-175	14	#N/A	#N/A	110	HDPE	New
PP-195	PJ-172	PJ-176	11.5	#N/A	#N/A	110	HDPE	New
PP-196	PJ-176	PJ-177	26.5	#N/A	#N/A	110	HDPE	New
PP-197	PJ-176	PJ-178	14.5	#N/A	#N/A	110	HDPE	New
PP-198	PJ-178	PJ-179	45.5	#N/A	#N/A	110	HDPE	New
PP-199	PJ-179	J-149	27	#N/A	#N/A	110	HDPE	New
PP-200	J-149	PJ-180	56.5	#N/A	#N/A	110	HDPE	New
PP-201	PJ-180	J-150	63.5	#N/A	#N/A	110	HDPE	New
PP-202	PJ-180	J-138	76.5	#N/A	#N/A	110	HDPE	New
PP-203	J-137	PJ-179	136	#N/A	#N/A	110	HDPE	New
PP-204	PJ-178	PJ-181	35.5	#N/A	#N/A	110	HDPE	New
PP-205	PJ-181	PJ-182	20	#N/A	#N/A	110	HDPE	New
PP-206	PJ-182	PJ-183	104	#N/A	#N/A	110	HDPE	New
PP-207	PJ-183	PJ-184	6	#N/A	#N/A	110	HDPE	New
PP-208	PJ-184	PJ-185	31	#N/A	#N/A	110	HDPE	New
PP-209	PJ-184	PJ-186	41	#N/A	#N/A	110	HDPE	New
PP-210	PJ-186	J-131	256.5	#N/A	#N/A	110	HDPE	New
PP-211	J-123	PJ-187	48	#N/A	#N/A	110	HDPE	New
PP-212	J-114	PJ-188	39.5	#N/A	#N/A	110	HDPE	New
PP-213	J-128	PJ-189	5.5	#N/A	#N/A	110	HDPE	New
PP-214	PJ-189	PJ-190	19.5	#N/A	#N/A	110	HDPE	New
PP-215	PJ-189	PJ-191	40	#N/A	#N/A	110	HDPE	New
PP-216	PJ-189	J-127	27.5	#N/A	#N/A	110	HDPE	New
PP-217	J-127	J-126	14.5	#N/A	#N/A	110	HDPE	New
PP-218	J-126	PJ-192	23	#N/A	#N/A	110	HDPE	New
PP-219	PJ-192	PJ-193	32.5	#N/A	#N/A	110	HDPE	New
PP-220	PJ-193	J-125	10.5	#N/A	#N/A	110	HDPE	New
PP-221	PJ-192	PJ-194	17	#N/A	#N/A	110	HDPE	New
PP-222	PJ-194	PJ-195	40	#N/A	#N/A	110	HDPE	New
PP-223	PJ-194	PJ-196	59	#N/A	#N/A	110	HDPE	New
PP-224	PJ-196	PJ-197	67.5	#N/A	#N/A	110	HDPE	New
PP-225	PJ-197	PJ-198	10	#N/A	#N/A	110	HDPE	New
PP-226	PJ-198	PJ-199	19	#N/A	#N/A	110	HDPE	New
PP-227	PJ-199	PJ-193	23	#N/A	#N/A	110	HDPE	New
PP-228	PJ-196	PJ-200	23.5	#N/A	#N/A	110	HDPE	New
PP-229	PJ-200	PJ-201	27	#N/A	#N/A	110	HDPE	New
PP-230	PJ-201	PJ-202	53	#N/A	#N/A	110	HDPE	New
PP-231	PJ-202	PJ-203	11.5	#N/A	#N/A	110	HDPE	New
PP-232	PJ-203	PJ-197	7.5	#N/A	#N/A	110	HDPE	New
PP-233	PJ-201	PJ-204	28.5	#N/A	#N/A	110	HDPE	New

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-234	PJ-204	PJ-205	17	#N/A	#N/A	110	HDPE	New
PP-235	PJ-205	PJ-206	17.5	#N/A	#N/A	110	HDPE	New
PP-236	PJ-206	PJ-207	20.5	#N/A	#N/A	110	HDPE	New
PP-237	PJ-207	PJ-202	20.5	#N/A	#N/A	110	HDPE	New
PP-238	PJ-206	PJ-208	44	#N/A	#N/A	110	HDPE	New
PP-239	PJ-208	PJ-205	16	#N/A	#N/A	110	HDPE	New
PP-240	PJ-208	PJ-209	7	#N/A	#N/A	110	HDPE	New
PP-241	PJ-209	PJ-210	8	#N/A	#N/A	110	HDPE	New
PP-242	PJ-209	PJ-211	10.5	#N/A	#N/A	110	HDPE	New
PP-243	PJ-211	PJ-212	37	#N/A	#N/A	110	HDPE	New
PP-244	PJ-212	PJ-213	13.5	#N/A	#N/A	110	HDPE	New
PP-245	PJ-213	PJ-214	7.5	#N/A	#N/A	110	HDPE	New
PP-246	PJ-212	PJ-215	114.5	#N/A	#N/A	110	HDPE	New
PP-247	PJ-215	PJ-216	26	#N/A	#N/A	110	HDPE	New
PP-248	PJ-215	PJ-217	39	#N/A	#N/A	110	HDPE	New
PP-249	PJ-217	PJ-218	91	#N/A	#N/A	110	HDPE	New
PP-250	PJ-218	PJ-219	31.5	#N/A	#N/A	110	HDPE	New
PP-251	PJ-219	PJ-220	17	#N/A	#N/A	110	HDPE	New
PP-252	PJ-220	PJ-215	58	#N/A	#N/A	110	HDPE	New
PP-253	PJ-220	PJ-221	81.5	#N/A	#N/A	110	HDPE	New
PP-254	PJ-221	PJ-222	12.5	#N/A	#N/A	110	HDPE	New
PP-255	PJ-222	J-168	33.5	#N/A	#N/A	110	HDPE	New
PP-256	PJ-219	PJ-222	64.5	#N/A	#N/A	110	HDPE	New
PP-257	PJ-221	PJ-207	106	#N/A	#N/A	110	HDPE	New
PP-258	PJ-221	PJ-223	45.5	#N/A	#N/A	110	HDPE	New
PP-259	PJ-223	PJ-203	89	#N/A	#N/A	110	HDPE	New
PP-260	PJ-198	PJ-224	80	#N/A	#N/A	110	HDPE	New
PP-261	PJ-224	PJ-223	25	#N/A	#N/A	110	HDPE	New
PP-262	PJ-224	PJ-225	20.5	#N/A	#N/A	110	HDPE	New
PP-263	PJ-225	J-119	29.5	#N/A	#N/A	110	HDPE	New
PP-264	PJ-199	PJ-225	74	#N/A	#N/A	110	HDPE	New
PP-266	PJ-224	J-226	45	#N/A	#N/A	110	HDPE	New
PP-271	PJ-230	J-121	18	#N/A	#N/A	110	HDPE	New
PP-272	J-121	J-231	21.5	#N/A	#N/A	110	HDPE	New
PP-273	J-231	J-232	25	#N/A	#N/A	110	HDPE	New
PP-276	J-232	J-233	22.5	#N/A	#N/A	110	HDPE	New
PP-277	J-111	PJ-234	46	#N/A	#N/A	110	HDPE	New
PP-278	PJ-234	PJ-211	31.5	#N/A	#N/A	110	HDPE	New
PP-279	PJ-234	PJ-235	14.5	#N/A	#N/A	110	HDPE	New
PP-280	J-111	PJ-236	227.5	#N/A	#N/A	110	HDPE	New
PP-281	PJ-236	PJ-217	52.5	#N/A	#N/A	110	HDPE	New
PP-282	PJ-236	PJ-237	49	#N/A	#N/A	110	HDPE	New
PP-283	PJ-237	PJ-238	152.5	#N/A	#N/A	110	HDPE	New
PP-284	PJ-238	PJ-239	28.5	#N/A	#N/A	110	HDPE	New
PP-285	PJ-239	PJ-240	42.5	#N/A	#N/A	110	HDPE	New
PP-286	PJ-240	PJ-241	185.5	#N/A	#N/A	110	HDPE	New
PP-287	PJ-241	J-166	111.5	#N/A	#N/A	110	HDPE	New
PP-288	J-165	J-161	46	#N/A	#N/A	140	HDPE	New
PP-289	J-161	PJ-242	92	#N/A	#N/A	160	HDPE	New
PP-290	PJ-242	J-48	10.5	#N/A	#N/A	160	HDPE	New
PP-291	PJ-242	PJ-243	46	#N/A	#N/A	110	HDPE	New
PP-292	J-47	PJ-244	79.5	#N/A	#N/A	110	HDPE	New
PP-293	PJ-244	J-50	40	#N/A	#N/A	110	HDPE	New
PP-294	PJ-244	PJ-245	45.5	#N/A	#N/A	110	HDPE	New
PP-295	J-158	PJ-246	70	#N/A	#N/A	125	HDPE	New
PP-296	PJ-246	PJ-247	76	#N/A	#N/A	125	HDPE	New
PP-297	PJ-247	PJ-248	49.5	#N/A	#N/A	110	HDPE	New
PP-298	PJ-248	J-129	47	#N/A	#N/A	110	HDPE	New
PP-299	J-130	J-156	109.5	#N/A	#N/A	125	HDPE	New
PP-300	J-132	J-154	89.5	#N/A	#N/A	110	HDPE	New

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-301	PJ-247	PJ-249	64.5	#N/A	#N/A	110	HDPE	New
PP-302	PJ-246	PJ-250	29	#N/A	#N/A	110	HDPE	New
PP-303	PJ-250	PJ-251	14	#N/A	#N/A	110	HDPE	New
PP-304	PJ-251	PJ-252	40.5	#N/A	#N/A	110	HDPE	New
PP-305	PJ-252	PJ-253	13.5	#N/A	#N/A	110	HDPE	New
PP-306	PJ-253	PJ-250	40.5	#N/A	#N/A	110	HDPE	New
PP-307	PJ-248	PJ-254	23	#N/A	#N/A	110	HDPE	New
PP-308	PJ-254	PJ-255	27	#N/A	#N/A	110	HDPE	New
PP-309	PJ-255	PJ-256	47	#N/A	#N/A	110	HDPE	New
PP-310	PJ-256	J-160	65	#N/A	#N/A	125	HDPE	New
PP-311	PJ-256	PJ-257	22.5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-257	PJ-258	16.5	#N/A	#N/A	110	HDPE	New
PP-313	PJ-258	J-162	57.5	#N/A	#N/A	110	HDPE	New
PP-314	PJ-259	PJ-258	16	#N/A	#N/A	110	HDPE	New
PP-315	PJ-258	PJ-260	48.5	#N/A	#N/A	110	HDPE	New
PP-316	PJ-260	PJ-261	78.5	#N/A	#N/A	110	HDPE	New
PP-317	PJ-261	PJ-262	15.5	#N/A	#N/A	125	HDPE	New
PP-318	PJ-262	J-120	23.5	#N/A	#N/A	110	HDPE	New
PP-319	PJ-261	PJ-263	78.5	#N/A	#N/A	110	HDPE	New
PP-320	PJ-263	J-231	31	#N/A	#N/A	110	HDPE	New
PP-321	J-232	PJ-254	61	#N/A	#N/A	110	HDPE	New
PP-322	PJ-263	PJ-264	27	#N/A	#N/A	110	HDPE	New
PP-323	PJ-264	PJ-265	49.5	#N/A	#N/A	110	HDPE	New
PP-324	PJ-265	PJ-255	16	#N/A	#N/A	110	HDPE	New
PP-325	PJ-264	PJ-257	29	#N/A	#N/A	110	HDPE	New
PP-326	PJ-265	PJ-266	9.5	#N/A	#N/A	110	HDPE	New
PP-327	PJ-262	PJ-267	41.5	#N/A	#N/A	110	HDPE	New
PP-328	PJ-267	PJ-268	9	#N/A	#N/A	110	HDPE	New
PP-329	PJ-262	PJ-269	74	#N/A	#N/A	110	HDPE	New
PP-330	PJ-269	J-169	20	#N/A	#N/A	110	HDPE	New
PP-331	PJ-269	PJ-270	38.5	#N/A	#N/A	110	HDPE	New
PP-332	PJ-270	PJ-267	75	#N/A	#N/A	110	HDPE	New
PP-333	PJ-269	PJ-271	103	#N/A	#N/A	110	HDPE	New
PP-334	PJ-271	PJ-272	22	#N/A	#N/A	110	HDPE	New
PP-335	PJ-272	PJ-273	23	#N/A	#N/A	110	HDPE	New
PP-336	PJ-273	PJ-270	81	#N/A	#N/A	110	HDPE	New
PP-337	PJ-273	PJ-274	21.5	#N/A	#N/A	110	HDPE	New
PP-338	PJ-274	PJ-275	30.5	#N/A	#N/A	110	HDPE	New
PP-339	PJ-274	PJ-276	25.5	#N/A	#N/A	110	HDPE	New
PP-340	PJ-276	PJ-272	16.5	#N/A	#N/A	110	HDPE	New
PP-341	PJ-276	PJ-239	89	#N/A	#N/A	110	HDPE	New
PP-342	J-167	PJ-238	60	#N/A	#N/A	110	HDPE	New
PP-343	PJ-240	PJ-277	162.5	#N/A	#N/A	110	HDPE	New
PP-344	PJ-277	PJ-278	77	#N/A	#N/A	110	HDPE	New
PP-345	PJ-277	PJ-279	55.5	#N/A	#N/A	110	HDPE	New
PP-346	PJ-279	PJ-280	121	#N/A	#N/A	110	HDPE	New
PP-347	J-163	PJ-281	19	#N/A	#N/A	110	HDPE	New
PP-348	PJ-279	PJ-282	7	#N/A	#N/A	110	HDPE	New
PP-349	PJ-282	J-164	94.5	#N/A	#N/A	110	HDPE	New
PP-350	PJ-282	PJ-241	119	#N/A	#N/A	110	HDPE	New
PP-351	J-112	PJ-283	73.5	#N/A	#N/A	110	HDPE	New
PP-352	PJ-283	PJ-200	37	#N/A	#N/A	110	HDPE	New
PP-353	PJ-283	PJ-284	35	#N/A	#N/A	110	HDPE	New
PP-354	PJ-284	PJ-285	20	#N/A	#N/A	110	HDPE	New
PP-355	PJ-286	PJ-284	37	#N/A	#N/A	110	HDPE	New
PP-356	J-113	PJ-287	120	#N/A	#N/A	110	HDPE	New
PP-357	PJ-287	PJ-186	101	#N/A	#N/A	110	HDPE	New
PP-358	PJ-287	PJ-288	123	#N/A	#N/A	110	HDPE	New
PP-359	PJ-288	PJ-289	39	#N/A	#N/A	110	HDPE	New
PP-360	PJ-288	PJ-290	31.5	#N/A	#N/A	110	HDPE	New

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-361	PJ-183	PJ-291	32	#N/A	#N/A	110	HDPE	New
PP-362	PJ-291	PJ-292	111.5	#N/A	#N/A	110	HDPE	New
PP-363	PJ-292	PJ-293	24	#N/A	#N/A	110	HDPE	New
PP-364	PJ-293	PJ-294	40	#N/A	#N/A	110	HDPE	New
PP-365	PJ-294	PJ-181	33.5	#N/A	#N/A	110	HDPE	New
PP-366	PJ-292	PJ-295	33	#N/A	#N/A	110	HDPE	New
PP-367	PJ-295	PJ-294	19	#N/A	#N/A	110	HDPE	New
PP-368	PJ-294	PJ-296	14.5	#N/A	#N/A	110	HDPE	New
PP-369	PJ-295	PJ-297	51	#N/A	#N/A	110	HDPE	New
PP-370	PJ-182	J-135	193	#N/A	#N/A	110	HDPE	New
PP-371	PJ-298	J-133	101	#N/A	#N/A	110	HDPE	New
PP-372	J-134	J-152	120.5	#N/A	#N/A	110	HDPE	New
PP-373	J-152	PJ-299	17.5	#N/A	#N/A	110	HDPE	New
PP-374	J-152	PJ-300	26.5	#N/A	#N/A	110	HDPE	New
PP-375	PJ-300	PJ-301	38.5	#N/A	#N/A	110	HDPE	New
PP-376	J-136	PJ-300	105.5	#N/A	#N/A	110	HDPE	New
PP-377	PJ-300	PJ-302	14	#N/A	#N/A	110	HDPE	New
PP-378	J-139	PJ-303	55.5	#N/A	#N/A	125	HDPE	New
PP-379	PJ-303	PJ-304	40	#N/A	#N/A	125	HDPE	New
PP-380	PJ-304	PJ-305	10.5	#N/A	#N/A	110	HDPE	New
PP-381	PJ-303	PJ-306	55.5	#N/A	#N/A	110	HDPE	New
PP-382	PJ-304	PJ-307	61	#N/A	#N/A	125	HDPE	New
PP-383	PJ-307	PJ-308	78	#N/A	#N/A	110	HDPE	New
PP-384	PJ-307	PJ-309	66.5	#N/A	#N/A	140	HDPE	New
PP-385	PJ-309	J-153	156.5	#N/A	#N/A	140	HDPE	New
PP-386	J-153	J-155	38	#N/A	#N/A	110	HDPE	New
PP-387	J-155	J-157	40.5	#N/A	#N/A	125	HDPE	New
PP-388	J-57	J-56	67.5	#N/A	#N/A	110	HDPE	New
PP-389	J-141	PJ-310	155.5	#N/A	#N/A	180	HDPE	New
PP-390	PJ-310	PJ-311	35.5	#N/A	#N/A	110	HDPE	New
PP-391	PJ-310	PJ-312	47	#N/A	#N/A	180	HDPE	New
PP-392	PJ-312	PJ-313	83.5	#N/A	#N/A	110	HDPE	New
PP-393	PJ-312	PJ-314	63.5	#N/A	#N/A	180	HDPE	New
PP-394	PJ-314	PJ-309	108	#N/A	#N/A	180	HDPE	New
PP-395	PJ-314	PJ-315	42	#N/A	#N/A	250	HDPE	New
PP-396	PJ-315	PJ-316	15.5	#N/A	#N/A	280	HDPE	New
PP-397	PJ-316	J-62	30.5	#N/A	#N/A	110	HDPE	New
PP-398	J-58	PJ-315	90.5	#N/A	#N/A	160	HDPE	New
PP-399	J-2	PJ-316	12	#N/A	#N/A	280	HDPE	New
PP-400	J-1	J-8	44.5	#N/A	#N/A	180	HDPE	New
PP-401	J-3	J-7	41	#N/A	#N/A	180	HDPE	New
PP-402	PJ-317	J-15	41.5	#N/A	#N/A	110	HDPE	New
PP-403	PJ-318	J-16	40.5	#N/A	#N/A	110	HDPE	New
PP-404	J-17	J-20	57.5	#N/A	#N/A	110	HDPE	New
PP-405	J-29	PJ-319	100	#N/A	#N/A	125	HDPE	New
PP-406	PJ-319	J-27	85.5	#N/A	#N/A	110	HDPE	New
PP-407	PJ-319	PJ-320	80.5	#N/A	#N/A	125	HDPE	New
PP-408	PJ-320	J-39	25	#N/A	#N/A	110	HDPE	New
PP-409	PJ-320	PJ-321	48	#N/A	#N/A	125	HDPE	New
PP-410	PJ-321	J-46	81.5	#N/A	#N/A	125	HDPE	New
PP-411	PJ-321	J-37	26	#N/A	#N/A	110	HDPE	New
PP-412	J-37	PJ-322	40.5	#N/A	#N/A	160	HDPE	New
PP-413	PJ-322	J-54	30	#N/A	#N/A	140	HDPE	New
PP-414	J-54	PJ-323	22.5	#N/A	#N/A	110	HDPE	New
PP-415	J-41	PJ-324	13.5	#N/A	#N/A	110	HDPE	New
PP-416	PJ-325	J-28	15.5	#N/A	#N/A	110	HDPE	New
PP-417	J-28	PJ-326	16	#N/A	#N/A	110	HDPE	New
PP-418	J-28	PJ-327	22	#N/A	#N/A	110	HDPE	New
PP-419	PJ-328	J-26	34	#N/A	#N/A	110	HDPE	New
PP-420	J-25	PJ-329	21.5	#N/A	#N/A	110	HDPE	New

BOQ for Z13								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm	Material	Diameter (mm)	Material	Status
PP-421	J-70	J-44	70	#N/A	#N/A	110	HDPE	New
PP-422	J-71	J-43	68.5	#N/A	#N/A	110	HDPE	New
PP-423	J-72	J-42	70.5	#N/A	#N/A	110	HDPE	New
PP-424	J-42	PJ-330	46.5	#N/A	#N/A	110	HDPE	New
PP-425	PJ-330	J-73	79.5	#N/A	#N/A	110	HDPE	New
PP-426	J-73	J-95	60.5	#N/A	#N/A	110	HDPE	New
PP-427	PJ-330	J-93	44	#N/A	#N/A	110	HDPE	New
PP-428	J-93	J-74	76.5	#N/A	#N/A	110	HDPE	New
PP-429	J-92	J-90	45	#N/A	#N/A	110	HDPE	New
PP-430	J-91	J-85	154	#N/A	#N/A	110	HDPE	New
PP-431	J-109	J-80	46.5	#N/A	#N/A	110	HDPE	New
PP-432	J-108	J-81	74	#N/A	#N/A	110	HDPE	New
PP-433	J-81	J-87	43	#N/A	#N/A	110	HDPE	New
PP-434	J-87	J-83	68.5	#N/A	#N/A	110	HDPE	New
PP-435	J-82	J-110	74	#N/A	#N/A	110	HDPE	New
PP-436	J-106	J-102	47.5	#N/A	#N/A	110	HDPE	New
PP-437	J-102	J-101	81	#N/A	#N/A	110	HDPE	New
PP-438	J-101	PJ-331	50.5	#N/A	#N/A	110	HDPE	New
PP-439	PJ-331	J-98	8	#N/A	#N/A	110	HDPE	New
PP-440	PJ-331	J-103	107	#N/A	#N/A	110	HDPE	New
PP-441	J-103	J-67	28	#N/A	#N/A	125	HDPE	New
PP-442	J-67	J-64	29	#N/A	#N/A	140	HDPE	New
PP-443	J-64	J-12	49	#N/A	#N/A	140	HDPE	New
PP-444	J-12	J-10	48.5	#N/A	#N/A	125	HDPE	New
			22617.00					

Zone -14

Distribution Network Design Output: Zone 14

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	43	1.796	21.449	252.02499	T-1	J-1	235.79	-7,260.58	7,473.30	400	2.01	7.16	252.02499	uPVC	145	0.31
P-10	85	19.11	18.476	25.10421	J-9	J-10	234.91	-7,638.43	7,435.48	180	0.99	4.89	25.10421	uPVC	145	0.42
P-100	53	8.357	8.193	6.51439	J-94	J-96	235.79	-5,840.07	6,860.59	110	0.69	4.42	6.51439	uPVC	145	0.23
P-101	127.5	8.193	8.23	-0.63719	J-96	J-97	235.72	-5,787.27	6,862.13	110	0.07	0.06	0.63719	uPVC	145	0.01
P-102	39	8.193	8.085	6.41306	J-96	J-98	235.72	-5,787.27	6,862.13	110	0.67	4.3	6.41306	uPVC	145	0.17
P-103	111.5	8.085	8.159	-1.75385	J-98	J-99	235.66	-5,748.37	6,863.06	110	0.18	0.39	1.75385	uPVC	145	0.04
P-104	71	8.085	8.112	2.2397	J-98	J-100	235.66	-5,748.37	6,863.06	110	0.24	0.61	2.2397	uPVC	145	0.04
P-105	31.5	8.085	8.097	5.07604	J-98	J-101	235.66	-5,748.37	6,863.06	110	0.53	2.79	5.07604	uPVC	145	0.09
P-106	32	8.097	8.072	3.93964	J-101	J-102	235.56	-5,747.75	6,894.55	110	0.41	1.74	3.93964	uPVC	145	0.06
P-107	16.5	8.072	8.102	0.05584	J-102	J-103	235.53	-5,748.99	6,926.67	110	0.01	0	0.05584	uPVC	145	0
P-108	73	8.097	8.182	0.677	J-101	J-104	235.56	-5,747.75	6,894.55	110	0.07	0.07	0.677	uPVC	145	0
P-109	77.5	8.072	8.171	0.20102	J-102	J-105	235.53	-5,748.99	6,926.67	110	0.02	0.01	0.20102	uPVC	145	0
P-11	53.5	18.476	18.316	0.18027	J-10	J-11	235.13	-7,553.52	7,429.30	110	0.02	0.01	0.18027	uPVC	145	0
P-110	86.5	8.072	8.112	2.96781	J-102	J-106	235.53	-5,748.99	6,926.67	110	0.31	1.03	2.96781	uPVC	145	0.09
P-111	87.5	8.112	8.121	1.37496	J-106	J-107	235.4	-5,749.91	7,013.12	110	0.14	0.25	1.37496	uPVC	145	0.02
P-112	41	8.112	8.168	0.86947	J-106	J-108	235.4	-5,749.91	7,013.12	110	0.09	0.11	0.86947	uPVC	145	0
P-113	30	8.168	8.241	-3.56677	J-108	J-109	235.34	-5,790.98	7,013.12	110	0.38	1.45	3.56677	uPVC	145	0.04
P-114	34.5	8.241	8.347	-4.13077	J-109	J-110	235.31	-5,820.93	7,013.12	110	0.43	1.9	4.13077	uPVC	145	0.07
P-115	22.5	8.347	8.428	-4.56865	J-110	J-111	235.27	-5,855.20	7,012.50	110	0.48	2.29	4.56865	uPVC	145	0.05
P-116	35	8.428	8.555	-5.04857	J-111	J-112	235.24	-5,877.74	7,011.89	110	0.53	2.76	5.04857	uPVC	145	0.1
P-117	14	8.555	8.636	-8.22835	J-112	J-113	235.21	-5,912.94	7,011.89	125	0.67	3.66	8.22835	uPVC	145	0.05
P-118	51.5	8.401	8.241	-0.17354	J-114	J-109	235.15	-5,822.78	7,064.68	110	0.02	0.01	0.17354	uPVC	145	0
P-119	85	8.168	8.28	3.48047	J-108	J-115	235.34	-5,790.98	7,013.12	110	0.37	1.39	3.48047	uPVC	145	0.12
P-12	124	19.373	19.27	0.41735	J-8	J-12	234.81	-7,646.92	7,396.11	110	0.04	0.03	0.41735	uPVC	145	0
P-120	12.5	8.28	8.281	4.61347	J-115	J-116	235.11	-5,790.36	7,098.03	110	0.49	2.34	4.61347	uPVC	145	0.03
P-121	40.5	8.281	8.286	2.21659	J-116	J-117	235.08	-5,778.01	7,098.34	110	0.23	0.6	2.21659	uPVC	145	0.02
P-122	41	8.286	8.315	0.41188	J-117	J-118	235.05	-5,737.56	7,099.58	110	0.04	0.03	0.41188	uPVC	145	0
P-123	42.5	8.315	8.356	-1.36478	J-118	J-119	235.02	-5,696.81	7,099.88	110	0.14	0.24	1.36478	uPVC	145	0.01
P-124	70.5	8.315	8.36	1.25842	J-118	J-120	235.02	-5,696.81	7,099.88	110	0.13	0.21	1.25842	uPVC	145	0.01
P-125	31	8.36	8.567	0.84112	J-120	J-121	234.96	-5,694.95	7,170.59	110	0.09	0.1	0.84112	uPVC	145	0

P-126	36	8.567	8.427	0.12142	J-121	J-122	234.75	-5,663.77	7,169.67	110	0.01	0	0.12142	uPVC	145	0
P-127	15.5	8.567	8.457	0.44191	J-121	J-123	234.75	-5,663.77	7,169.67	110	0.05	0.03	0.44191	uPVC	145	0
P-128	72.5	8.286	8.49	1.28646	J-117	J-124	235.05	-5,737.56	7,099.58	110	0.14	0.22	1.28646	uPVC	145	0.02
P-129	41.5	8.49	8.36	0.06395	J-124	J-120	234.83	-5,736.33	7,172.14	110	0.01	0	0.06395	uPVC	145	0
P-13	194.5	18.926	19.153	0.65444	J-6	J-13	235.71	-7,718.33	7,369.09	110	0.07	0.06	0.65444	uPVC	145	0.01
P-130	67.5	8.49	8.603	1.40306	J-124	J-125	234.83	-5,736.33	7,172.14	110	0.15	0.26	1.40306	uPVC	145	0.02
P-131	94.5	8.603	8.529	1.04186	J-125	J-126	234.7	-5,736.02	7,239.76	110	0.11	0.15	1.04186	uPVC	145	0.01
P-132	42	8.603	8.573	-0.32519	J-125	J-127	234.7	-5,736.02	7,239.76	110	0.03	0.02	0.32519	uPVC	145	0
P-133	69	8.573	8.675	-1.56459	J-127	J-128	234.73	-5,778.01	7,239.76	110	0.16	0.32	1.56459	uPVC	145	0.02
P-134	42	8.675	8.49	0.93251	J-128	J-124	234.65	-5,778.32	7,170.90	110	0.1	0.12	0.93251	uPVC	145	0.01
P-135	72.5	8.281	8.675	1.97448	J-116	J-128	235.08	-5,778.01	7,098.34	110	0.21	0.48	1.97448	uPVC	145	0.04
P-136	51	8.675	8.666	-1.31158	J-128	J-129	234.65	-5,778.32	7,170.90	110	0.14	0.23	1.31158	uPVC	145	0.01
P-137	69	8.666	8.66	2.0816	J-129	J-130	234.67	-5,829.27	7,171.21	110	0.22	0.53	2.0816	uPVC	145	0.04
P-138	51	8.66	8.573	-0.69425	J-130	J-127	234.64	-5,828.96	7,240.06	110	0.07	0.07	0.69425	uPVC	145	0
P-139	38	8.28	8.801	-1.58903	J-115	J-131	235.11	-5,790.36	7,098.03	110	0.17	0.32	1.58903	uPVC	145	0.01
P-14	150.5	19.512	18.462	8.84453	J-7	J-14	234.95	-7,709.06	7,410.78	140	0.57	2.41	8.84453	uPVC	145	0.36
P-140	73	8.801	8.666	2.74301	J-131	J-129	234.6	-5,828.34	7,098.34	110	0.29	0.89	2.74301	uPVC	145	0.07
P-141	41	8.666	8.777	-1.43745	J-129	J-132	234.67	-5,829.27	7,171.21	110	0.15	0.27	1.43745	uPVC	145	0.01
P-142	68	8.777	8.76	2.41075	J-132	J-133	234.57	-5,870.02	7,171.83	110	0.25	0.7	2.41075	uPVC	145	0.05
P-143	41	8.66	8.76	-0.17302	J-130	J-133	234.64	-5,828.96	7,240.06	110	0.02	0.01	0.17302	uPVC	145	0
P-144	41.5	8.76	8.774	1.73126	J-133	J-134	234.54	-5,870.02	7,239.76	110	0.18	0.38	1.73126	uPVC	145	0.02
P-145	41	8.774	8.792	1.45346	J-134	J-135	234.51	-5,870.33	7,281.13	110	0.15	0.27	1.45346	uPVC	145	0.01
P-146	43	8.792	8.66	-2.26248	J-135	J-130	234.48	-5,829.27	7,282.98	110	0.24	0.62	2.26248	uPVC	145	0.03
P-147	191.5	8.827	8.792	-0.4569	J-136	J-135	234.44	-5,637.83	7,281.13	110	0.05	0.03	0.4569	uPVC	145	0.01
P-148	31	8.792	8.844	2.22795	J-135	J-137	234.48	-5,829.27	7,282.98	110	0.23	0.61	2.22795	uPVC	145	0.02
P-149	41.5	8.844	8.873	0.13991	J-137	J-138	234.41	-5,829.27	7,314.17	110	0.01	0	0.13991	uPVC	145	0
P-15	161	18.926	18.439	11.84638	J-6	J-15	235.71	-7,718.33	7,369.09	160	0.59	2.16	11.84638	uPVC	145	0.35
P-150	43	8.844	8.899	0.82325	J-137	J-139	234.41	-5,829.27	7,314.17	110	0.09	0.1	0.82325	uPVC	145	0
P-151	95	8.899	8.929	-0.07118	J-139	J-140	234.35	-5,786.04	7,314.79	110	0.01	0	0.07118	uPVC	145	0
P-152	57	8.929	8.975	-0.83946	J-140	J-141	234.32	-5,690.94	7,316.02	110	0.09	0.1	0.83946	uPVC	145	0.01
P-153	63.5	8.844	8.999	0.66247	J-137	J-142	234.41	-5,829.27	7,314.17	110	0.07	0.06	0.66247	uPVC	145	0
P-154	42.5	8.999	9.029	0.27938	J-142	J-143	234.25	-5,829.88	7,377.47	110	0.03	0.01	0.27938	uPVC	145	0
P-155	95.5	9.029	9.059	-0.18216	J-143	J-144	234.22	-5,787.27	7,378.08	110	0.02	0.01	0.18216	uPVC	145	0
P-156	62.5	9.059	8.929	-0.04658	J-144	J-140	234.19	-5,691.56	7,378.39	110	0	0	0.04658	uPVC	145	0
P-157	63.5	9.029	8.899	-0.21644	J-143	J-139	234.22	-5,787.27	7,378.08	110	0.02	0.01	0.21644	uPVC	145	0
P-158	66	8.999	9.089	-0.19568	J-142	J-145	234.25	-5,829.88	7,377.47	110	0.02	0.01	0.19568	uPVC	145	0

Distribution Network Design Output: Zone 14

P-159	18	9.659	9.624	8.19062	J-146	J-147	234.12	-5,928.52	7,098.20	125	0.67	3.63	8.19062	uPVC	145	0.07
P-16	170.5	18.63	18.193	19.412	J-5	J-16	236.11	-7,726.43	7,327.02	180	0.76	3.04	19.412	uPVC	145	0.52
P-160	41	9.624	9.446	9.82913	J-147	J-148	234.09	-5,910.74	7,098.45	125	0.8	5.08	9.82913	uPVC	145	0.21
P-161	41.5	9.446	8.801	4.84523	J-148	J-131	234.06	-5,869.98	7,098.94	110	0.51	2.56	4.84523	uPVC	145	0.11
P-162	73	9.446	8.777	4.4606	J-148	J-132	234.06	-5,869.98	7,098.94	110	0.47	2.19	4.4606	uPVC	145	0.16
P-17	45	18.28	18.057	25.32438	J-17	J-18	236.46	-7,551.78	7,240.18	200	0.81	2.97	25.32438	uPVC	145	0.13
P-18	79	18.057	17.497	0.26602	J-18	J-19	236.55	-7,596.17	7,248.38	110	0.03	0.01	0.26602	uPVC	145	0
P-19	47	18.057	18.065	24.48295	J-18	J-20	236.55	-7,596.17	7,248.38	200	0.78	2.79	24.48295	uPVC	145	0.13
P-2	98.5	21.449	21.156	251.54878	J-1	J-2	235.79	-7,252.47	7,430.85	400	2	7.14	251.54878	PE-100	145	0.7
P-20	37.5	18.065	17.902	14.43413	J-20	J-21	236.41	-7,642.48	7,257.07	140	0.94	5.97	14.43413	uPVC	145	0.22
P-21	41	17.902	17.844	8.81882	J-21	J-22	236.35	-7,678.67	7,266.24	140	0.57	2.39	8.81882	uPVC	145	0.1
P-22	113.5	17.844	17.927	3.74101	J-22	J-23	236.31	-7,719.19	7,272.99	125	0.3	0.85	3.74101	uPVC	145	0.1
P-23	28.5	17.927	17.898	-1.19924	J-23	J-24	236.13	-7,830.16	7,296.15	160	0.06	0.03	1.19924	uPVC	145	0
P-24	31.5	17.898	17.881	-6.43061	J-24	J-25	236.16	-7,858.14	7,302.42	180	0.25	0.39	6.43061	uPVC	145	0.01
P-25	25.5	17.881	17.896	-13.96223	J-25	J-26	236.19	-7,889.02	7,308.21	200	0.44	0.99	13.96223	uPVC	145	0.03
P-26	92	17.844	17.211	4.2485	J-22	J-27	236.31	-7,719.19	7,272.99	110	0.45	2	4.2485	uPVC	145	0.18
P-27	92.5	17.902	16.959	5.0399	J-21	J-28	236.35	-7,678.67	7,266.24	110	0.53	2.75	5.0399	uPVC	145	0.25
P-28	126	18.065	16.565	9.34057	J-20	J-29	236.41	-7,642.48	7,257.07	125	0.76	4.63	9.34057	uPVC	145	0.58
P-29	37	16.565	16.864	-5.6544	J-29	J-30	237.33	-7,676.26	7,135.49	140	0.37	1.05	5.6544	uPVC	145	0.04
P-3	60.5	21.156	20.679	209.89371	J-2	J-3	235.38	-7,308.82	7,350.18	400	1.67	5.1	209.89371	PE-100	145	0.31
P-30	42	16.864	17.159	-1.38027	J-30	J-31	237.07	-7,710.51	7,149.96	125	0.11	0.13	1.38027	uPVC	145	0.01
P-31	123	17.159	17.494	1.87546	J-31	J-32	236.78	-7,749.59	7,165.89	110	0.2	0.44	1.87546	uPVC	145	0.05
P-32	17	17.494	17.443	5.25797	J-32	J-33	236.39	-7,863.45	7,212.20	110	0.55	2.98	5.25797	uPVC	145	0.05
P-33	12	17.443	17.456	-5.6177	J-33	J-34	236.39	-7,879.37	7,217.51	140	0.36	1.04	5.6177	uPVC	145	0.01
P-34	31.5	17.456	17.483	-1.32025	J-34	J-35	236.39	-7,890.46	7,221.85	110	0.14	0.23	1.32025	uPVC	145	0.01
P-35	26.5	17.483	17.503	5.29259	J-35	J-36	236.37	-7,918.93	7,235.36	110	0.56	3.01	5.29259	uPVC	145	0.08
P-36	7.5	17.503	17.512	13.81724	J-36	J-37	236.27	-7,943.53	7,244.52	160	0.69	2.87	13.81724	uPVC	145	0.02
P-37	73	17.512	17.528	5.47322	J-37	J-38	236.24	-7,949.80	7,240.18	110	0.58	3.2	5.47322	uPVC	145	0.23
P-38	244	17.528	18.44	2.03982	J-38	J-39	235.99	-8,020.72	7,225.23	110	0.21	0.52	2.03982	uPVC	145	0.13
P-39	79	17.483	17.881	-7.07391	J-35	J-25	236.37	-7,918.93	7,235.36	125	0.58	2.77	7.07391	uPVC	145	0.22
P-4	91.5	20.679	19.741	181.64661	J-3	J-4	235.55	-7,345.49	7,302.32	355	1.84	6.98	181.64661	PE-100	145	0.64
P-40	87	17.898	17.456	4.73667	J-24	J-34	236.16	-7,858.14	7,302.42	110	0.5	2.45	4.73667	uPVC	145	0.21
P-41	90.5	17.494	17.927	-4.15801	J-32	J-23	236.39	-7,863.45	7,212.20	110	0.44	1.93	4.15801	uPVC	145	0.17
P-42	27	17.512	17.599	7.46392	J-37	J-40	236.24	-7,949.80	7,240.18	125	0.61	3.05	7.46392	uPVC	145	0.08
P-43	30.5	17.599	17.521	3.3067	J-40	J-41	236.07	-7,949.69	7,213.42	110	0.35	1.26	3.3067	uPVC	145	0.04
P-44	58.5	17.521	17.842	4.45124	J-41	J-42	236.11	-7,937.63	7,185.53	110	0.47	2.19	4.45124	uPVC	145	0.13

P-45	31	17.842	17.646	2.67739	J-42	J-43	235.66	-7,990.40	7,159.90	110	0.28	0.85	2.67739	uPVC	145	0.03
P-46	68	17.646	17.426	1.0468	J-43	J-44	235.83	-7,989.64	7,128.99	110	0.11	0.15	1.0468	uPVC	145	0.01
P-47	7.5	17.426	17.409	2.95311	J-44	J-45	236.04	-8,049.95	7,098.08	110	0.31	1.02	2.95311	uPVC	145	0.01
P-48	62	17.409	16.892	3.94128	J-45	J-46	236.05	-8,050.70	7,090.55	110	0.41	1.74	3.94128	uPVC	145	0.11
P-49	29.5	17.409	17.206	-1.32144	J-45	J-47	236.05	-8,050.70	7,090.55	110	0.14	0.23	1.32144	uPVC	145	0.01
P-5	342	19.741	18.63	76.09952	J-4	J-5	235.85	-7,400.29	7,228.99	315	0.98	2.5	76.09952	uPVC	145	0.85
P-50	42.5	17.206	17.171	-0.95562	J-47	J-48	236.26	-8,024.32	7,076.98	110	0.1	0.13	0.95562	uPVC	145	0.01
P-51	74.5	17.206	16.715	-0.85885	J-47	J-49	236.26	-8,024.32	7,076.98	110	0.09	0.1	0.85885	uPVC	145	0.01
P-53	15	16.397	16.274	3.17239	J-50	J-51	237.07	-7,986.63	7,008.38	160	0.16	0.19	3.17239	uPVC	145	0
P-54	53	16.397	16.307	-0.17814	J-50	J-52	237.07	-7,986.63	7,008.38	110	0.02	0.01	0.17814	uPVC	145	0
P-55	17.5	16.307	16.186	0.72004	J-52	J-53	237.16	-7,939.89	6,983.50	110	0.08	0.07	0.72004	uPVC	145	0
P-56	32	16.307	16.673	-1.24323	J-52	J-54	237.16	-7,939.89	6,983.50	110	0.13	0.21	1.24323	uPVC	145	0.01
P-57	7.5	16.715	16.643	3.68788	J-49	J-55	236.76	-7,960.24	7,039.29	160	0.18	0.25	3.68788	uPVC	145	0
P-58	33.5	16.643	16.397	3.33594	J-55	J-50	236.83	-7,964.84	7,033.63	160	0.17	0.21	3.33594	uPVC	145	0.01
P-59	46.5	16.673	16.643	-0.05734	J-54	J-55	236.8	-7,924.06	7,011.39	110	0.01	0	0.05734	uPVC	145	0
P-6	43	18.63	18.926	54.81905	J-5	J-6	236.11	-7,726.43	7,327.02	280	0.89	2.41	54.81905	uPVC	145	0.1
P-60	28	16.715	17.096	-4.917	J-49	J-56	236.76	-7,960.24	7,039.29	160	0.24	0.42	4.917	uPVC	145	0.01
P-61	47.5	17.096	16.723	0.75949	J-56	J-57	236.39	-7,943.30	7,061.29	110	0.08	0.08	0.75949	uPVC	145	0
P-62	31.5	16.723	16.673	1.55617	J-57	J-54	236.76	-7,903.38	7,035.21	110	0.16	0.31	1.55617	uPVC	145	0.01
P-63	25.5	16.723	16.757	-1.14845	J-57	J-58	236.76	-7,903.38	7,035.21	110	0.12	0.18	1.14845	uPVC	145	0
P-64	19	16.757	16.797	0.06425	J-58	J-59	236.73	-7,886.39	7,054.38	110	0.01	0	0.06425	uPVC	145	0
P-65	25	17.096	17.231	-6.01482	J-56	J-60	236.39	-7,943.30	7,061.29	160	0.3	0.61	6.01482	uPVC	145	0.02
P-66	49	17.231	16.757	1.52748	J-60	J-58	236.27	-7,927.69	7,081.06	110	0.16	0.3	1.52748	uPVC	145	0.01
P-67	12.5	17.231	17.263	-7.83355	J-60	J-61	236.27	-7,927.69	7,081.06	160	0.39	1	7.83355	uPVC	145	0.01
P-68	99	17.263	17.521	-3.20573	J-61	J-41	236.25	-7,920.09	7,090.72	110	0.34	1.19	3.20573	uPVC	145	0.12
P-69	33	17.263	17.358	-5.11412	J-61	J-62	236.25	-7,920.09	7,090.72	160	0.25	0.46	5.11412	uPVC	145	0.02
P-7	42.5	18.926	19.512	40.83483	J-6	J-7	235.71	-7,718.33	7,369.09	225	1.03	4.06	40.83483	uPVC	145	0.17
P-70	56.5	17.358	16.829	0.19036	J-62	J-63	236.17	-7,899.52	7,116.28	110	0.02	0.01	0.19036	uPVC	145	0
P-71	40.5	17.358	17.441	-5.742	J-62	J-64	236.17	-7,899.52	7,116.28	160	0.29	0.56	5.742	uPVC	145	0.02
P-72	67	17.441	17.421	-5.12536	J-64	J-65	236.11	-7,871.73	7,145.61	110	0.54	2.84	5.12536	uPVC	145	0.19
P-73	19.5	17.441	17.382	-1.04409	J-64	J-66	236.11	-7,871.73	7,145.61	160	0.05	0.02	1.04409	uPVC	145	0
P-74	40	17.382	17.137	-1.34914	J-66	J-67	236.17	-7,859.77	7,161.05	125	0.11	0.13	1.34914	uPVC	145	0.01
P-75	139	17.137	16.143	-2.18756	J-67	J-68	236.42	-7,825.42	7,140.98	125	0.18	0.31	2.18756	uPVC	145	0.04
P-76	32.5	16.143	16.355	-10.05364	J-68	J-69	237.46	-7,693.80	7,096.59	125	0.82	5.3	10.05364	uPVC	145	0.17
P-77	39.5	16.355	16.565	-14.31362	J-69	J-29	237.42	-7,667.94	7,116.66	160	0.71	3.06	14.31362	uPVC	145	0.12
P-78	54.5	16.143	15.951	7.10571	J-68	J-70	237.46	-7,693.80	7,096.59	125	0.58	2.79	7.10571	uPVC	145	0.15

Distribution Network Design Output: Zone 14

P-79	107.5	15.951	16.807	0.36187	J-70	J-71	237.5	-7,738.19	7,065.33	110	0.04	0.02	0.36187	uPVC	145	0
P-8	64	19.512	19.373	31.12568	J-7	J-8	234.95	-7,709.06	7,410.78	200	0.99	4.36	31.12568	uPVC	145	0.28
P-80	53	15.951	15.833	6.02046	J-70	J-72	237.5	-7,738.19	7,065.33	125	0.49	2.05	6.02046	uPVC	145	0.11
P-81	65	15.833	16.361	0.32018	J-72	J-73	237.51	-7,781.03	7,034.07	110	0.03	0.02	0.32018	uPVC	145	0
P-82	52.5	15.833	15.843	5.12655	J-72	J-74	237.51	-7,781.03	7,034.07	125	0.42	1.52	5.12655	uPVC	145	0.08
P-83	47	15.843	16.182	0.15841	J-74	J-75	237.42	-7,824.26	7,003.96	110	0.02	0	0.15841	uPVC	145	0
P-84	76	15.843	15.787	4.37759	J-74	J-76	237.42	-7,824.26	7,003.96	125	0.36	1.14	4.37759	uPVC	145	0.09
P-85	53.5	14.372	14.722	-0.18027	J-77	J-78	237.85	-7,678.24	6,828.50	110	0.02	0.01	0.18027	uPVC	145	0
P-86	70.5	14.722	14.506	-0.59762	J-78	J-79	237.5	-7,641.18	6,867.41	110	0.06	0.05	0.59762	uPVC	145	0
P-87	42.5	14.506	14.152	10.04842	J-79	J-80	237.72	-7,589.93	6,819.24	125	0.82	5.3	10.04842	uPVC	145	0.23
P-88	20	14.506	14.693	-11.09367	J-79	J-81	237.72	-7,589.93	6,819.24	125	0.9	6.36	11.09367	uPVC	145	0.13
P-89	11.5	14.693	14.813	-22.27104	J-81	J-82	237.66	-7,576.96	6,834.37	160	1.11	6.95	22.27104	uPVC	145	0.08
P-9	40.5	19.373	19.11	29.93954	J-8	J-9	234.81	-7,646.92	7,396.11	200	0.95	4.05	29.93954	uPVC	145	0.16
P-90	21.5	14.813	15	-14.39032	J-82	J-83	237.62	-7,570.48	6,843.94	140	0.93	5.93	14.39032	uPVC	145	0.13
P-91	177	15	13.568	21.4251	J-83	J-84	237.56	-7,556.89	6,860.61	160	1.07	6.47	21.4251	uPVC	145	1.14
P-92	73	13.568	13.661	13.72567	J-84	J-85	237.85	-7,408.68	6,763.97	160	0.68	2.84	13.72567	uPVC	145	0.21
P-93	77.5	13.661	14.071	-37.27459	J-85	J-86	237.55	-7,346.62	6,725.37	200	1.19	6.08	37.27459	uPVC	145	0.47
P-94	33	14.071	14.07	0.60267	J-86	J-87	237.61	-7,316.98	6,796.39	110	0.06	0.05	0.60267	uPVC	145	0
P-95	95	13.661	13.613	14.85036	J-85	J-88	237.55	-7,346.62	6,725.37	140	0.96	6.29	14.85036	uPVC	145	0.6
P-96	61	14.407	14.035	10.69745	J-89	J-90	237.79	-7,556.64	6,819.94	125	0.87	5.95	10.69745	uPVC	145	0.36
P-97	69	15.605	15.207	-0.23239	J-91	J-92	237.45	-7,676.75	6,893.43	110	0.02	0.01	0.23239	uPVC	145	0
P-98	144.5	8.335	8.357	0.62401	J-93	J-94	235.82	-5,836.06	6,716.39	110	0.07	0.06	0.62401	uPVC	145	0.01
P-99	74.5	8.357	8.753	-6.80545	J-94	J-95	235.79	-5,840.07	6,860.59	110	0.72	4.8	6.80545	uPVC	145	0.36
PP-163	70.5	16.571	16.541	-0.23744	PJ-149	PJ-150	236.06	-8,354.92	7,208.38	110	0.02	0.01	0.23744	HDPE	145	0
PP-164	24	16.541	16.623	-0.66731	PJ-150	PJ-151	236.09	-8,425.16	7,206.84	110	0.07	0.07	0.66731	HDPE	145	0
PP-165	132.5	16.623	16.942	-0.72426	PJ-151	PJ-152	236.01	-8,434.81	7,228.84	110	0.08	0.08	0.72426	HDPE	145	0.01
PP-166	137	16.942	17.508	-1.63092	PJ-152	PJ-153	235.7	-8,480.85	7,353.12	110	0.17	0.34	1.63092	HDPE	145	0.05
PP-167	156.5	17.508	16.688	1.60539	PJ-153	PJ-154	235.18	-8,349.14	7,390.75	110	0.17	0.33	1.60539	HDPE	145	0.05
PP-168	69	16.688	16.623	0.70174	PJ-154	PJ-151	235.95	-8,366.02	7,235.40	110	0.07	0.07	0.70174	HDPE	145	0
PP-169	21.5	16.688	16.658	0.07265	PJ-154	PJ-155	235.95	-8,366.02	7,235.40	110	0.01	0	0.07265	HDPE	145	0
PP-170	87	17.508	17.782	-4.51626	PJ-153	PJ-156	235.18	-8,349.14	7,390.75	110	0.48	2.24	4.51626	HDPE	145	0.2
PP-171	91	17.782	17.352	0.30638	PJ-156	PJ-157	235.1	-8,265.19	7,412.94	110	0.03	0.02	0.30638	HDPE	145	0
PP-172	125	17.782	18.353	-5.84196	PJ-156	PJ-158	235.1	-8,265.19	7,412.94	110	0.61	3.62	5.84196	HDPE	145	0.45
PP-173	39.5	18.353	18.44	-4.98168	PJ-158	J-39	234.98	-8,144.10	7,444.78	125	0.41	1.44	4.98168	HDPE	145	0.06
PP-174	267.5	18.44	18.939	-4.79518	J-39	PJ-159	234.95	-8,105.73	7,453.89	125	0.39	1.35	4.79518	HDPE	145	0.36
PP-175	286	18.939	17.501	10.22633	PJ-159	PJ-160	234.81	-7,844.01	7,509.91	140	0.66	3.15	10.22633	HDPE	145	0.9

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PP-176	277.5	17.501	15.554	31.56362	PJ-160	PJ-161	235.35	-7,564.19	7,569.25	200	1	4.47	31.56362	HDPE	145	1.24
PP-177	202.5	15.554	14.705	29.94906	PJ-161	PJ-162	236.06	-7,292.66	7,625.78	200	0.95	4.06	29.94906	HDPE	145	0.82
PP-178	128.5	14.705	14.3	28.83558	PJ-162	PJ-163	236.09	-7,093.65	7,664.23	200	0.92	3.78	28.83558	HDPE	145	0.49
PP-179	201.5	14.3	14.207	67.49625	PJ-163	PJ-164	236.01	-6,967.76	7,689.11	315	0.87	2	67.49625	HDPE	145	0.4
PP-180	402.5	14.207	13.045	54.76734	PJ-164	PJ-165	235.7	-6,770.25	7,729.06	250	1.12	4.18	54.76734	HDPE	145	1.68
PP-181	176.5	13.045	11.588	52.81985	PJ-165	PJ-166	235.18	-6,376.00	7,810.47	250	1.08	3.91	52.81985	HDPE	145	0.69
PP-182	185.5	11.588	10.864	51.60211	PJ-166	PJ-167	235.95	-6,207.90	7,864.75	250	1.05	3.75	51.60211	HDPE	145	0.7
PP-183	344.5	10.864	10.535	49.81941	PJ-167	PJ-168	235.98	-6,026.98	7,906.21	250	1.01	3.51	49.81941	HDPE	145	1.21
PP-184	19	10.535	10.007	34.33515	PJ-168	PJ-169	235.1	-5,692.28	7,987.62	200	1.09	5.22	34.33515	HDPE	145	0.1
PP-185	18.5	10.007	10.454	26.79432	PJ-169	PJ-170	235.53	-5,673.43	7,991.39	180	1.05	5.51	26.79432	HDPE	145	0.1
PP-186	47	10.454	10.396	12.92841	PJ-170	PJ-171	234.98	-5,655.34	7,995.91	140	0.84	4.86	12.92841	HDPE	145	0.23
PP-187	89	10.396	9.413	6.95687	PJ-171	PJ-172	234.81	-5,610.11	8,007.97	110	0.73	5	6.95687	HDPE	145	0.44
PP-188	21	9.413	9.294	7.44182	PJ-172	PJ-173	235.35	-5,548.30	7,986.11	110	0.78	5.66	7.44182	HDPE	145	0.12
PP-189	47	9.294	9.122	5.89266	PJ-173	PJ-174	235.35	-5,528.88	7,978.27	110	0.62	3.67	5.89266	HDPE	145	0.17
PP-190	50.5	9.122	9.036	4.14595	PJ-174	PJ-175	235.35	-5,486.36	7,958.51	110	0.44	1.92	4.14595	HDPE	145	0.1
PP-191	19.5	9.036	9.005	3.72824	PJ-175	PJ-176	235.34	-5,442.10	7,933.81	110	0.39	1.57	3.72824	HDPE	145	0.03
PP-192	78	9.005	9.977	1.6025	PJ-176	PJ-177	235.34	-5,425.11	7,923.77	110	0.17	0.33	1.6025	HDPE	145	0.03
PP-193	7.5	9.977	8.976	1.75139	PJ-177	PJ-178	234.34	-5,359.12	7,882.86	110	0.18	0.39	1.75139	HDPE	145	0
PP-194	36	8.976	8.994	1.60476	PJ-178	PJ-179	235.34	-5,356.80	7,875.92	110	0.17	0.33	1.60476	HDPE	145	0.01
PP-195	93	8.994	9.014	-1.26287	PJ-179	PJ-180	235.31	-5,361.43	7,840.41	110	0.13	0.21	1.26287	HDPE	145	0.02
PP-196	5.5	9.014	9.021	-3.34029	PJ-180	PJ-181	235.31	-5,453.29	7,825.35	110	0.35	1.29	3.34029	HDPE	145	0.01
PP-197	25.5	9.021	9.023	-0.66219	PJ-181	PJ-182	235.31	-5,458.69	7,826.90	110	0.07	0.06	0.66219	HDPE	145	0
PP-198	46.5	9.023	9.111	-3.59153	PJ-182	PJ-183	235.31	-5,483.39	7,820.72	110	0.38	1.47	3.59153	HDPE	145	0.07
PP-199	5	9.111	9.11	-4.12034	PJ-183	PJ-184	235.29	-5,502.69	7,860.86	110	0.43	1.89	4.12034	HDPE	145	0.01
PP-200	45.5	9.11	9.055	3.25589	PJ-184	PJ-185	235.3	-5,503.85	7,865.88	110	0.34	1.22	3.25589	HDPE	145	0.06
PP-201	24.5	9.055	9.021	2.86509	PJ-185	PJ-181	235.3	-5,461.01	7,851.21	110	0.3	0.97	2.86509	HDPE	145	0.02
PP-202	23	9.055	9.055	0.0777	PJ-185	PJ-186	235.3	-5,461.01	7,851.21	110	0.01	0	0.0777	HDPE	145	0
PP-203	27	9.036	9.075	0.09115	PJ-175	PJ-187	235.34	-5,442.10	7,933.81	110	0.01	0	0.09115	HDPE	145	0
PP-204	69.5	9.005	9.033	1.56379	PJ-176	PJ-188	235.34	-5,425.11	7,923.77	110	0.16	0.32	1.56379	HDPE	145	0.02
PP-205	13	9.033	9.031	1.0536	PJ-188	PJ-189	235.29	-5,401.18	7,879.39	110	0.11	0.15	1.0536	HDPE	145	0
PP-206	15.5	9.031	9.03	0.77882	PJ-189	PJ-190	235.29	-5,388.06	7,878.62	110	0.08	0.09	0.77882	HDPE	145	0
PP-207	14	9.03	9.977	0.48386	PJ-190	PJ-177	235.29	-5,372.62	7,880.16	110	0.05	0.04	0.48386	HDPE	145	0
PP-208	34.5	9.033	9.023	0.11637	PJ-188	PJ-191	235.29	-5,401.18	7,879.39	110	0.01	0	0.11637	HDPE	145	0
PP-209	26.5	9.031	9.031	0.08947	PJ-189	PJ-192	235.29	-5,388.06	7,878.62	110	0.01	0	0.08947	HDPE	145	0
PP-210	29	9.03	9.02	0.09788	PJ-190	PJ-193	235.29	-5,372.62	7,880.16	110	0.01	0	0.09788	HDPE	145	0
PP-211	105.5	9.122	9.156	1.06368	PJ-174	PJ-194	235.35	-5,486.36	7,958.51	110	0.11	0.15	1.06368	HDPE	145	0.02

Distribution Network Design Output: Zone 14

PP-212	13	9.156	9.11	5.74047	PJ-194	PJ-184	235.3	-5,510.41	7,877.07	110	0.6	3.5	5.74047	HDPE	145	0.05
PP-213	44.5	9.11	9.142	-1.99931	PJ-184	PJ-195	235.3	-5,503.85	7,865.88	110	0.21	0.5	1.99931	HDPE	145	0.02
PP-214	30	9.142	9.274	-6.76365	PJ-195	PJ-196	235.29	-5,547.85	7,867.81	110	0.71	4.74	6.76365	HDPE	145	0.14
PP-215	12	9.274	9.274	0.41703	PJ-196	PJ-197	235.3	-5,557.50	7,894.06	110	0.04	0.03	0.41703	HDPE	145	0
PP-216	40.5	9.274	9.156	5.21185	PJ-197	PJ-194	235.3	-5,545.53	7,892.51	110	0.55	2.93	5.21185	HDPE	145	0.12
PP-217	21	9.274	9.332	-5.04235	PJ-197	PJ-198	235.3	-5,545.53	7,892.51	110	0.53	2.75	5.04235	HDPE	145	0.06
PP-218	56.5	9.332	9.475	-4.63967	PJ-198	PJ-199	235.3	-5,547.46	7,913.35	110	0.49	2.36	4.63967	HDPE	145	0.13
PP-219	16	9.475	9.413	0.90903	PJ-199	PJ-172	235.29	-5,547.85	7,970.09	110	0.1	0.12	0.90903	HDPE	145	0
PP-220	24.5	9.332	9.334	-0.74605	PJ-198	PJ-200	235.3	-5,547.46	7,913.35	110	0.08	0.08	0.74605	HDPE	145	0
PP-221	64.5	9.334	9.294	-1.10322	PJ-200	PJ-173	235.3	-5,523.15	7,914.13	110	0.12	0.17	1.10322	HDPE	145	0.01
PP-222	8.5	9.334	9.344	0.02894	PJ-200	PJ-201	235.3	-5,523.15	7,914.13	110	0	0	0.02894	HDPE	145	0
PP-223	66.5	9.475	9.718	-6.0165	PJ-199	PJ-202	235.29	-5,547.85	7,970.09	110	0.63	3.82	6.0165	HDPE	145	0.25
PP-224	62.5	9.718	10.396	-5.30365	PJ-202	PJ-171	235.3	-5,609.60	7,945.39	110	0.56	3.02	5.30365	HDPE	145	0.19
PP-225	31.5	9.718	9.842	-6.12135	PJ-202	PJ-203	235.3	-5,609.60	7,945.39	110	0.64	3.94	6.12135	HDPE	145	0.12
PP-226	56	9.842	10.454	-13.45696	PJ-203	PJ-170	235.3	-5,640.87	7,942.30	140	0.87	5.24	13.45696	HDPE	145	0.29
PP-227	31	9.842	9.698	6.93675	PJ-203	PJ-204	235.3	-5,640.87	7,942.30	110	0.73	4.97	6.93675	HDPE	145	0.15
PP-228	23	9.698	9.798	-12.80707	PJ-204	PJ-205	235.29	-5,632.76	7,912.58	140	0.83	4.78	12.80707	HDPE	145	0.11
PP-229	84	9.798	10.007	-7.13189	PJ-205	PJ-169	235.3	-5,655.53	7,909.11	110	0.75	5.23	7.13189	HDPE	145	0.44
PP-230	85.5	10.535	9.877	13.97395	PJ-168	PJ-206	235.1	-5,692.28	7,987.62	140	0.91	5.62	13.97395	HDPE	145	0.48
PP-231	15	9.877	9.798	6.08581	PJ-206	PJ-205	235.28	-5,670.20	7,905.25	110	0.64	3.9	6.08581	HDPE	145	0.06
PP-232	51.5	9.718	9.594	4.69521	PJ-202	PJ-207	235.3	-5,609.60	7,945.39	110	0.49	2.41	4.69521	HDPE	145	0.12
PP-233	19	9.594	9.62	-3.42625	PJ-207	PJ-208	235.3	-5,609.60	7,893.67	110	0.36	1.35	3.42625	HDPE	145	0.03
PP-234	22.5	9.62	9.698	-19.4862	PJ-208	PJ-204	235.3	-5,628.51	7,890.58	180	0.77	3.06	19.4862	HDPE	145	0.07
PP-235	8.5	9.62	9.579	15.89145	PJ-208	PJ-209	235.3	-5,628.51	7,890.58	140	1.03	7.13	15.89145	HDPE	145	0.06
PP-236	38	9.579	9.4	6.74859	PJ-209	PJ-210	235.28	-5,626.59	7,882.09	110	0.71	4.72	6.74859	HDPE	145	0.18
PP-237	22	9.4	9.39	-0.12421	PJ-210	PJ-211	235.28	-5,589.15	7,882.86	110	0.01	0	0.12421	HDPE	145	0
PP-238	35	9.39	9.594	-7.76632	PJ-211	PJ-207	235.29	-5,575.25	7,900.23	110	0.82	6.13	7.76632	HDPE	145	0.21
PP-239	19	9.39	9.274	7.38617	PJ-211	PJ-196	235.29	-5,575.25	7,900.23	110	0.78	5.58	7.38617	HDPE	145	0.11
PP-240	150.5	9.877	9.119	7.04369	PJ-206	PJ-212	235.28	-5,670.20	7,905.25	110	0.74	5.11	7.04369	HDPE	145	0.77
PP-241	19	9.119	9.069	4.33054	PJ-212	PJ-213	235.27	-5,765.20	7,808.52	110	0.46	2.08	4.33054	HDPE	145	0.04
PP-242	24	9.069	9.011	5.12607	PJ-213	PJ-214	235.28	-5,762.79	7,789.83	110	0.54	2.84	5.12607	HDPE	145	0.07
PP-243	25	9.011	8.92	4.75208	PJ-214	PJ-215	235.27	-5,762.79	7,765.70	110	0.5	2.47	4.75208	HDPE	145	0.06
PP-244	64	8.92	8.807	4.50053	PJ-215	PJ-216	235.3	-5,760.98	7,740.98	110	0.47	2.23	4.50053	HDPE	145	0.14
PP-245	14.5	8.807	8.768	4.23619	PJ-216	PJ-217	235.27	-5,751.93	7,677.66	110	0.45	1.99	4.23619	HDPE	145	0.03
PP-246	12.5	8.768	8.755	4.08416	PJ-217	PJ-218	235.28	-5,737.46	7,677.05	110	0.43	1.86	4.08416	HDPE	145	0.02
PP-247	8	8.755	8.711	3.90354	PJ-218	PJ-219	235.27	-5,725.40	7,680.07	110	0.41	1.71	3.90354	HDPE	145	0.01

PP-248	25.5	8.711	8.702	3.68593	PJ-219	PJ-220	235.3	-5,717.56	7,678.86	110	0.39	1.54	3.68593	HDPE	145	0.04
PP-249	34.5	8.702	8.734	-4.0161	PJ-220	PJ-221	235.27	-5,692.23	7,680.67	110	0.42	1.81	4.0161	HDPE	145	0.06
PP-250	27	8.734	8.736	-0.55126	PJ-221	PJ-222	235.3	-5,657.86	7,682.48	110	0.06	0.05	0.55126	HDPE	145	0
PP-251	44.5	8.736	8.728	2.68211	PJ-222	PJ-223	235.3	-5,630.72	7,683.08	110	0.28	0.86	2.68211	HDPE	145	0.04
PP-252	18.5	8.728	8.762	-4.69306	PJ-223	PJ-224	235.27	-5,586.41	7,684.78	110	0.49	2.41	4.69306	HDPE	145	0.04
PP-253	49	8.762	8.891	-4.92041	PJ-224	PJ-225	235.28	-5,568.22	7,686.32	110	0.52	2.63	4.92041	HDPE	145	0.13
PP-254	201.5	8.891	8.966	-1.59117	PJ-225	PJ-226	235.28	-5,561.30	7,734.77	110	0.17	0.33	1.59117	HDPE	145	0.07
PP-255	9.5	8.966	8.962	-2.3011	PJ-226	PJ-227	235.27	-5,364.84	7,707.76	110	0.24	0.64	2.3011	HDPE	145	0.01
PP-256	123	8.962	8.994	-2.01982	PJ-227	PJ-179	235.28	-5,364.84	7,717.40	110	0.21	0.51	2.01982	HDPE	145	0.06
PP-257	89	8.962	8.975	-1.02653	PJ-227	PJ-228	235.28	-5,364.84	7,717.40	110	0.11	0.14	1.02653	HDPE	145	0.01
PP-258	20	8.975	8.955	0.06761	PJ-228	PJ-229	235.28	-5,448.21	7,746.88	110	0.01	0	0.06761	HDPE	145	0
PP-259	8.5	8.975	8.998	-1.48963	PJ-228	PJ-230	235.28	-5,448.21	7,746.88	110	0.16	0.29	1.48963	HDPE	145	0
PP-260	16	8.998	8.997	0.05416	PJ-230	PJ-231	235.26	-5,456.41	7,749.78	110	0.01	0	0.05416	HDPE	145	0
PP-261	14.5	8.998	8.963	-1.6753	PJ-230	PJ-232	235.26	-5,456.41	7,749.78	110	0.18	0.36	1.6753	HDPE	145	0.01
PP-262	15.5	8.963	9.003	0.05248	PJ-232	PJ-233	235.3	-5,469.92	7,755.57	110	0.01	0	0.05248	HDPE	145	0
PP-263	19	8.963	8.991	-1.89291	PJ-232	PJ-234	235.3	-5,469.92	7,755.57	110	0.2	0.45	1.89291	HDPE	145	0.01
PP-264	21.5	8.991	9.043	-3.60102	PJ-234	PJ-235	235.28	-5,487.29	7,763.77	110	0.38	1.48	3.60102	HDPE	145	0.03
PP-265	21.5	9.043	9.039	-2.48779	PJ-235	PJ-236	235.26	-5,484.88	7,785.00	110	0.26	0.74	2.48779	HDPE	145	0.02
PP-266	15	9.039	9.023	-2.79956	PJ-236	PJ-182	235.28	-5,481.98	7,806.22	110	0.29	0.93	2.79956	HDPE	145	0.01
PP-267	28	9.049	9.039	-0.09451	PJ-237	PJ-236	235.27	-5,510.17	7,805.64	110	0.01	0	0.09451	HDPE	145	0
PP-268	72.5	9.043	9.014	-1.502	PJ-235	PJ-180	235.26	-5,484.88	7,785.00	110	0.16	0.29	1.502	HDPE	145	0.02
PP-269	67.5	9.023	9.074	-0.39015	PJ-182	PJ-238	235.31	-5,483.39	7,820.72	110	0.04	0.02	0.39015	HDPE	145	0
PP-270	32	9.074	9.141	-4.32694	PJ-238	PJ-239	235.26	-5,550.11	7,823.08	110	0.46	2.07	4.32694	HDPE	145	0.07
PP-271	14.5	9.141	9.142	-4.46469	PJ-239	PJ-195	235.26	-5,551.35	7,853.65	110	0.47	2.2	4.46469	HDPE	145	0.03
PP-272	50	9.141	9.111	-0.18712	PJ-239	PJ-183	235.26	-5,551.35	7,853.65	110	0.02	0.01	0.18712	HDPE	145	0
PP-273	25.5	9.074	9.038	3.51608	PJ-238	PJ-240	235.26	-5,550.11	7,823.08	110	0.37	1.41	3.51608	HDPE	145	0.04
PP-274	28.5	9.038	8.964	3.21608	PJ-240	PJ-241	235.26	-5,547.02	7,798.07	110	0.34	1.2	3.21608	HDPE	145	0.03
PP-275	33	8.964	9.086	-0.53669	PJ-241	PJ-242	235.3	-5,546.72	7,769.36	110	0.06	0.04	0.53669	HDPE	145	0
PP-276	18	9.086	9.188	-1.04554	PJ-242	PJ-243	235.18	-5,513.68	7,766.58	110	0.11	0.15	1.04554	HDPE	145	0
PP-277	9	9.188	8.991	-1.5413	PJ-243	PJ-234	235.08	-5,496.08	7,764.11	110	0.16	0.31	1.5413	HDPE	145	0
PP-278	16.5	9.086	9.086	-0.05584	PJ-244	PJ-242	235.18	-5,513.06	7,783.25	110	0.01	0	0.05584	HDPE	145	0
PP-279	33.5	9.086	8.966	0.11301	PJ-242	PJ-245	235.18	-5,513.68	7,766.58	110	0.01	0	0.11301	HDPE	145	0
PP-280	20.5	9.168	8.968	-0.06929	PJ-246	PJ-247	235.1	-5,508.12	7,727.36	110	0.01	0	0.06929	HDPE	145	0
PP-281	24.5	8.968	9.188	-0.32221	PJ-247	PJ-243	235.3	-5,498.24	7,739.71	110	0.03	0.02	0.32221	HDPE	145	0
PP-282	15	8.968	9.088	0.05079	PJ-247	PJ-248	235.3	-5,498.24	7,739.71	110	0.01	0	0.05079	HDPE	145	0
PP-283	32.5	8.891	8.937	-4.2813	PJ-225	PJ-249	235.28	-5,561.30	7,734.77	110	0.45	2.03	4.2813	HDPE	145	0.07

PP-284	20	8.937	8.964	-3.47833	PJ-249	PJ-241	235.3	-5,566.78	7,766.89	110	0.37	1.38	3.47833	HDPE	145	0.03
PP-285	11.5	8.937	8.938	-1.01855	PJ-249	PJ-250	235.3	-5,566.78	7,766.89	110	0.11	0.14	1.01855	HDPE	145	0
PP-286	60	8.938	9.239	-5.30553	PJ-250	PJ-251	235.3	-5,578.21	7,765.65	110	0.56	3.03	5.30553	HDPE	145	0.18
PP-287	12.5	9.239	9.162	-5.64757	PJ-251	PJ-252	235.18	-5,578.83	7,823.70	110	0.59	3.4	5.64757	HDPE	145	0.04
PP-288	12.5	9.162	9.326	-5.80633	PJ-252	PJ-253	235.3	-5,574.81	7,835.43	110	0.61	3.57	5.80633	HDPE	145	0.04
PP-289	17	9.326	9.306	-6.26607	PJ-253	PJ-254	235.18	-5,584.38	7,843.15	110	0.66	4.12	6.26607	HDPE	145	0.07
PP-290	23	9.306	9.4	-6.59333	PJ-254	PJ-210	235.27	-5,586.24	7,859.82	110	0.69	4.52	6.59333	HDPE	145	0.1
PP-291	18	9.396	9.306	-0.06088	PJ-255	PJ-254	235.18	-5,604.15	7,856.74	110	0.01	0	0.06088	HDPE	145	0
PP-292	10.5	9.306	9.306	0.03566	PJ-254	PJ-256	235.27	-5,586.24	7,859.82	110	0	0	0.03566	HDPE	145	0
PP-293	53.5	9.326	9.406	0.18027	PJ-253	PJ-257	235.18	-5,584.38	7,843.15	110	0.02	0.01	0.18027	HDPE	145	0
PP-294	11	9.162	9.192	0.03734	PJ-252	PJ-258	235.3	-5,574.81	7,835.43	110	0	0	0.03734	HDPE	145	0
PP-295	14.5	9.239	9.239	0.04911	PJ-251	PJ-259	235.18	-5,578.83	7,823.70	110	0.01	0	0.04911	HDPE	145	0
PP-296	17.5	9.038	9.028	0.0592	PJ-240	PJ-260	235.26	-5,547.02	7,798.07	110	0.01	0	0.0592	HDPE	145	0
PP-297	8.5	9.579	9.643	8.95755	PJ-209	PJ-261	235.28	-5,626.59	7,882.09	125	0.73	4.28	8.95755	HDPE	145	0.04
PP-298	29.5	9.643	9.503	3.87423	PJ-261	PJ-262	235.18	-5,634.10	7,878.35	110	0.41	1.69	3.87423	HDPE	145	0.05
PP-299	30.5	9.503	9.593	0.10292	PJ-262	PJ-263	235.27	-5,640.58	7,849.64	110	0.01	0	0.10292	HDPE	145	0
PP-300	23.5	9.643	9.492	4.87615	PJ-261	PJ-264	235.18	-5,634.10	7,878.35	110	0.51	2.59	4.87615	HDPE	145	0.06
PP-301	74.5	9.492	9.412	0.25089	PJ-264	PJ-265	235.27	-5,655.71	7,868.78	110	0.03	0.01	0.25089	HDPE	145	0
PP-302	15.5	9.492	9.461	4.24321	PJ-264	PJ-266	235.27	-5,655.71	7,868.78	110	0.45	2	4.24321	HDPE	145	0.03
PP-303	30.5	9.461	9.503	-3.46662	PJ-266	PJ-262	235.27	-5,665.59	7,857.05	110	0.36	1.38	3.46662	HDPE	145	0.04
PP-304	45	9.461	9.299	7.40345	PJ-266	PJ-267	235.27	-5,665.59	7,857.05	110	0.78	5.61	7.40345	HDPE	145	0.25
PP-305	14.5	9.299	9.209	0.40292	PJ-267	PJ-268	235.18	-5,679.79	7,815.67	110	0.04	0.03	0.40292	HDPE	145	0
PP-306	29.5	9.209	9.209	0.09956	PJ-268	PJ-269	235.27	-5,665.28	7,814.74	110	0.01	0	0.09956	HDPE	145	0
PP-307	23	9.209	9.299	0.0777	PJ-268	PJ-270	235.27	-5,665.28	7,814.74	110	0.01	0	0.0777	HDPE	145	0
PP-308	17.5	9.299	9.127	6.74123	PJ-267	PJ-271	235.18	-5,679.79	7,815.67	110	0.71	4.71	6.74123	HDPE	145	0.08
PP-309	46	9.127	9.057	0.15505	PJ-271	PJ-272	235.27	-5,684.73	7,798.69	110	0.02	0	0.15505	HDPE	145	0
PP-310	68	9.119	9.177	1.9141	PJ-212	PJ-273	235.27	-5,765.20	7,808.52	110	0.2	0.46	1.9141	HDPE	145	0.03
PP-311	27.5	9.177	9.03	-1.89806	PJ-273	PJ-274	235.18	-5,714.07	7,792.51	110	0.2	0.45	1.89806	HDPE	145	0.01
PP-312	6.5	9.03	9.127	-6.35043	PJ-274	PJ-271	235.34	-5,686.59	7,792.51	110	0.67	4.22	6.35043	HDPE	145	0.03
PP-313	9.5	9.03	9.01	4.30573	PJ-274	PJ-275	235.34	-5,686.59	7,792.51	110	0.45	2.05	4.30573	HDPE	145	0.02
PP-314	24	9.01	9.02	0.08106	PJ-275	PJ-276	235.34	-5,687.82	7,783.25	110	0.01	0	0.08106	HDPE	145	0
PP-315	50	9.069	9.177	-1.10863	PJ-213	PJ-273	235.28	-5,762.79	7,789.83	110	0.12	0.17	1.10863	HDPE	145	0.01
PP-316	39.5	9.177	8.997	2.08104	PJ-273	PJ-277	235.18	-5,714.07	7,792.51	110	0.22	0.53	2.08104	HDPE	145	0.02
PP-317	7.5	8.997	9.01	-4.08644	PJ-277	PJ-275	235.34	-5,689.06	7,775.84	110	0.43	1.87	4.08644	HDPE	145	0.01
PP-318	31	9.011	9.101	0.1046	PJ-214	PJ-278	235.27	-5,762.79	7,765.70	110	0.01	0	0.1046	HDPE	145	0
PP-319	68.5	8.92	8.881	-0.27847	PJ-215	PJ-279	235.3	-5,760.98	7,740.98	110	0.03	0.01	0.27847	HDPE	145	0

PP-320	31.5	8.881	8.997	-5.90314	PJ-279	PJ-277	235.34	-5,694.00	7,744.65	110	0.62	3.69	5.90314	HDPE	145	0.12
PP-321	28	8.881	8.959	5.19386	PJ-279	PJ-280	235.34	-5,694.00	7,744.65	110	0.55	2.91	5.19386	HDPE	145	0.08
PP-322	13	8.959	8.798	0.96661	PJ-280	PJ-281	235.18	-5,665.90	7,743.73	110	0.1	0.13	0.96661	HDPE	145	0
PP-323	43.5	8.798	8.867	0.14664	PJ-281	PJ-282	235.34	-5,653.24	7,745.27	110	0.02	0	0.14664	HDPE	145	0
PP-324	16.5	8.798	8.957	0.57413	PJ-281	PJ-283	235.34	-5,653.24	7,745.27	110	0.06	0.05	0.57413	HDPE	145	0
PP-325	30	8.957	8.839	-3.49732	PJ-283	PJ-284	235.18	-5,636.88	7,748.05	110	0.37	1.4	3.49732	HDPE	145	0.04
PP-326	34.5	8.839	8.938	-3.93016	PJ-284	PJ-250	235.34	-5,607.23	7,751.76	110	0.41	1.74	3.93016	HDPE	145	0.06
PP-327	32	8.909	8.839	-0.10796	PJ-285	PJ-284	235.27	-5,614.34	7,782.94	110	0.01	0	0.10796	HDPE	145	0
PP-328	62	8.959	8.734	3.88051	PJ-280	PJ-221	235.18	-5,665.90	7,743.73	110	0.41	1.7	3.88051	HDPE	145	0.11
PP-329	65.5	8.957	8.736	3.69445	PJ-283	PJ-222	235.18	-5,636.88	7,748.05	110	0.39	1.55	3.69445	HDPE	145	0.1
PP-330	9	8.768	8.868	0.03062	PJ-217	PJ-286	235.28	-5,737.46	7,677.05	110	0	0	0.03062	HDPE	145	0
PP-331	16.5	8.755	8.685	0.05584	PJ-218	PJ-287	235.27	-5,725.40	7,680.07	110	0.01	0	0.05584	HDPE	145	0
PP-332	15.5	8.711	8.741	0.05248	PJ-219	PJ-288	235.3	-5,717.56	7,678.86	110	0.01	0	0.05248	HDPE	145	0
PP-333	57.5	8.702	8.478	7.30653	PJ-220	PJ-289	235.27	-5,692.23	7,680.67	110	0.77	5.47	7.30653	HDPE	145	0.31
PP-334	18	8.478	8.388	0.06088	PJ-289	PJ-290	235.18	-5,693.07	7,623.31	110	0.01	0	0.06088	HDPE	145	0
PP-335	36.5	8.478	8.21	6.86865	PJ-289	PJ-291	235.18	-5,693.07	7,623.31	110	0.72	4.88	6.86865	HDPE	145	0.18
PP-336	99	8.21	8.177	3.28418	PJ-291	PJ-292	235.27	-5,694.31	7,586.87	110	0.35	1.24	3.28418	HDPE	145	0.12
PP-337	40.5	8.177	8.02	2.8147	PJ-292	PJ-293	235.18	-5,792.49	7,600.77	110	0.3	0.94	2.8147	HDPE	145	0.04
PP-338	37.5	8.21	8.171	3.00233	PJ-291	PJ-294	235.27	-5,694.31	7,586.87	110	0.32	1.05	3.00233	HDPE	145	0.04
PP-339	46.5	8.171	8.203	-2.37917	PJ-294	PJ-295	235.27	-5,657.14	7,581.73	110	0.25	0.68	2.37917	HDPE	145	0.03
PP-340	110	8.203	8.728	-6.79304	PJ-295	PJ-223	235.27	-5,610.82	7,577.72	110	0.71	4.78	6.79304	HDPE	145	0.53
PP-341	52	8.171	8.124	4.92378	PJ-294	PJ-296	235.27	-5,657.14	7,581.73	110	0.52	2.63	4.92378	HDPE	145	0.14
PP-342	45.5	8.124	7.966	2.67005	PJ-296	PJ-297	235.18	-5,659.21	7,529.65	110	0.28	0.85	2.67005	HDPE	145	0.04
PP-343	62.5	7.966	8.081	0.70066	PJ-297	PJ-298	235.3	-5,659.83	7,483.96	110	0.07	0.07	0.70066	HDPE	145	0
PP-344	37.5	8.081	7.998	-1.15904	PJ-298	PJ-299	235.18	-5,659.21	7,421.28	110	0.12	0.18	1.15904	HDPE	145	0.01
PP-345	158.5	7.998	8.203	-3.3542	PJ-299	PJ-295	235.27	-5,621.85	7,419.73	110	0.35	1.29	3.3542	HDPE	145	0.21
PP-346	134.5	8.124	8.086	1.47319	PJ-296	PJ-300	235.18	-5,659.21	7,529.65	110	0.16	0.28	1.47319	HDPE	145	0.04
PP-347	36.5	8.086	7.998	-0.58058	PJ-300	PJ-301	235.18	-5,793.83	7,528.42	110	0.06	0.05	0.58058	HDPE	145	0
PP-348	72	7.998	8.02	-2.43602	PJ-301	PJ-293	235.27	-5,830.27	7,529.04	110	0.26	0.72	2.43602	HDPE	145	0.05
PP-349	85.5	7.998	9.089	1.20268	PJ-301	J-145	235.27	-5,830.27	7,529.04	110	0.13	0.19	1.20268	HDPE	145	0.02
PP-350	60	9.089	8.071	0.20213	J-145	PJ-302	234.16	-5,831.12	7,443.54	110	0.02	0.01	0.20213	HDPE	145	0
PP-351	41.5	9.089	7.952	-0.0463	J-145	PJ-303	234.16	-5,831.12	7,443.54	110	0	0	0.0463	HDPE	145	0
PP-352	18	7.952	8.072	-0.52251	PJ-303	PJ-304	235.3	-5,791.67	7,429.92	110	0.05	0.04	0.52251	HDPE	145	0
PP-353	36.5	8.072	7.956	-0.84884	PJ-304	PJ-305	235.18	-5,791.67	7,447.83	110	0.09	0.1	0.84884	HDPE	145	0
PP-354	44	7.956	8.086	-1.33038	PJ-305	PJ-300	235.3	-5,791.67	7,484.27	110	0.14	0.23	1.33038	HDPE	145	0.01
PP-355	100	7.956	7.956	-0.12581	PJ-305	PJ-306	235.3	-5,791.67	7,484.27	110	0.01	0	0.12581	HDPE	145	0

Distribution Network Design Output: Zone 14

PP-356	32	7.956	7.966	-1.49823	PJ-306	PJ-297	235.3	-5,691.63	7,484.27	110	0.16	0.29	1.49823	HDPE	145	0.01
PP-357	99	8.072	8.073	-0.19024	PJ-304	PJ-307	235.18	-5,791.67	7,447.83	110	0.02	0.01	0.19024	HDPE	145	0
PP-358	37	8.073	7.956	-0.80373	PJ-307	PJ-306	235.18	-5,692.56	7,447.52	110	0.08	0.09	0.80373	HDPE	145	0
PP-359	31.5	8.081	7.953	1.41712	PJ-298	PJ-308	235.18	-5,659.21	7,421.28	110	0.15	0.26	1.41712	HDPE	145	0.01
PP-360	28	7.953	8.073	-0.06162	PJ-308	PJ-307	235.3	-5,690.70	7,419.42	110	0.01	0	0.06162	HDPE	145	0
PP-361	39	7.952	8.071	0.14461	PJ-303	PJ-309	235.3	-5,791.67	7,429.92	110	0.02	0	0.14461	HDPE	145	0
PP-362	64.5	8.071	7.953	-0.37939	PJ-309	PJ-308	235.18	-5,754.93	7,416.64	110	0.04	0.02	0.37939	HDPE	145	0
PP-363	26.5	7.953	7.982	0.59288	PJ-308	PJ-310	235.3	-5,690.70	7,419.42	110	0.06	0.05	0.59288	HDPE	145	0
PP-364	68	7.982	8.071	0.05309	PJ-310	PJ-309	235.27	-5,691.01	7,392.87	110	0.01	0	0.05309	HDPE	145	0
PP-365	14.5	9.059	7.982	-0.41716	J-144	PJ-310	234.19	-5,691.56	7,378.39	110	0.04	0.03	0.41716	HDPE	145	0
PP-366	51	7.982	7.983	-0.41579	PJ-310	PJ-311	235.27	-5,691.01	7,392.87	110	0.04	0.02	0.41579	HDPE	145	0
PP-367	49	7.983	9.059	0.46366	PJ-311	J-144	235.27	-5,643.15	7,375.58	110	0.05	0.03	0.46366	HDPE	145	0
PP-368	15.5	7.983	8.076	-1.26822	PJ-311	PJ-312	235.27	-5,643.15	7,375.58	110	0.13	0.21	1.26822	HDPE	145	0
PP-369	48	8.076	7.998	-1.37425	PJ-312	PJ-299	235.18	-5,628.03	7,372.18	110	0.14	0.25	1.37425	HDPE	145	0.01
PP-370	58	8.076	8.975	-0.30293	PJ-312	J-141	235.18	-5,628.03	7,372.18	110	0.03	0.01	0.30293	HDPE	145	0
PP-371	33.5	8.975	8.827	-1.64213	J-141	J-136	234.28	-5,634.13	7,314.48	110	0.17	0.34	1.64213	HDPE	145	0.01
PP-372	40	8.827	8.529	-2.07676	J-136	J-126	234.44	-5,637.83	7,281.13	110	0.22	0.53	2.07676	HDPE	145	0.02
PP-373	73	8.529	8.457	-1.73306	J-126	J-123	234.76	-5,641.54	7,241.30	110	0.18	0.38	1.73306	HDPE	145	0.03
PP-374	69	8.457	8.356	-1.82116	J-123	J-119	234.86	-5,648.33	7,168.43	110	0.19	0.42	1.82116	HDPE	145	0.03
PP-375	86.5	8.356	8.121	-3.85215	J-119	J-107	234.99	-5,654.50	7,099.58	110	0.41	1.67	3.85215	HDPE	145	0.14
PP-376	85.5	8.121	8.171	-3.35022	J-107	J-105	235.37	-5,662.53	7,013.43	110	0.35	1.29	3.35022	HDPE	145	0.11
PP-377	31.5	8.171	8.182	-3.80364	J-105	J-104	235.43	-5,671.49	6,928.21	110	0.4	1.63	3.80364	HDPE	145	0.05
PP-378	33.5	8.182	8.112	-3.59107	J-104	J-100	235.47	-5,674.88	6,897.02	110	0.38	1.47	3.59107	HDPE	145	0.05
PP-379	88	8.112	8.475	-1.99909	J-100	PJ-313	235.59	-5,677.35	6,863.37	110	0.21	0.5	1.99909	HDPE	145	0.04
PP-380	58	8.475	8.159	-2.49043	PJ-313	J-99	235.27	-5,685.55	6,775.95	110	0.26	0.75	2.49043	HDPE	145	0.04
PP-381	49	8.159	8.23	-4.97943	J-99	J-97	235.63	-5,738.49	6,752.83	110	0.52	2.69	4.97943	HDPE	145	0.13
PP-382	55	8.23	8.335	-6.39549	J-97	J-93	235.69	-5,784.19	6,734.61	110	0.67	4.28	6.39549	HDPE	145	0.24
PP-383	491	8.335	11.152	-9.34195	J-93	PJ-314	235.82	-5,836.06	6,716.39	125	0.76	4.63	9.34195	HDPE	145	2.27
PP-384	121.5	11.152	10.845	5.53351	PJ-314	PJ-315	235.27	-6,323.83	6,724.03	110	0.58	3.27	5.53351	HDPE	145	0.4
PP-385	401	10.845	8.753	8.40488	PJ-315	J-95	235.18	-6,315.54	6,845.39	125	0.68	3.81	8.40488	HDPE	145	1.53
PP-386	88.5	8.493	8.555	-0.29797	PJ-316	J-112	235.27	-5,909.43	6,923.35	110	0.03	0.01	0.29797	HDPE	145	0
PP-387	86.5	8.555	9.624	2.12816	J-112	J-147	235.21	-5,912.94	7,011.89	110	0.22	0.56	2.12816	HDPE	145	0.05
PP-388	42.5	8.398	8.428	-0.14328	PJ-317	J-111	235.27	-5,879.32	7,054.58	110	0.02	0	0.14328	HDPE	145	0
PP-389	36.5	8.347	8.347	0.1231	J-110	PJ-318	235.27	-5,855.20	7,012.50	110	0.01	0	0.1231	HDPE	145	0
PP-390	64	8.168	8.327	0.21558	J-108	PJ-319	235.34	-5,790.98	7,013.12	110	0.02	0.01	0.21558	HDPE	145	0
PP-391	310	9.659	10.02	-9.29401	J-146	PJ-320	234.12	-5,928.52	7,098.20	125	0.76	4.58	9.29401	HDPE	145	1.42

Distribution Network Design Output: Zone 14

PP-392	73	10.02	10.355	-10.58237	PJ-320	PJ-321	235.18	-6,233.95	7,052.21	125	0.86	5.83	10.58237	HDPE	145	0.43
PP-393	93.5	10.355	10.516	-2.53506	PJ-321	PJ-322	235.27	-6,306.79	7,052.59	110	0.27	0.77	2.53506	HDPE	145	0.07
PP-394	114	10.516	10.845	-5.1759	PJ-322	PJ-315	235.18	-6,312.07	6,959.12	110	0.54	2.89	5.1759	HDPE	145	0.33
PP-395	35	10.845	11.039	-10.30583	PJ-315	PJ-323	235.18	-6,315.54	6,845.39	125	0.84	5.55	10.30583	HDPE	145	0.19
PP-396	117	11.039	10.721	5.57863	PJ-323	PJ-324	235.18	-6,350.52	6,843.78	110	0.59	3.32	5.57863	HDPE	145	0.39
PP-397	31	10.721	10.516	9.05037	PJ-324	PJ-322	235.11	-6,342.98	6,960.62	125	0.74	4.36	9.05037	HDPE	145	0.14
PP-398	388.5	10.516	8.636	9.58229	PJ-322	J-113	235.18	-6,312.07	6,959.12	125	0.78	4.85	9.58229	HDPE	145	1.88
PP-399	33	10.355	10.579	-8.71856	PJ-321	PJ-325	235.27	-6,306.79	7,052.59	125	0.71	4.07	8.71856	HDPE	145	0.13
PP-400	92	10.579	10.721	-2.57445	PJ-325	PJ-324	235.18	-6,339.96	7,052.59	110	0.27	0.79	2.57445	HDPE	145	0.07
PP-401	74	10.721	10.767	-7.1025	PJ-324	PJ-326	235.11	-6,342.98	6,960.62	125	0.58	2.79	7.1025	HDPE	145	0.21
PP-402	99.5	10.767	10.765	2.80264	PJ-326	PJ-327	235.27	-6,416.85	6,957.61	110	0.29	0.93	2.80264	HDPE	145	0.09
PP-403	72.5	10.765	10.579	6.80864	PJ-327	PJ-325	235.18	-6,412.33	7,057.11	125	0.55	2.58	6.80864	HDPE	145	0.19
PP-404	40	10.765	10.932	-4.7193	PJ-327	PJ-328	235.18	-6,412.33	7,057.11	110	0.5	2.44	4.7193	HDPE	145	0.1
PP-405	40.5	10.932	10.891	-2.44626	PJ-328	PJ-329	235.11	-6,452.43	7,057.26	110	0.26	0.72	2.44626	HDPE	145	0.03
PP-406	107	10.891	11.07	-2.94265	PJ-329	PJ-330	235.18	-6,492.84	7,061.49	110	0.31	1.02	2.94265	HDPE	145	0.11
PP-407	41.5	11.07	11.032	2.77793	PJ-330	PJ-331	235.11	-6,496.46	6,954.74	110	0.29	0.91	2.77793	HDPE	145	0.04
PP-408	102	11.032	10.932	2.88712	PJ-331	PJ-328	235.11	-6,454.85	6,955.35	110	0.3	0.98	2.88712	HDPE	145	0.1
PP-409	38	10.767	11.032	-5.0545	PJ-326	PJ-331	235.27	-6,416.85	6,957.61	110	0.53	2.77	5.0545	HDPE	145	0.11
PP-410	113	11.032	11.471	-6.15442	PJ-331	PJ-332	235.11	-6,454.85	6,955.35	110	0.65	3.98	6.15442	HDPE	145	0.45
PP-411	38.5	11.471	11.583	-4.95515	PJ-332	PJ-333	235.12	-6,457.86	6,842.57	110	0.52	2.67	4.95515	HDPE	145	0.1
PP-412	113.5	11.583	11.07	6.60202	PJ-333	PJ-330	235.11	-6,496.46	6,841.37	110	0.69	4.54	6.60202	HDPE	145	0.51
PP-413	35.5	11.471	11.346	5.75951	PJ-332	PJ-334	235.12	-6,457.86	6,842.57	110	0.61	3.52	5.75951	HDPE	145	0.13
PP-414	115	11.346	10.767	5.94898	PJ-334	PJ-326	235.12	-6,422.28	6,842.57	110	0.63	3.74	5.94898	HDPE	145	0.43
PP-415	41	11.346	11.165	7.32812	PJ-334	PJ-335	235.12	-6,422.28	6,842.57	125	0.6	2.95	7.32812	HDPE	145	0.12
PP-416	31	11.165	11.039	11.77148	PJ-335	PJ-323	235.18	-6,381.27	6,843.18	140	0.76	4.09	11.77148	HDPE	145	0.13
PP-417	122.5	11.039	11.458	-5.1407	PJ-323	PJ-336	235.18	-6,350.52	6,843.78	110	0.54	2.85	5.1407	HDPE	145	0.35
PP-418	32	11.458	11.152	6.6352	PJ-336	PJ-314	235.11	-6,355.94	6,721.36	110	0.7	4.58	6.6352	HDPE	145	0.15
PP-419	63	11.152	11.671	-10.61989	PJ-314	PJ-337	235.27	-6,323.83	6,724.03	125	0.87	5.87	10.61989	HDPE	145	0.37
PP-420	111.5	11.671	11.668	0.37532	PJ-337	PJ-338	235.12	-6,328.20	6,661.05	110	0.04	0.02	0.37532	HDPE	145	0
PP-421	107	11.671	12.059	-11.94223	PJ-337	PJ-339	235.12	-6,328.20	6,661.05	140	0.78	4.2	11.94223	HDPE	145	0.45
PP-422	45.5	12.059	11.749	22.05567	PJ-339	PJ-340	235.18	-6,434.95	6,667.69	160	1.1	6.83	22.05567	HDPE	145	0.31
PP-423	48	11.749	11.59	18.18931	PJ-340	PJ-341	235.18	-6,432.53	6,712.92	160	0.9	4.78	18.18931	HDPE	145	0.23
PP-424	29.5	11.59	11.458	12.39503	PJ-341	PJ-336	235.11	-6,384.89	6,717.14	140	0.81	4.5	12.39503	HDPE	145	0.13
PP-425	126	11.59	11.165	5.10957	PJ-341	PJ-335	235.11	-6,384.89	6,717.14	110	0.54	2.82	5.10957	HDPE	145	0.36
PP-426	104	11.346	11.75	-8.51169	PJ-334	PJ-342	235.12	-6,422.28	6,842.57	125	0.69	3.9	8.51169	HDPE	145	0.41
PP-427	26	11.75	11.749	-4.52824	PJ-342	PJ-340	235.12	-6,429.52	6,738.85	110	0.48	2.26	4.52824	HDPE	145	0.06

Distribution Network Design Output: Zone 14

PP-428	30	11.749	11.775	-1.16499	PJ-340	PJ-343	235.18	-6,432.53	6,712.92	110	0.12	0.18	1.16499	HDPE	145	0.01
PP-429	32.5	11.775	11.763	-1.37552	PJ-343	PJ-344	235.16	-6,462.08	6,706.89	110	0.14	0.25	1.37552	HDPE	145	0.01
PP-430	32	11.763	11.75	4.5286	PJ-344	PJ-342	235.18	-6,461.48	6,739.45	110	0.48	2.26	4.5286	HDPE	145	0.07
PP-431	103	11.471	11.763	-7.93439	PJ-332	PJ-344	235.12	-6,457.86	6,842.57	125	0.65	3.42	7.93439	HDPE	145	0.35
PP-432	34.5	11.763	11.97	-14.51817	PJ-344	PJ-345	235.18	-6,461.48	6,739.45	140	0.94	6.03	14.51817	HDPE	145	0.21
PP-433	101.5	11.97	11.583	12.41003	PJ-345	PJ-333	235.18	-6,495.85	6,740.05	140	0.81	4.51	12.41003	HDPE	145	0.46
PP-434	71	11.97	12.404	-27.62468	PJ-345	PJ-346	235.18	-6,495.85	6,740.05	180	1.09	5.83	27.62468	HDPE	145	0.41
PP-435	61	12.404	12.059	34.71623	PJ-346	PJ-339	235.16	-6,495.85	6,668.89	200	1.11	5.33	34.71623	HDPE	145	0.33
PP-436	33.5	12.404	12.462	-62.89782	PJ-346	PJ-347	235.16	-6,495.85	6,668.89	315	0.81	1.75	62.89782	HDPE	145	0.06
PP-437	60	12.462	12.442	0.20213	PJ-347	PJ-348	235.16	-6,505.50	6,636.93	110	0.02	0.01	0.20213	HDPE	145	0
PP-438	140	12.462	12.794	-63.88554	PJ-347	PJ-349	235.16	-6,505.50	6,636.93	315	0.82	1.81	63.88554	HDPE	145	0.25
PP-439	496	12.794	12.97	-5.47362	PJ-349	PJ-350	235.08	-6,638.78	6,623.66	160	0.27	0.52	5.47362	HDPE	145	0.26
PP-440	154	12.97	13.044	0.51824	PJ-350	PJ-351	235.16	-6,627.55	7,119.32	110	0.05	0.04	0.51824	HDPE	145	0.01
PP-441	254	12.97	13.381	-9.0323	PJ-350	PJ-352	235.16	-6,627.55	7,119.32	160	0.45	1.31	9.0323	HDPE	145	0.33
PP-442	250.5	13.381	13.725	-7.31557	PJ-352	PJ-353	235.08	-6,881.56	7,122.82	140	0.48	1.69	7.31557	HDPE	145	0.42
PP-443	377.5	13.725	14.207	-9.42785	PJ-353	PJ-164	235.16	-6,826.56	7,366.94	140	0.61	2.71	9.42785	HDPE	145	1.02
PP-444	419.5	14.3	18.291	-41.18154	PJ-163	PJ-354	236.01	-6,967.76	7,689.11	200	1.31	7.32	41.18154	HDPE	145	3.07
PP-445	224.5	18.291	18.706	-18.22435	PJ-354	PJ-355	235.08	-6,939.11	7,271.47	160	0.91	4.79	18.22435	HDPE	145	1.08
PP-446	42.5	18.706	18.831	-11.20785	PJ-355	PJ-356	235.74	-7,055.95	7,200.61	125	0.91	6.48	11.20785	HDPE	145	0.28
PP-447	100.5	18.831	18.888	11.22023	PJ-356	PJ-357	235.89	-7,092.14	7,223.23	125	0.91	6.5	11.22023	HDPE	145	0.65
PP-448	138	18.888	18.291	25.58736	PJ-357	PJ-354	235.18	-7,040.88	7,309.92	180	1.01	5.06	25.58736	HDPE	145	0.7
PP-449	83	18.831	19.641	-23.18846	PJ-356	PJ-358	235.89	-7,092.14	7,223.23	160	1.15	7.49	23.18846	HDPE	145	0.62
PP-450	103.5	19.641	19.5	16.17071	PJ-358	PJ-359	235.7	-7,163.75	7,265.44	140	1.05	7.36	16.17071	HDPE	145	0.76
PP-451	21	19.5	19.4	0.07097	PJ-359	PJ-360	235.08	-7,104.95	7,350.62	110	0.01	0	0.07097	HDPE	145	0
PP-452	76	18.888	19.5	-15.42512	PJ-357	PJ-359	235.18	-7,040.88	7,309.92	140	1	6.74	15.42512	HDPE	145	0.51
PP-453	168.5	19.641	21.156	-40.55336	PJ-358	J-2	235.7	-7,163.75	7,265.44	200	1.29	7.11	40.55336	HDPE	145	1.2
PP-454	303.5	20.679	18.469	26.71494	J-3	PJ-361	235.55	-7,345.49	7,302.32	180	1.05	5.48	26.71494	HDPE	145	1.66
PP-455	59.5	18.469	18.706	8.11485	PJ-361	PJ-355	236.1	-7,085.35	7,148.60	140	0.53	2.05	8.11485	HDPE	145	0.12
PP-456	22	18.469	18.213	17.30501	PJ-361	PJ-362	236.1	-7,085.35	7,148.60	160	0.86	4.36	17.30501	HDPE	145	0.1
PP-457	91	18.213	18.481	0.30638	PJ-362	PJ-363	236.26	-7,098.17	7,130.51	110	0.03	0.02	0.30638	HDPE	145	0
PP-458	56.5	18.213	17.496	16.42826	PJ-362	PJ-364	236.26	-7,098.17	7,130.51	140	1.07	7.58	16.42826	HDPE	145	0.43
PP-459	36	17.496	17.041	15.18797	PJ-364	PJ-365	236.55	-7,129.83	7,083.77	140	0.99	6.55	15.18797	HDPE	145	0.24
PP-460	310	17.041	14.071	39.8705	PJ-365	J-86	236.77	-7,150.18	7,054.37	200	1.27	6.89	39.8705	HDPE	145	2.14
PP-461	86	14.071	13.851	0.28956	J-86	PJ-366	237.61	-7,316.98	6,796.39	110	0.03	0.01	0.28956	HDPE	145	0
PP-462	73	14.07	14.189	0.24585	J-87	PJ-367	237.61	-7,289.19	6,778.17	110	0.03	0.01	0.24585	HDPE	145	0
PP-463	48	17.516	17.496	-0.16177	PJ-368	PJ-364	236.53	-7,170.53	7,109.59	110	0.02	0.01	0.16177	HDPE	145	0

PP-464	90	17.496	17.635	0.30302	PJ-364	PJ-369	236.55	-7,129.83	7,083.77	110	0.03	0.02	0.30302	HDPE	145	0
PP-465	52.5	16.812	17.041	-0.17691	PJ-370	PJ-365	237	-7,105.69	7,026.84	110	0.02	0.01	0.17691	HDPE	145	0
PP-466	308	17.041	19.667	-27.2357	PJ-365	PJ-371	236.77	-7,150.18	7,054.37	180	1.07	5.68	27.2357	HDPE	145	1.75
PP-467	14	19.667	19.741	-104.04183	PJ-371	J-4	235.89	-7,409.07	7,218.02	355	1.05	2.49	104.04183	HDPE	145	0.03
PP-468	40.5	19.667	19.21	75.58672	PJ-371	PJ-372	235.89	-7,409.07	7,218.02	250	1.54	7.6	75.58672	HDPE	145	0.31
PP-469	130.5	19.21	18.28	22.29094	PJ-372	J-17	236.04	-7,433.79	7,186.05	180	0.88	3.92	22.29094	HDPE	145	0.51
PP-470	137.5	18.28	18.556	-4.0864	J-17	PJ-373	236.46	-7,551.78	7,240.18	110	0.43	1.87	4.0864	HDPE	145	0.26
PP-471	66	18.556	19.21	-52.49842	PJ-373	PJ-372	236.44	-7,479.62	7,138.41	250	1.07	3.87	52.49842	HDPE	145	0.26
PP-472	337.5	18.556	15.452	21.19652	PJ-373	PJ-374	236.44	-7,479.62	7,138.41	160	1.05	6.34	21.19652	HDPE	145	2.14
PP-473	143.5	15.452	16.755	-8.72728	PJ-374	PJ-375	237.41	-7,525.46	6,900.20	125	0.71	4.08	8.72728	HDPE	145	0.59
PP-474	48	16.755	17.122	-27.50953	PJ-375	PJ-376	236.69	-7,624.36	7,003.93	180	1.08	5.79	27.50953	HDPE	145	0.28
PP-475	109.5	17.122	16.355	-3.64926	PJ-376	J-69	236.6	-7,591.19	7,038.91	140	0.24	0.47	3.64926	HDPE	145	0.05
PP-476	149.5	17.122	18.556	-24.89304	PJ-376	PJ-373	236.6	-7,591.19	7,038.91	160	1.24	8.54	24.89304	HDPE	145	1.28
PP-477	88	15.765	16.146	-0.29629	PJ-377	PJ-378	237.36	-7,727.48	7,030.46	110	0.03	0.01	0.29629	HDPE	145	0
PP-478	21.5	16.146	16.414	-8.30688	PJ-378	PJ-379	236.98	-7,667.78	6,965.94	110	0.87	6.94	8.30688	HDPE	145	0.15
PP-479	36.5	16.414	16.755	-18.01515	PJ-379	PJ-375	236.86	-7,651.50	6,979.81	160	0.9	4.69	18.01515	HDPE	145	0.17
PP-480	148	16.414	15.126	9.01516	PJ-379	PJ-380	236.86	-7,651.50	6,979.81	125	0.73	4.33	9.01516	HDPE	145	0.64
PP-481	37.5	15.126	15.452	-28.17977	PJ-380	PJ-374	237.51	-7,550.18	6,871.86	180	1.11	6.05	28.17977	HDPE	145	0.23
PP-482	13	15.126	15	36.52703	PJ-380	J-83	237.51	-7,550.18	6,871.86	200	1.16	5.86	36.52703	HDPE	145	0.08
PP-483	25	14.407	14.693	-10.98702	J-89	J-81	237.79	-7,556.64	6,819.94	125	0.9	6.25	10.98702	HDPE	145	0.16
PP-484	154.5	14.813	15.962	-8.51162	J-82	PJ-381	237.62	-7,570.48	6,843.94	125	0.69	3.9	8.51162	HDPE	145	0.6
PP-485	16	15.962	16.146	-7.58819	PJ-381	PJ-378	237.07	-7,678.63	6,954.48	110	0.8	5.87	7.58819	HDPE	145	0.09
PP-486	103.5	15.962	15.377	-1.84523	PJ-381	PJ-382	237.07	-7,678.63	6,954.48	125	0.15	0.23	1.84523	HDPE	145	0.02
PP-487	151	15.377	15.787	-3.61386	PJ-382	J-76	237.68	-7,754.02	6,883.32	125	0.29	0.8	3.61386	HDPE	145	0.12
PP-488	47	16.186	16.274	0.50278	J-53	J-51	237.28	-7,953.46	6,972.20	110	0.05	0.04	0.50278	HDPE	145	0
PP-489	97	16.274	16.892	3.14011	J-51	J-46	237.19	-7,994.17	6,995.56	110	0.33	1.15	3.14011	HDPE	145	0.11
PP-490	29.5	17.171	17.646	-1.1981	J-48	J-43	236.3	-7,988.13	7,099.59	110	0.13	0.19	1.1981	HDPE	145	0.01
PP-491	15.5	17.117	17.137	-0.05248	PJ-383	J-67	236.44	-7,836.64	7,129.97	110	0.01	0	0.05248	HDPE	145	0
PP-492	19.5	17.137	17.147	0.06593	J-67	PJ-384	236.42	-7,825.42	7,140.98	110	0.01	0	0.06593	HDPE	145	0
PP-493	19	17.211	17.159	3.87487	J-27	J-31	236.76	-7,744.28	7,184.22	110	0.41	1.69	3.87487	HDPE	145	0.03
PP-494	37	17.426	17.719	-2.285	J-44	PJ-385	236.04	-8,049.95	7,098.08	110	0.24	0.64	2.285	HDPE	145	0.02
PP-495	61.5	17.719	17.842	-1.2657	PJ-385	J-42	235.77	-8,046.50	7,134.79	110	0.13	0.21	1.2657	HDPE	145	0.01
PP-496	39	17.521	17.421	-5.11402	J-41	J-65	236.11	-7,937.63	7,185.53	110	0.54	2.83	5.11402	HDPE	145	0.11
PP-497	27	17.421	17.443	-10.687	J-65	J-33	236.32	-7,903.38	7,204.66	140	0.69	3.42	10.687	HDPE	145	0.09
PP-498	15.5	17.382	17.352	0.05248	J-66	PJ-386	236.17	-7,859.77	7,161.05	110	0.01	0	0.05248	HDPE	145	0
PP-499	34.5	17.719	17.34	0.11637	PJ-385	PJ-387	235.77	-8,046.50	7,134.79	110	0.01	0	0.11637	HDPE	145	0

PP-500	23.5	17.719	17.827	-1.66232	PJ-385	PJ-388	235.77	-8,046.50	7,134.79	110	0.17	0.35	1.66232	HDPE	145	0.01
PP-501	118	17.827	17.599	-3.56667	PJ-388	J-40	235.67	-8,053.14	7,157.11	110	0.38	1.45	3.56667	HDPE	145	0.17
PP-502	54.5	17.827	17.517	1.24487	PJ-388	PJ-389	235.67	-8,053.14	7,157.11	110	0.13	0.21	1.24487	HDPE	145	0.01
PP-503	52.5	17.517	17.528	-2.19044	PJ-389	J-38	235.97	-8,070.62	7,208.97	110	0.23	0.59	2.19044	HDPE	145	0.03
PP-504	247	17.517	18.353	2.24448	PJ-389	PJ-158	235.97	-8,070.62	7,208.97	110	0.24	0.61	2.24448	HDPE	145	0.15
PP-505	77	17.512	17.581	0.2593	J-37	PJ-390	236.24	-7,949.80	7,240.18	110	0.03	0.01	0.2593	HDPE	145	0
PP-506	76.5	17.503	17.896	-8.89661	J-36	J-26	236.27	-7,943.53	7,244.52	125	0.72	4.23	8.89661	HDPE	145	0.32
PP-507	50	17.896	18.193	-23.37036	J-26	J-16	236.2	-7,913.62	7,314.96	200	0.74	2.56	23.37036	HDPE	145	0.13
PP-508	48	18.193	18.439	-4.86166	J-16	J-15	236.03	-7,893.55	7,360.60	125	0.4	1.38	4.86166	HDPE	145	0.07
PP-509	47.5	18.439	18.462	6.12178	J-15	J-14	235.85	-7,875.02	7,404.99	110	0.64	3.94	6.12178	HDPE	145	0.19
PP-510	44	18.462	18.718	14.15213	J-14	PJ-391	235.64	-7,854.95	7,447.83	140	0.92	5.75	14.15213	HDPE	145	0.25
PP-511	23.5	18.718	18.939	16.96227	PJ-391	PJ-159	235.13	-7,836.42	7,487.64	160	0.84	4.2	16.96227	HDPE	145	0.1
PP-512	204.5	18.718	19.11	-3.72522	PJ-391	J-9	235.13	-7,836.42	7,487.64	125	0.3	0.84	3.72522	HDPE	145	0.17
PP-513	101.5	18.476	17.836	24.11648	J-10	PJ-392	235.13	-7,553.52	7,429.30	180	0.95	4.54	24.11648	HDPE	145	0.46
PP-514	39	17.836	17.501	23.36381	PJ-392	PJ-160	235.31	-7,559.93	7,530.44	160	1.16	7.59	23.36381	HDPE	145	0.3
PP-515	21	17.876	17.836	-0.07097	PJ-393	PJ-392	235.27	-7,580.14	7,524.42	110	0.01	0	0.07097	HDPE	145	0
PP-516	20.5	17.836	17.796	0.06929	PJ-392	PJ-394	235.31	-7,559.93	7,530.44	110	0.01	0	0.06929	HDPE	145	0
PP-517	133.5	16.541	16.304	-0.33723	PJ-150	PJ-395	236.09	-8,425.16	7,206.84	110	0.04	0.02	0.33723	HDPE	145	0
PP-518	51	16.304	16.242	-2.09506	PJ-395	PJ-396	236.33	-8,346.50	7,114.80	110	0.22	0.54	2.09506	HDPE	145	0.03
PP-519	20.5	16.242	16.25	-3.47625	PJ-396	PJ-397	236.42	-8,297.05	7,102.73	110	0.37	1.38	3.47625	HDPE	145	0.03
PP-520	158	16.25	16.61	-5.19709	PJ-397	PJ-398	236.44	-8,276.55	7,101.53	110	0.55	2.91	5.19709	HDPE	145	0.46
PP-521	47.5	16.61	16.892	-6.38659	PJ-398	J-46	236.54	-8,127.59	7,048.46	110	0.67	4.27	6.38659	HDPE	145	0.2
PP-522	169	16.304	16.745	0.56869	PJ-395	PJ-399	236.33	-8,346.50	7,114.80	110	0.06	0.05	0.56869	HDPE	145	0.01
PP-523	169.5	16.242	16.713	0.57037	PJ-396	PJ-400	236.42	-8,297.05	7,102.73	110	0.06	0.05	0.57037	HDPE	145	0.01
PP-524	166.5	16.25	16.732	0.56028	PJ-397	PJ-401	236.44	-8,276.55	7,101.53	110	0.06	0.05	0.56028	HDPE	145	0.01
PP-525	74	16.61	16.878	0.24921	PJ-398	PJ-402	236.54	-8,127.59	7,048.46	110	0.03	0.01	0.24921	HDPE	145	0
PP-526	28	16.959	16.864	4.63431	J-28	J-30	237.04	-7,702.79	7,176.98	110	0.49	2.35	4.63431	HDPE	145	0.07
PP-527	33	14.152	14.035	9.79417	J-80	J-90	237.85	-7,614.32	6,784.35	125	0.8	5.05	9.79417	HDPE	145	0.17
PP-528	151	14.035	13.513	19.66735	J-90	PJ-403	237.8	-7,586.59	6,766.52	160	0.98	5.52	19.66735	HDPE	145	0.83
PP-529	79.5	13.513	13.613	25.12469	PJ-403	J-88	237.49	-7,459.08	6,685.83	180	0.99	4.89	25.12469	HDPE	145	0.39
PP-530	93	13.513	13.568	-6.54559	PJ-403	J-84	237.49	-7,459.08	6,685.83	110	0.69	4.46	6.54559	HDPE	145	0.42
PP-531	49.5	13.613	13.223	39.2214	J-88	PJ-404	237	-7,392.01	6,642.93	200	1.25	6.68	39.2214	HDPE	145	0.33
PP-532	96.5	13.223	13.488	-15.48054	PJ-404	PJ-405	237.06	-7,350.70	6,615.74	140	1.01	6.79	15.48054	HDPE	145	0.66
PP-533	50	13.488	13.661	-35.15581	PJ-405	J-85	237.45	-7,303.77	6,700.03	200	1.12	5.46	35.15581	HDPE	145	0.27
PP-534	47	13.488	13.145	19.02419	PJ-405	PJ-406	237.45	-7,303.77	6,700.03	160	0.95	5.19	19.02419	HDPE	145	0.24
PP-535	16.5	13.145	13.195	0.05584	PJ-406	PJ-407	237.55	-7,259.61	6,683.66	110	0.01	0	0.05584	HDPE	145	0

PP-536	107	13.145	13.073	18.39462	PJ-406	PJ-408	237.55	-7,259.61	6,683.66	160	0.91	4.88	18.39462	HDPE	145	0.52
PP-537	27	13.073	13.223	-54.11979	PJ-408	PJ-404	237.1	-7,326.61	6,603.08	250	1.1	4.09	54.11979	HDPE	145	0.11
PP-538	60	13.073	12.719	71.86165	PJ-408	PJ-409	237.1	-7,326.61	6,603.08	315	0.92	2.24	71.86165	HDPE	145	0.13
PP-539	368	12.719	12.793	70.42197	PJ-409	PJ-410	237.32	-7,270.11	6,582.70	315	0.9	2.16	70.42197	HDPE	145	0.8
PP-540	264.5	12.793	12.794	61.44059	PJ-410	PJ-349	236.45	-6,903.11	6,612.70	250	1.25	5.18	61.44059	HDPE	145	1.37
PP-541	511.5	12.793	13.381	5.13382	PJ-410	PJ-352	236.45	-6,903.11	6,612.70	125	0.42	1.53	5.13382	HDPE	145	0.78
PP-542	15	16.361	16.481	0.05079	J-73	PJ-411	236.98	-7,841.24	7,058.77	160	0	0	0.05079	HDPE	145	0
PP-543	47.5	15.207	17.972	-0.62453	J-92	PJ-412	237.85	-7,725.84	6,844.95	160	0.03	0.01	0.62453	HDPE	145	0
PP-544	19	17.972	15.377	-0.84851	PJ-412	PJ-382	235.08	-7,766.68	6,868.88	160	0.04	0.02	0.84851	HDPE	145	0
	37471															

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	43	400	PVC	400	uPVC	Retained
P-10	J-9	J-10	85	180	PVC	180	uPVC	Retained
P-100	J-94	J-96	53	110	PVC	110	uPVC	Retained
P-101	J-96	J-97	127.5	110	PVC	110	uPVC	Retained
P-102	J-96	J-98	39	110	PVC	110	uPVC	Retained
P-103	J-98	J-99	111.5	110	PVC	110	uPVC	Retained
P-104	J-98	J-100	71	110	PVC	110	uPVC	Retained
P-105	J-98	J-101	31.5	110	PVC	110	uPVC	Retained
P-106	J-101	J-102	32	110	PVC	110	uPVC	Retained
P-107	J-102	J-103	16.5	110	PVC	110	uPVC	Retained
P-108	J-101	J-104	73	110	PVC	110	uPVC	Retained
P-109	J-102	J-105	77.5	110	PVC	110	uPVC	Retained
P-11	J-10	J-11	53.5	110	PVC	110	uPVC	Retained
P-110	J-102	J-106	86.5	110	PVC	110	uPVC	Retained
P-111	J-106	J-107	87.5	110	PVC	110	uPVC	Retained
P-112	J-106	J-108	41	110	PVC	110	uPVC	Retained
P-113	J-108	J-109	30	110	PVC	110	uPVC	Retained
P-114	J-109	J-110	34.5	110	PVC	110	uPVC	Retained
P-115	J-110	J-111	22.5	110	PVC	110	uPVC	Retained
P-116	J-111	J-112	35	110	PVC	110	uPVC	Retained
P-117	J-112	J-113	14	125	PVC	125	uPVC	Retained
P-118	J-114	J-109	51.5	110	PVC	110	uPVC	Retained
P-119	J-108	J-115	85	110	PVC	110	uPVC	Retained
P-12	J-8	J-12	124	110	PVC	110	uPVC	Retained
P-120	J-115	J-116	12.5	110	PVC	110	uPVC	Retained
P-121	J-116	J-117	40.5	110	PVC	110	uPVC	Retained
P-122	J-117	J-118	41	110	PVC	110	uPVC	Retained
P-123	J-118	J-119	42.5	110	PVC	110	uPVC	Retained
P-124	J-118	J-120	70.5	110	PVC	110	uPVC	Retained
P-125	J-120	J-121	31	110	PVC	110	uPVC	Retained
P-126	J-121	J-122	36	110	PVC	110	uPVC	Retained
P-127	J-121	J-123	15.5	110	PVC	110	uPVC	Retained
P-128	J-117	J-124	72.5	110	PVC	110	uPVC	Retained
P-129	J-124	J-120	41.5	110	PVC	110	uPVC	Retained
P-13	J-6	J-13	194.5	110	PVC	110	uPVC	Retained
P-130	J-124	J-125	67.5	110	PVC	110	uPVC	Retained
P-131	J-125	J-126	94.5	110	PVC	110	uPVC	Retained
P-132	J-125	J-127	42	110	PVC	110	uPVC	Retained
P-133	J-127	J-128	69	110	PVC	110	uPVC	Retained
P-134	J-128	J-124	42	110	PVC	110	uPVC	Retained
P-135	J-116	J-128	72.5	110	PVC	110	uPVC	Retained
P-136	J-128	J-129	51	110	PVC	110	uPVC	Retained
P-137	J-129	J-130	69	110	PVC	110	uPVC	Retained
P-138	J-130	J-127	51	110	PVC	110	uPVC	Retained
P-139	J-115	J-131	38	110	PVC	110	uPVC	Retained
P-14	J-7	J-14	150.5	140	PVC	140	uPVC	Retained
P-140	J-131	J-129	73	110	PVC	110	uPVC	Retained
P-141	J-129	J-132	41	110	PVC	110	uPVC	Retained
P-142	J-132	J-133	68	110	PVC	110	uPVC	Retained
P-143	J-130	J-133	41	110	PVC	110	uPVC	Retained
P-144	J-133	J-134	41.5	110	PVC	110	uPVC	Retained
P-145	J-134	J-135	41	110	PVC	110	uPVC	Retained
P-146	J-135	J-130	43	110	PVC	110	uPVC	Retained
P-147	J-136	J-135	191.5	110	PVC	110	uPVC	Retained
P-148	J-135	J-137	31	110	PVC	110	uPVC	Retained
P-149	J-137	J-138	41.5	110	PVC	110	uPVC	Retained
P-15	J-6	J-15	161	160	PVC	160	uPVC	Retained
P-150	J-137	J-139	43	110	PVC	110	uPVC	Retained
P-151	J-139	J-140	95	110	PVC	110	uPVC	Retained
P-152	J-140	J-141	57	110	PVC	110	uPVC	Retained
P-153	J-137	J-142	63.5	110	PVC	110	uPVC	Retained
P-154	J-142	J-143	42.5	110	PVC	110	uPVC	Retained
P-155	J-143	J-144	95.5	110	PVC	110	uPVC	Retained
P-156	J-144	J-140	62.5	110	PVC	110	uPVC	Retained

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-157	J-143	J-139	63.5	110	PVC	110	uPVC	Retained
P-158	J-142	J-145	66	110	PVC	110	uPVC	Retained
P-159	J-146	J-147	18	125	PVC	125	uPVC	Retained
P-16	J-5	J-16	170.5	180	PVC	180	uPVC	Retained
P-160	J-147	J-148	41	125	PVC	125	uPVC	Retained
P-161	J-148	J-131	41.5	110	PVC	110	uPVC	Retained
P-162	J-148	J-132	73	110	PVC	110	uPVC	Retained
P-17	J-17	J-18	45	200	PVC	200	uPVC	Retained
P-18	J-18	J-19	79	110	PVC	110	uPVC	Retained
P-19	J-18	J-20	47	200	PVC	200	uPVC	Retained
P-2	J-1	J-2	98.5	400	PVC	400	uPVC	Retained
P-20	J-20	J-21	37.5	140	PVC	140	uPVC	Retained
P-21	J-21	J-22	41	140	PVC	140	uPVC	Retained
P-22	J-22	J-23	113.5	125	PVC	125	uPVC	Retained
P-23	J-23	J-24	28.5	160	PVC	160	uPVC	Retained
P-24	J-24	J-25	31.5	180	PVC	180	uPVC	Retained
P-25	J-25	J-26	25.5	200	PVC	200	uPVC	Retained
P-26	J-22	J-27	92	110	PVC	110	uPVC	Retained
P-27	J-21	J-28	92.5	110	PVC	110	uPVC	Retained
P-28	J-20	J-29	126	125	PVC	125	uPVC	Retained
P-29	J-29	J-30	37	140	PVC	140	uPVC	Retained
P-3	J-2	J-3	60.5	400	PVC	400	uPVC	Retained
P-30	J-30	J-31	42	125	PVC	125	uPVC	Retained
P-31	J-31	J-32	123	110	PVC	110	uPVC	Retained
P-32	J-32	J-33	17	110	PVC	110	uPVC	Retained
P-33	J-33	J-34	12	140	PVC	140	uPVC	Retained
P-34	J-34	J-35	31.5	110	PVC	110	uPVC	Retained
P-35	J-35	J-36	26.5	110	PVC	110	uPVC	Retained
P-36	J-36	J-37	7.5	160	PVC	160	uPVC	Retained
P-37	J-37	J-38	73	110	PVC	110	uPVC	Retained
P-38	J-38	J-39	244	110	PVC	110	uPVC	Retained
P-39	J-35	J-25	79	125	PVC	125	uPVC	Retained
P-4	J-3	J-4	91.5	355	PVC	355	uPVC	Retained
P-40	J-24	J-34	87	110	PVC	110	uPVC	Retained
P-41	J-32	J-23	90.5	110	PVC	110	uPVC	Retained
P-42	J-37	J-40	27	125	PVC	125	uPVC	Retained
P-43	J-40	J-41	30.5	110	PVC	110	uPVC	Retained
P-44	J-41	J-42	58.5	110	PVC	110	uPVC	Retained
P-45	J-42	J-43	31	110	PVC	110	uPVC	Retained
P-46	J-43	J-44	68	110	PVC	110	uPVC	Retained
P-47	J-44	J-45	7.5	110	PVC	110	uPVC	Retained
P-48	J-45	J-46	62	110	PVC	110	uPVC	Retained
P-49	J-45	J-47	29.5	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	342	315	PVC	315	uPVC	Retained
P-50	J-47	J-48	42.5	110	PVC	110	uPVC	Retained
P-51	J-47	J-49	74.5	110	PVC	110	uPVC	Retained
P-53	J-50	J-51	15	160	PVC	160	uPVC	Retained
P-54	J-50	J-52	53	110	PVC	110	uPVC	Retained
P-55	J-52	J-53	17.5	110	PVC	110	uPVC	Retained
P-56	J-52	J-54	32	110	PVC	110	uPVC	Retained
P-57	J-49	J-55	7.5	160	PVC	160	uPVC	Retained
P-58	J-55	J-50	33.5	160	PVC	160	uPVC	Retained
P-59	J-54	J-55	46.5	110	PVC	110	uPVC	Retained
P-6	J-5	J-6	43	280	PVC	280	uPVC	Retained
P-60	J-49	J-56	28	160	PVC	160	uPVC	Retained
P-61	J-56	J-57	47.5	110	PVC	110	uPVC	Retained
P-62	J-57	J-54	31.5	110	PVC	110	uPVC	Retained
P-63	J-57	J-58	25.5	110	PVC	110	uPVC	Retained
P-64	J-58	J-59	19	110	PVC	110	uPVC	Retained
P-65	J-56	J-60	25	160	PVC	160	uPVC	Retained
P-66	J-60	J-58	49	110	PVC	110	uPVC	Retained
P-67	J-60	J-61	12.5	160	PVC	160	uPVC	Retained
P-68	J-61	J-41	99	110	PVC	110	uPVC	Retained
P-69	J-61	J-62	33	160	PVC	160	uPVC	Retained
P-7	J-6	J-7	42.5	225	PVC	225	uPVC	Retained

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-70	J-62	J-63	56.5	110	PVC	110	uPVC	Retained
P-71	J-62	J-64	40.5	160	PVC	160	uPVC	Retained
P-72	J-64	J-65	67	110	PVC	110	uPVC	Retained
P-73	J-64	J-66	19.5	160	PVC	160	uPVC	Retained
P-74	J-66	J-67	40	125	PVC	125	uPVC	Retained
P-75	J-67	J-68	139	125	PVC	125	uPVC	Retained
P-76	J-68	J-69	32.5	125	PVC	125	uPVC	Retained
P-77	J-69	J-29	39.5	160	PVC	160	uPVC	Retained
P-78	J-68	J-70	54.5	125	PVC	125	uPVC	Retained
P-79	J-70	J-71	107.5	110	PVC	110	uPVC	Retained
P-8	J-7	J-8	64	200	PVC	200	uPVC	Retained
P-80	J-70	J-72	53	125	PVC	125	uPVC	Retained
P-81	J-72	J-73	65	110	PVC	110	uPVC	Retained
P-82	J-72	J-74	52.5	125	PVC	125	uPVC	Retained
P-83	J-74	J-75	47	110	PVC	110	uPVC	Retained
P-84	J-74	J-76	76	125	PVC	125	uPVC	Retained
P-85	J-77	J-78	53.5	110	PVC	110	uPVC	Retained
P-86	J-78	J-79	70.5	110	PVC	110	uPVC	Retained
P-87	J-79	J-80	42.5	125	PVC	125	uPVC	Retained
P-88	J-79	J-81	20	125	PVC	125	uPVC	Retained
P-89	J-81	J-82	11.5	160	PVC	160	uPVC	Retained
P-9	J-8	J-9	40.5	200	PVC	200	uPVC	Retained
P-90	J-82	J-83	21.5	140	PVC	140	uPVC	Retained
P-91	J-83	J-84	177	160	PVC	160	uPVC	Retained
P-92	J-84	J-85	73	160	PVC	160	uPVC	Retained
P-93	J-85	J-86	77.5	200	PVC	200	uPVC	Retained
P-94	J-86	J-87	33	110	PVC	110	uPVC	Retained
P-95	J-85	J-88	95	140	PVC	140	uPVC	Retained
P-96	J-89	J-90	61	125	PVC	125	uPVC	Retained
P-97	J-91	J-92	69	110	PVC	110	uPVC	Retained
P-98	J-93	J-94	144.5	110	PVC	110	uPVC	Retained
P-99	J-94	J-95	74.5	110	PVC	110	uPVC	Retained
PP-163	PJ-149	PJ-150	70.5	#N/A	#N/A	110	HDPE	New
PP-164	PJ-150	PJ-151	24	#N/A	#N/A	110	HDPE	New
PP-165	PJ-151	PJ-152	132.5	#N/A	#N/A	110	HDPE	New
PP-166	PJ-152	PJ-153	137	#N/A	#N/A	110	HDPE	New
PP-167	PJ-153	PJ-154	156.5	#N/A	#N/A	110	HDPE	New
PP-168	PJ-154	PJ-151	69	#N/A	#N/A	110	HDPE	New
PP-169	PJ-154	PJ-155	21.5	#N/A	#N/A	110	HDPE	New
PP-170	PJ-153	PJ-156	87	#N/A	#N/A	110	HDPE	New
PP-171	PJ-156	PJ-157	91	#N/A	#N/A	110	HDPE	New
PP-172	PJ-156	PJ-158	125	#N/A	#N/A	110	HDPE	New
PP-173	PJ-158	J-39	39.5	#N/A	#N/A	125	HDPE	New
PP-174	J-39	PJ-159	267.5	#N/A	#N/A	125	HDPE	New
PP-175	PJ-159	PJ-160	286	#N/A	#N/A	140	HDPE	New
PP-176	PJ-160	PJ-161	277.5	#N/A	#N/A	200	HDPE	New
PP-177	PJ-161	PJ-162	202.5	#N/A	#N/A	200	HDPE	New
PP-178	PJ-162	PJ-163	128.5	#N/A	#N/A	200	HDPE	New
PP-179	PJ-163	PJ-164	201.5	#N/A	#N/A	315	HDPE	New
PP-180	PJ-164	PJ-165	402.5	#N/A	#N/A	250	HDPE	New
PP-181	PJ-165	PJ-166	176.5	#N/A	#N/A	250	HDPE	New
PP-182	PJ-166	PJ-167	185.5	#N/A	#N/A	250	HDPE	New
PP-183	PJ-167	PJ-168	344.5	#N/A	#N/A	250	HDPE	New
PP-184	PJ-168	PJ-169	19	#N/A	#N/A	200	HDPE	New
PP-185	PJ-169	PJ-170	18.5	#N/A	#N/A	180	HDPE	New
PP-186	PJ-170	PJ-171	47	#N/A	#N/A	140	HDPE	New
PP-187	PJ-171	PJ-172	89	#N/A	#N/A	110	HDPE	New
PP-188	PJ-172	PJ-173	21	#N/A	#N/A	110	HDPE	New
PP-189	PJ-173	PJ-174	47	#N/A	#N/A	110	HDPE	New
PP-190	PJ-174	PJ-175	50.5	#N/A	#N/A	110	HDPE	New
PP-191	PJ-175	PJ-176	19.5	#N/A	#N/A	110	HDPE	New
PP-192	PJ-176	PJ-177	78	#N/A	#N/A	110	HDPE	New
PP-193	PJ-177	PJ-178	7.5	#N/A	#N/A	110	HDPE	New
PP-194	PJ-178	PJ-179	36	#N/A	#N/A	110	HDPE	New
PP-195	PJ-179	PJ-180	93	#N/A	#N/A	110	HDPE	New

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-196	PJ-180	PJ-181	5.5	#N/A	#N/A	110	HDPE	New
PP-197	PJ-181	PJ-182	25.5	#N/A	#N/A	110	HDPE	New
PP-198	PJ-182	PJ-183	46.5	#N/A	#N/A	110	HDPE	New
PP-199	PJ-183	PJ-184	5	#N/A	#N/A	110	HDPE	New
PP-200	PJ-184	PJ-185	45.5	#N/A	#N/A	110	HDPE	New
PP-201	PJ-185	PJ-181	24.5	#N/A	#N/A	110	HDPE	New
PP-202	PJ-185	PJ-186	23	#N/A	#N/A	110	HDPE	New
PP-203	PJ-175	PJ-187	27	#N/A	#N/A	110	HDPE	New
PP-204	PJ-176	PJ-188	69.5	#N/A	#N/A	110	HDPE	New
PP-205	PJ-188	PJ-189	13	#N/A	#N/A	110	HDPE	New
PP-206	PJ-189	PJ-190	15.5	#N/A	#N/A	110	HDPE	New
PP-207	PJ-190	PJ-177	14	#N/A	#N/A	110	HDPE	New
PP-208	PJ-188	PJ-191	34.5	#N/A	#N/A	110	HDPE	New
PP-209	PJ-189	PJ-192	26.5	#N/A	#N/A	110	HDPE	New
PP-210	PJ-190	PJ-193	29	#N/A	#N/A	110	HDPE	New
PP-211	PJ-174	PJ-194	105.5	#N/A	#N/A	110	HDPE	New
PP-212	PJ-194	PJ-184	13	#N/A	#N/A	110	HDPE	New
PP-213	PJ-184	PJ-195	44.5	#N/A	#N/A	110	HDPE	New
PP-214	PJ-195	PJ-196	30	#N/A	#N/A	110	HDPE	New
PP-215	PJ-196	PJ-197	12	#N/A	#N/A	110	HDPE	New
PP-216	PJ-197	PJ-194	40.5	#N/A	#N/A	110	HDPE	New
PP-217	PJ-197	PJ-198	21	#N/A	#N/A	110	HDPE	New
PP-218	PJ-198	PJ-199	56.5	#N/A	#N/A	110	HDPE	New
PP-219	PJ-199	PJ-172	16	#N/A	#N/A	110	HDPE	New
PP-220	PJ-198	PJ-200	24.5	#N/A	#N/A	110	HDPE	New
PP-221	PJ-200	PJ-173	64.5	#N/A	#N/A	110	HDPE	New
PP-222	PJ-200	PJ-201	8.5	#N/A	#N/A	110	HDPE	New
PP-223	PJ-199	PJ-202	66.5	#N/A	#N/A	110	HDPE	New
PP-224	PJ-202	PJ-171	62.5	#N/A	#N/A	110	HDPE	New
PP-225	PJ-202	PJ-203	31.5	#N/A	#N/A	110	HDPE	New
PP-226	PJ-203	PJ-170	56	#N/A	#N/A	140	HDPE	New
PP-227	PJ-203	PJ-204	31	#N/A	#N/A	110	HDPE	New
PP-228	PJ-204	PJ-205	23	#N/A	#N/A	140	HDPE	New
PP-229	PJ-205	PJ-169	84	#N/A	#N/A	110	HDPE	New
PP-230	PJ-168	PJ-206	85.5	#N/A	#N/A	140	HDPE	New
PP-231	PJ-206	PJ-205	15	#N/A	#N/A	110	HDPE	New
PP-232	PJ-202	PJ-207	51.5	#N/A	#N/A	110	HDPE	New
PP-233	PJ-207	PJ-208	19	#N/A	#N/A	110	HDPE	New
PP-234	PJ-208	PJ-204	22.5	#N/A	#N/A	180	HDPE	New
PP-235	PJ-208	PJ-209	8.5	#N/A	#N/A	140	HDPE	New
PP-236	PJ-209	PJ-210	38	#N/A	#N/A	110	HDPE	New
PP-237	PJ-210	PJ-211	22	#N/A	#N/A	110	HDPE	New
PP-238	PJ-211	PJ-207	35	#N/A	#N/A	110	HDPE	New
PP-239	PJ-211	PJ-196	19	#N/A	#N/A	110	HDPE	New
PP-240	PJ-206	PJ-212	150.5	#N/A	#N/A	110	HDPE	New
PP-241	PJ-212	PJ-213	19	#N/A	#N/A	110	HDPE	New
PP-242	PJ-213	PJ-214	24	#N/A	#N/A	110	HDPE	New
PP-243	PJ-214	PJ-215	25	#N/A	#N/A	110	HDPE	New
PP-244	PJ-215	PJ-216	64	#N/A	#N/A	110	HDPE	New
PP-245	PJ-216	PJ-217	14.5	#N/A	#N/A	110	HDPE	New
PP-246	PJ-217	PJ-218	12.5	#N/A	#N/A	110	HDPE	New
PP-247	PJ-218	PJ-219	8	#N/A	#N/A	110	HDPE	New
PP-248	PJ-219	PJ-220	25.5	#N/A	#N/A	110	HDPE	New
PP-249	PJ-220	PJ-221	34.5	#N/A	#N/A	110	HDPE	New
PP-250	PJ-221	PJ-222	27	#N/A	#N/A	110	HDPE	New
PP-251	PJ-222	PJ-223	44.5	#N/A	#N/A	110	HDPE	New
PP-252	PJ-223	PJ-224	18.5	#N/A	#N/A	110	HDPE	New
PP-253	PJ-224	PJ-225	49	#N/A	#N/A	110	HDPE	New
PP-254	PJ-225	PJ-226	201.5	#N/A	#N/A	110	HDPE	New
PP-255	PJ-226	PJ-227	9.5	#N/A	#N/A	110	HDPE	New
PP-256	PJ-227	PJ-179	123	#N/A	#N/A	110	HDPE	New
PP-257	PJ-227	PJ-228	89	#N/A	#N/A	110	HDPE	New
PP-258	PJ-228	PJ-229	20	#N/A	#N/A	110	HDPE	New
PP-259	PJ-228	PJ-230	8.5	#N/A	#N/A	110	HDPE	New
PP-260	PJ-230	PJ-231	16	#N/A	#N/A	110	HDPE	New

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-261	PJ-230	PJ-232	14.5	#N/A	#N/A	110	HDPE	New
PP-262	PJ-232	PJ-233	15.5	#N/A	#N/A	110	HDPE	New
PP-263	PJ-232	PJ-234	19	#N/A	#N/A	110	HDPE	New
PP-264	PJ-234	PJ-235	21.5	#N/A	#N/A	110	HDPE	New
PP-265	PJ-235	PJ-236	21.5	#N/A	#N/A	110	HDPE	New
PP-266	PJ-236	PJ-182	15	#N/A	#N/A	110	HDPE	New
PP-267	PJ-237	PJ-236	28	#N/A	#N/A	110	HDPE	New
PP-268	PJ-235	PJ-180	72.5	#N/A	#N/A	110	HDPE	New
PP-269	PJ-182	PJ-238	67.5	#N/A	#N/A	110	HDPE	New
PP-270	PJ-238	PJ-239	32	#N/A	#N/A	110	HDPE	New
PP-271	PJ-239	PJ-195	14.5	#N/A	#N/A	110	HDPE	New
PP-272	PJ-239	PJ-183	50	#N/A	#N/A	110	HDPE	New
PP-273	PJ-238	PJ-240	25.5	#N/A	#N/A	110	HDPE	New
PP-274	PJ-240	PJ-241	28.5	#N/A	#N/A	110	HDPE	New
PP-275	PJ-241	PJ-242	33	#N/A	#N/A	110	HDPE	New
PP-276	PJ-242	PJ-243	18	#N/A	#N/A	110	HDPE	New
PP-277	PJ-243	PJ-234	9	#N/A	#N/A	110	HDPE	New
PP-278	PJ-244	PJ-242	16.5	#N/A	#N/A	110	HDPE	New
PP-279	PJ-242	PJ-245	33.5	#N/A	#N/A	110	HDPE	New
PP-280	PJ-246	PJ-247	20.5	#N/A	#N/A	110	HDPE	New
PP-281	PJ-247	PJ-243	24.5	#N/A	#N/A	110	HDPE	New
PP-282	PJ-247	PJ-248	15	#N/A	#N/A	110	HDPE	New
PP-283	PJ-225	PJ-249	32.5	#N/A	#N/A	110	HDPE	New
PP-284	PJ-249	PJ-241	20	#N/A	#N/A	110	HDPE	New
PP-285	PJ-249	PJ-250	11.5	#N/A	#N/A	110	HDPE	New
PP-286	PJ-250	PJ-251	60	#N/A	#N/A	110	HDPE	New
PP-287	PJ-251	PJ-252	12.5	#N/A	#N/A	110	HDPE	New
PP-288	PJ-252	PJ-253	12.5	#N/A	#N/A	110	HDPE	New
PP-289	PJ-253	PJ-254	17	#N/A	#N/A	110	HDPE	New
PP-290	PJ-254	PJ-210	23	#N/A	#N/A	110	HDPE	New
PP-291	PJ-255	PJ-254	18	#N/A	#N/A	110	HDPE	New
PP-292	PJ-254	PJ-256	10.5	#N/A	#N/A	110	HDPE	New
PP-293	PJ-253	PJ-257	53.5	#N/A	#N/A	110	HDPE	New
PP-294	PJ-252	PJ-258	11	#N/A	#N/A	110	HDPE	New
PP-295	PJ-251	PJ-259	14.5	#N/A	#N/A	110	HDPE	New
PP-296	PJ-240	PJ-260	17.5	#N/A	#N/A	110	HDPE	New
PP-297	PJ-209	PJ-261	8.5	#N/A	#N/A	125	HDPE	New
PP-298	PJ-261	PJ-262	29.5	#N/A	#N/A	110	HDPE	New
PP-299	PJ-262	PJ-263	30.5	#N/A	#N/A	110	HDPE	New
PP-300	PJ-261	PJ-264	23.5	#N/A	#N/A	110	HDPE	New
PP-301	PJ-264	PJ-265	74.5	#N/A	#N/A	110	HDPE	New
PP-302	PJ-264	PJ-266	15.5	#N/A	#N/A	110	HDPE	New
PP-303	PJ-266	PJ-262	30.5	#N/A	#N/A	110	HDPE	New
PP-304	PJ-266	PJ-267	45	#N/A	#N/A	110	HDPE	New
PP-305	PJ-267	PJ-268	14.5	#N/A	#N/A	110	HDPE	New
PP-306	PJ-268	PJ-269	29.5	#N/A	#N/A	110	HDPE	New
PP-307	PJ-268	PJ-270	23	#N/A	#N/A	110	HDPE	New
PP-308	PJ-267	PJ-271	17.5	#N/A	#N/A	110	HDPE	New
PP-309	PJ-271	PJ-272	46	#N/A	#N/A	110	HDPE	New
PP-310	PJ-212	PJ-273	68	#N/A	#N/A	110	HDPE	New
PP-311	PJ-273	PJ-274	27.5	#N/A	#N/A	110	HDPE	New
PP-312	PJ-274	PJ-271	6.5	#N/A	#N/A	110	HDPE	New
PP-313	PJ-274	PJ-275	9.5	#N/A	#N/A	110	HDPE	New
PP-314	PJ-275	PJ-276	24	#N/A	#N/A	110	HDPE	New
PP-315	PJ-213	PJ-273	50	#N/A	#N/A	110	HDPE	New
PP-316	PJ-273	PJ-277	39.5	#N/A	#N/A	110	HDPE	New
PP-317	PJ-277	PJ-275	7.5	#N/A	#N/A	110	HDPE	New
PP-318	PJ-214	PJ-278	31	#N/A	#N/A	110	HDPE	New
PP-319	PJ-215	PJ-279	68.5	#N/A	#N/A	110	HDPE	New
PP-320	PJ-279	PJ-277	31.5	#N/A	#N/A	110	HDPE	New
PP-321	PJ-279	PJ-280	28	#N/A	#N/A	110	HDPE	New
PP-322	PJ-280	PJ-281	13	#N/A	#N/A	110	HDPE	New
PP-323	PJ-281	PJ-282	43.5	#N/A	#N/A	110	HDPE	New
PP-324	PJ-281	PJ-283	16.5	#N/A	#N/A	110	HDPE	New
PP-325	PJ-283	PJ-284	30	#N/A	#N/A	110	HDPE	New

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-326	PJ-284	PJ-250	34.5	#N/A	#N/A	110	HDPE	New
PP-327	PJ-285	PJ-284	32	#N/A	#N/A	110	HDPE	New
PP-328	PJ-280	PJ-221	62	#N/A	#N/A	110	HDPE	New
PP-329	PJ-283	PJ-222	65.5	#N/A	#N/A	110	HDPE	New
PP-330	PJ-217	PJ-286	9	#N/A	#N/A	110	HDPE	New
PP-331	PJ-218	PJ-287	16.5	#N/A	#N/A	110	HDPE	New
PP-332	PJ-219	PJ-288	15.5	#N/A	#N/A	110	HDPE	New
PP-333	PJ-220	PJ-289	57.5	#N/A	#N/A	110	HDPE	New
PP-334	PJ-289	PJ-290	18	#N/A	#N/A	110	HDPE	New
PP-335	PJ-289	PJ-291	36.5	#N/A	#N/A	110	HDPE	New
PP-336	PJ-291	PJ-292	99	#N/A	#N/A	110	HDPE	New
PP-337	PJ-292	PJ-293	40.5	#N/A	#N/A	110	HDPE	New
PP-338	PJ-291	PJ-294	37.5	#N/A	#N/A	110	HDPE	New
PP-339	PJ-294	PJ-295	46.5	#N/A	#N/A	110	HDPE	New
PP-340	PJ-295	PJ-223	110	#N/A	#N/A	110	HDPE	New
PP-341	PJ-294	PJ-296	52	#N/A	#N/A	110	HDPE	New
PP-342	PJ-296	PJ-297	45.5	#N/A	#N/A	110	HDPE	New
PP-343	PJ-297	PJ-298	62.5	#N/A	#N/A	110	HDPE	New
PP-344	PJ-298	PJ-299	37.5	#N/A	#N/A	110	HDPE	New
PP-345	PJ-299	PJ-295	158.5	#N/A	#N/A	110	HDPE	New
PP-346	PJ-296	PJ-300	134.5	#N/A	#N/A	110	HDPE	New
PP-347	PJ-300	PJ-301	36.5	#N/A	#N/A	110	HDPE	New
PP-348	PJ-301	PJ-293	72	#N/A	#N/A	110	HDPE	New
PP-349	PJ-301	J-145	85.5	#N/A	#N/A	110	HDPE	New
PP-350	J-145	PJ-302	60	#N/A	#N/A	110	HDPE	New
PP-351	J-145	PJ-303	41.5	#N/A	#N/A	110	HDPE	New
PP-352	PJ-303	PJ-304	18	#N/A	#N/A	110	HDPE	New
PP-353	PJ-304	PJ-305	36.5	#N/A	#N/A	110	HDPE	New
PP-354	PJ-305	PJ-300	44	#N/A	#N/A	110	HDPE	New
PP-355	PJ-305	PJ-306	100	#N/A	#N/A	110	HDPE	New
PP-356	PJ-306	PJ-297	32	#N/A	#N/A	110	HDPE	New
PP-357	PJ-304	PJ-307	99	#N/A	#N/A	110	HDPE	New
PP-358	PJ-307	PJ-306	37	#N/A	#N/A	110	HDPE	New
PP-359	PJ-298	PJ-308	31.5	#N/A	#N/A	110	HDPE	New
PP-360	PJ-308	PJ-307	28	#N/A	#N/A	110	HDPE	New
PP-361	PJ-303	PJ-309	39	#N/A	#N/A	110	HDPE	New
PP-362	PJ-309	PJ-308	64.5	#N/A	#N/A	110	HDPE	New
PP-363	PJ-308	PJ-310	26.5	#N/A	#N/A	110	HDPE	New
PP-364	PJ-310	PJ-309	68	#N/A	#N/A	110	HDPE	New
PP-365	J-144	PJ-310	14.5	#N/A	#N/A	110	HDPE	New
PP-366	PJ-310	PJ-311	51	#N/A	#N/A	110	HDPE	New
PP-367	PJ-311	J-144	49	#N/A	#N/A	110	HDPE	New
PP-368	PJ-311	PJ-312	15.5	#N/A	#N/A	110	HDPE	New
PP-369	PJ-312	PJ-299	48	#N/A	#N/A	110	HDPE	New
PP-370	PJ-312	J-141	58	#N/A	#N/A	110	HDPE	New
PP-371	J-141	J-136	33.5	#N/A	#N/A	110	HDPE	New
PP-372	J-136	J-126	40	#N/A	#N/A	110	HDPE	New
PP-373	J-126	J-123	73	#N/A	#N/A	110	HDPE	New
PP-374	J-123	J-119	69	#N/A	#N/A	110	HDPE	New
PP-375	J-119	J-107	86.5	#N/A	#N/A	110	HDPE	New
PP-376	J-107	J-105	85.5	#N/A	#N/A	110	HDPE	New
PP-377	J-105	J-104	31.5	#N/A	#N/A	110	HDPE	New
PP-378	J-104	J-100	33.5	#N/A	#N/A	110	HDPE	New
PP-379	J-100	PJ-313	88	#N/A	#N/A	110	HDPE	New
PP-380	PJ-313	J-99	58	#N/A	#N/A	110	HDPE	New
PP-381	J-99	J-97	49	#N/A	#N/A	110	HDPE	New
PP-382	J-97	J-93	55	#N/A	#N/A	110	HDPE	New
PP-383	J-93	PJ-314	491	#N/A	#N/A	125	HDPE	New
PP-384	PJ-314	PJ-315	121.5	#N/A	#N/A	110	HDPE	New
PP-385	PJ-315	J-95	401	#N/A	#N/A	125	HDPE	New
PP-386	PJ-316	J-112	88.5	#N/A	#N/A	110	HDPE	New
PP-387	J-112	J-147	86.5			110	HDPE	Replacement
PP-388	PJ-317	J-111	42.5	#N/A	#N/A	110	HDPE	New
PP-389	J-110	PJ-318	36.5	#N/A	#N/A	110	HDPE	New
PP-390	J-108	PJ-319	64	#N/A	#N/A	110	HDPE	New

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-391	J-146	PJ-320	310	#N/A	#N/A	125	HDPE	New
PP-392	PJ-320	PJ-321	73	#N/A	#N/A	125	HDPE	New
PP-393	PJ-321	PJ-322	93.5	#N/A	#N/A	110	HDPE	New
PP-394	PJ-322	PJ-315	114	#N/A	#N/A	110	HDPE	New
PP-395	PJ-315	PJ-323	35	#N/A	#N/A	125	HDPE	New
PP-396	PJ-323	PJ-324	117	#N/A	#N/A	110	HDPE	New
PP-397	PJ-324	PJ-322	31	#N/A	#N/A	125	HDPE	New
PP-398	PJ-322	J-113	388.5	#N/A	#N/A	125	HDPE	New
PP-399	PJ-321	PJ-325	33	#N/A	#N/A	125	HDPE	New
PP-400	PJ-325	PJ-324	92	#N/A	#N/A	110	HDPE	New
PP-401	PJ-324	PJ-326	74	#N/A	#N/A	125	HDPE	New
PP-402	PJ-326	PJ-327	99.5	#N/A	#N/A	110	HDPE	New
PP-403	PJ-327	PJ-325	72.5	#N/A	#N/A	125	HDPE	New
PP-404	PJ-327	PJ-328	40	#N/A	#N/A	110	HDPE	New
PP-405	PJ-328	PJ-329	40.5	#N/A	#N/A	110	HDPE	New
PP-406	PJ-329	PJ-330	107	#N/A	#N/A	110	HDPE	New
PP-407	PJ-330	PJ-331	41.5	#N/A	#N/A	110	HDPE	New
PP-408	PJ-331	PJ-328	102	#N/A	#N/A	110	HDPE	New
PP-409	PJ-326	PJ-331	38	#N/A	#N/A	110	HDPE	New
PP-410	PJ-331	PJ-332	113	#N/A	#N/A	110	HDPE	New
PP-411	PJ-332	PJ-333	38.5	#N/A	#N/A	110	HDPE	New
PP-412	PJ-333	PJ-330	113.5	#N/A	#N/A	110	HDPE	New
PP-413	PJ-332	PJ-334	35.5	#N/A	#N/A	110	HDPE	New
PP-414	PJ-334	PJ-326	115	#N/A	#N/A	110	HDPE	New
PP-415	PJ-334	PJ-335	41	#N/A	#N/A	125	HDPE	New
PP-416	PJ-335	PJ-323	31	#N/A	#N/A	140	HDPE	New
PP-417	PJ-323	PJ-336	122.5	#N/A	#N/A	110	HDPE	New
PP-418	PJ-336	PJ-314	32	#N/A	#N/A	110	HDPE	New
PP-419	PJ-314	PJ-337	63	#N/A	#N/A	125	HDPE	New
PP-420	PJ-337	PJ-338	111.5	#N/A	#N/A	110	HDPE	New
PP-421	PJ-337	PJ-339	107	#N/A	#N/A	140	HDPE	New
PP-422	PJ-339	PJ-340	45.5	#N/A	#N/A	160	HDPE	New
PP-423	PJ-340	PJ-341	48	#N/A	#N/A	160	HDPE	New
PP-424	PJ-341	PJ-336	29.5	#N/A	#N/A	140	HDPE	New
PP-425	PJ-341	PJ-335	126	#N/A	#N/A	110	HDPE	New
PP-426	PJ-334	PJ-342	104	#N/A	#N/A	125	HDPE	New
PP-427	PJ-342	PJ-340	26	#N/A	#N/A	110	HDPE	New
PP-428	PJ-340	PJ-343	30	#N/A	#N/A	110	HDPE	New
PP-429	PJ-343	PJ-344	32.5	#N/A	#N/A	110	HDPE	New
PP-430	PJ-344	PJ-342	32	#N/A	#N/A	110	HDPE	New
PP-431	PJ-332	PJ-344	103	#N/A	#N/A	125	HDPE	New
PP-432	PJ-344	PJ-345	34.5	#N/A	#N/A	140	HDPE	New
PP-433	PJ-345	PJ-333	101.5	#N/A	#N/A	140	HDPE	New
PP-434	PJ-345	PJ-346	71	#N/A	#N/A	180	HDPE	New
PP-435	PJ-346	PJ-339	61	#N/A	#N/A	200	HDPE	New
PP-436	PJ-346	PJ-347	33.5	#N/A	#N/A	315	HDPE	New
PP-437	PJ-347	PJ-348	60	#N/A	#N/A	110	HDPE	New
PP-438	PJ-347	PJ-349	140	#N/A	#N/A	315	HDPE	New
PP-439	PJ-349	PJ-350	496	#N/A	#N/A	160	HDPE	New
PP-440	PJ-350	PJ-351	154	#N/A	#N/A	110	HDPE	New
PP-441	PJ-350	PJ-352	254	#N/A	#N/A	160	HDPE	New
PP-442	PJ-352	PJ-353	250.5	#N/A	#N/A	140	HDPE	New
PP-443	PJ-353	PJ-164	377.5	#N/A	#N/A	140	HDPE	New
PP-444	PJ-163	PJ-354	419.5	#N/A	#N/A	200	HDPE	New
PP-445	PJ-354	PJ-355	224.5	#N/A	#N/A	160	HDPE	New
PP-446	PJ-355	PJ-356	42.5	#N/A	#N/A	125	HDPE	New
PP-447	PJ-356	PJ-357	100.5	#N/A	#N/A	125	HDPE	New
PP-448	PJ-357	PJ-354	138	#N/A	#N/A	180	HDPE	New
PP-449	PJ-356	PJ-358	83	#N/A	#N/A	160	HDPE	New
PP-450	PJ-358	PJ-359	103.5	#N/A	#N/A	140	HDPE	New
PP-451	PJ-359	PJ-360	21	#N/A	#N/A	110	HDPE	New
PP-452	PJ-357	PJ-359	76	#N/A	#N/A	140	HDPE	New
PP-453	PJ-358	J-2	168.5	#N/A	#N/A	200	HDPE	New
PP-454	J-3	PJ-361	303.5	#N/A	#N/A	180	HDPE	New
PP-455	PJ-361	PJ-355	59.5	#N/A	#N/A	140	HDPE	New

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-456	PJ-361	PJ-362	22	#N/A	#N/A	160	HDPE	New
PP-457	PJ-362	PJ-363	91	#N/A	#N/A	110	HDPE	New
PP-458	PJ-362	PJ-364	56.5	#N/A	#N/A	140	HDPE	New
PP-459	PJ-364	PJ-365	36	#N/A	#N/A	140	HDPE	New
PP-460	PJ-365	J-86	310	#N/A	#N/A	200	HDPE	New
PP-461	J-86	PJ-366	86	#N/A	#N/A	110	HDPE	New
PP-462	J-87	PJ-367	73	#N/A	#N/A	110	HDPE	New
PP-463	PJ-368	PJ-364	48	#N/A	#N/A	110	HDPE	New
PP-464	PJ-364	PJ-369	90	#N/A	#N/A	110	HDPE	New
PP-465	PJ-370	PJ-365	52.5	#N/A	#N/A	110	HDPE	New
PP-466	PJ-365	PJ-371	308	#N/A	#N/A	180	HDPE	New
PP-467	PJ-371	J-4	14	#N/A	#N/A	355	HDPE	New
PP-468	PJ-371	PJ-372	40.5	#N/A	#N/A	250	HDPE	New
PP-469	PJ-372	J-17	130.5	#N/A	#N/A	180	HDPE	New
PP-470	J-17	PJ-373	137.5	#N/A	#N/A	110	HDPE	New
PP-471	PJ-373	PJ-372	66	#N/A	#N/A	250	HDPE	New
PP-472	PJ-373	PJ-374	337.5	#N/A	#N/A	160	HDPE	New
PP-473	PJ-374	PJ-375	143.5	#N/A	#N/A	125	HDPE	New
PP-474	PJ-375	PJ-376	48	#N/A	#N/A	180	HDPE	New
PP-475	PJ-376	J-69	109.5	#N/A	#N/A	140	HDPE	New
PP-476	PJ-376	PJ-373	149.5	#N/A	#N/A	160	HDPE	New
PP-477	PJ-377	PJ-378	88	#N/A	#N/A	110	HDPE	New
PP-478	PJ-378	PJ-379	21.5	#N/A	#N/A	110	HDPE	New
PP-479	PJ-379	PJ-375	36.5	#N/A	#N/A	160	HDPE	New
PP-480	PJ-379	PJ-380	148	#N/A	#N/A	125	HDPE	New

BOQ for Z14								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-481	PJ-380	PJ-374	37.5	#N/A	#N/A	180	HDPE	New
PP-482	PJ-380	J-83	13	#N/A	#N/A	200	HDPE	New
PP-483	J-89	J-81	25	#N/A	#N/A	125	HDPE	New
PP-484	J-82	PJ-381	154.5	#N/A	#N/A	125	HDPE	New
PP-485	PJ-381	PJ-378	16	#N/A	#N/A	110	HDPE	New
PP-486	PJ-381	PJ-382	103.5	#N/A	#N/A	125	HDPE	New
PP-487	PJ-382	J-76	151	#N/A	#N/A	125	HDPE	New
PP-488	J-53	J-51	47	#N/A	#N/A	110	HDPE	New
PP-489	J-51	J-46	97	#N/A	#N/A	110	HDPE	New
PP-490	J-48	J-43	29.5	#N/A	#N/A	110	HDPE	New
PP-491	PJ-383	J-67	15.5	#N/A	#N/A	110	HDPE	New
PP-492	J-67	PJ-384	19.5	#N/A	#N/A	110	HDPE	New
PP-493	J-27	J-31	19	#N/A	#N/A	110	HDPE	New
PP-494	J-44	PJ-385	37	#N/A	#N/A	110	HDPE	New
PP-495	PJ-385	J-42	61.5	#N/A	#N/A	110	HDPE	New
PP-496	J-41	J-65	39	#N/A	#N/A	110	HDPE	New
PP-497	J-65	J-33	27	#N/A	#N/A	140	HDPE	New
PP-498	J-66	PJ-386	15.5	#N/A	#N/A	110	HDPE	New
PP-499	PJ-385	PJ-387	34.5	#N/A	#N/A	110	HDPE	New
PP-500	PJ-385	PJ-388	23.5	#N/A	#N/A	110	HDPE	New
PP-501	PJ-388	J-40	118	#N/A	#N/A	110	HDPE	New
PP-502	PJ-388	PJ-389	54.5	#N/A	#N/A	110	HDPE	New
PP-503	PJ-389	J-38	52.5	#N/A	#N/A	110	HDPE	New
PP-504	PJ-389	PJ-158	247	#N/A	#N/A	110	HDPE	New
PP-505	J-37	PJ-390	77	#N/A	#N/A	110	HDPE	New
PP-506	J-36	J-26	76.5	#N/A	#N/A	125	HDPE	New
PP-507	J-26	J-16	50	#N/A	#N/A	200	HDPE	New
PP-508	J-16	J-15	48	#N/A	#N/A	125	HDPE	New
PP-509	J-15	J-14	47.5	#N/A	#N/A	110	HDPE	New
PP-510	J-14	PJ-391	44	#N/A	#N/A	140	HDPE	New
PP-511	PJ-391	PJ-159	23.5	#N/A	#N/A	160	HDPE	New
PP-512	PJ-391	J-9	204.5	#N/A	#N/A	125	HDPE	New
PP-513	J-10	PJ-392	101.5	#N/A	#N/A	180	HDPE	New
PP-514	PJ-392	PJ-160	39	#N/A	#N/A	160	HDPE	New
PP-515	PJ-393	PJ-392	21	#N/A	#N/A	110	HDPE	New
PP-516	PJ-392	PJ-394	20.5	#N/A	#N/A	110	HDPE	New
PP-517	PJ-150	PJ-395	133.5	#N/A	#N/A	110	HDPE	New
PP-518	PJ-395	PJ-396	51	#N/A	#N/A	110	HDPE	New
PP-519	PJ-396	PJ-397	20.5	#N/A	#N/A	110	HDPE	New
PP-520	PJ-397	PJ-398	158	#N/A	#N/A	110	HDPE	New
PP-521	PJ-398	J-46	47.5	#N/A	#N/A	110	HDPE	New
PP-522	PJ-395	PJ-399	169	#N/A	#N/A	110	HDPE	New
PP-523	PJ-396	PJ-400	169.5	#N/A	#N/A	110	HDPE	New
PP-524	PJ-397	PJ-401	166.5	#N/A	#N/A	110	HDPE	New
PP-525	PJ-398	PJ-402	74	#N/A	#N/A	110	HDPE	New
PP-526	J-28	J-30	28	#N/A	#N/A	110	HDPE	New
PP-527	J-80	J-90	33	#N/A	#N/A	125	HDPE	New
PP-528	J-90	PJ-403	151	#N/A	#N/A	160	HDPE	New
PP-529	PJ-403	J-88	79.5	#N/A	#N/A	180	HDPE	New
PP-530	PJ-403	J-84	93	#N/A	#N/A	110	HDPE	New
PP-531	J-88	PJ-404	49.5	#N/A	#N/A	200	HDPE	New
PP-532	PJ-404	PJ-405	96.5	#N/A	#N/A	140	HDPE	New
PP-533	PJ-405	J-85	50	#N/A	#N/A	200	HDPE	New
PP-534	PJ-405	PJ-406	47	#N/A	#N/A	160	HDPE	New
PP-535	PJ-406	PJ-407	16.5	#N/A	#N/A	110	HDPE	New
PP-536	PJ-406	PJ-408	107	#N/A	#N/A	160	HDPE	New
PP-537	PJ-408	PJ-404	27	#N/A	#N/A	250	HDPE	New
PP-538	PJ-408	PJ-409	60	#N/A	#N/A	315	HDPE	New
PP-539	PJ-409	PJ-410	368	#N/A	#N/A	315	HDPE	New
PP-540	PJ-410	PJ-349	264.5	#N/A	#N/A	250	HDPE	New
PP-541	PJ-410	PJ-352	511.5	#N/A	#N/A	125	HDPE	New
PP-542	J-73	PJ-411	15	#N/A	#N/A	160	HDPE	New
PP-543	J-92	PJ-412	47.5	#N/A	#N/A	160	HDPE	New
PP-544	PJ-412	PJ-382	19	#N/A	#N/A	160	HDPE	New
			37471.00					

Zone -15

Distribution Network Design Output: Zone 15

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	35	1.796	22.695	296.57497	T-1	J-1	235.5	-13,750.68	7,788.70	400	2.36	9.68	296.57497	HDPE	145	0.34
P-10	161	21.338	21.157	0.22809	J-9	J-6	234.1	-13,618.01	8,063.70	110	0.02	0.01	0.22809	uPVC	145	0
P-100	70	19.153	19.146	0.80869	J-72	J-76	234.22	-13,936.88	7,341.37	110	0.09	0.09	0.80869	uPVC	145	0.01
P-101	86	19.146	19.204	2.4463	J-76	J-75	234.22	-13,866.93	7,340.77	110	0.26	0.72	2.4463	uPVC	145	0.06
P-102	141	20.824	19.186	8.15072	J-67	J-77	232.87	-14,006.84	7,402.88	140	0.53	2.07	8.15072	HDPE	145	0.29
P-103	59.5	19.186	19.146	2.34828	J-77	J-76	234.22	-13,865.72	7,400.47	110	0.25	0.67	2.34828	uPVC	145	0.04
P-104	61	19.186	19.144	4.94014	J-77	J-78	234.22	-13,865.72	7,400.47	110	0.52	2.65	4.94014	uPVC	145	0.16
P-105	52	19.144	20.372	0.39467	J-78	J-79	234.1	-13,804.81	7,398.66	160	0.02	0	0.39467	uPVC	145	0
P-106	93.5	20.372	20.394	-3.62879	J-79	J-74	232.87	-13,806.02	7,346.80	160	0.18	0.24	3.62879	uPVC	145	0.02
P-107	69	19.144	19.138	3.94524	J-78	J-80	234.1	-13,804.81	7,398.66	200	0.13	0.09	3.94524	uPVC	145	0.01
P-108	39	19.138	20.205	0.12884	J-80	J-81	234.1	-13,803.00	7,467.41	110	0.01	0	0.12884	uPVC	145	0
P-109	70	19.138	20.321	3.22936	J-80	J-82	234.1	-13,803.00	7,467.41	110	0.34	1.21	3.22936	uPVC	145	0.08
P-11	164	20.311	21.786	0.30137	J-5	J-10	235.13	-13,778.42	8,122.20	110	0.03	0.01	0.30137	uPVC	145	0
P-110	64.5	20.321	20.193	0.97175	J-82	J-83	232.83	-13,733.05	7,465.00	110	0.1	0.13	0.97175	uPVC	145	0.01
P-111	53.5	20.193	19.053	-1.0799	J-83	J-84	232.95	-13,733.65	7,400.47	110	0.11	0.16	1.0799	uPVC	145	0.01
P-112	72	19.053	20.372	-3.3062	J-84	J-79	234.1	-13,734.25	7,346.80	110	0.35	1.26	3.3062	uPVC	145	0.09
P-113	213.5	19.053	20.086	1.10852	J-84	J-85	234.1	-13,734.25	7,346.80	110	0.12	0.17	1.10852	uPVC	145	0.04
P-114	55	20.086	20.006	0.22314	J-85	J-86	233.03	-13,520.77	7,343.78	160	0.01	0	0.22314	uPVC	145	0
P-115	214	20.006	20.193	-0.95694	J-86	J-83	233.11	-13,519.56	7,398.66	110	0.1	0.13	0.95694	uPVC	145	0.03
P-116	216	20.321	20.026	1.10191	J-82	J-87	232.83	-13,733.05	7,465.00	110	0.12	0.16	1.10191	uPVC	145	0.04
P-117	61.5	20.026	20.006	-0.09032	J-87	J-86	233.09	-13,517.15	7,460.17	160	0	0	0.09032	uPVC	145	0
P-118	42	20.096	20.026	-0.13873	J-88	J-87	233.02	-13,515.95	7,502.39	160	0.01	0	0.13873	uPVC	145	0
P-119	19.5	20.606	20.415	11.50866	J-89	J-90	232.87	-14,030.10	7,343.38	160	0.57	2.05	11.50866	HDPE	145	0.04
P-12	56	21.786	21.338	-0.42413	J-10	J-9	233.65	-13,614.39	8,119.78	110	0.04	0.03	0.42413	uPVC	145	0
P-120	52	20.415	20.448	16.65302	J-90	J-91	233.02	-14,030.48	7,362.95	180	0.65	2.29	16.65302	HDPE	145	0.12
P-121	169	20.448	20.781	-5.14704	J-91	J-92	232.87	-14,082.58	7,361.98	110	0.54	2.86	5.14704	uPVC	145	0.48
P-122	52	20.781	19.85	-34.04308	J-92	J-93	233.02	-14,081.89	7,531.23	200	1.08	5.14	34.04308	HDPE	145	0.27
P-123	169.5	19.85	20.415	5.93909	J-93	J-90	234.22	-14,030.03	7,532.44	110	0.62	3.73	5.93909	uPVC	145	0.63
P-124	81.5	19.85	21.38	-40.98128	J-93	J-94	234.22	-14,030.03	7,532.44	225	1.03	4.09	40.98128	HDPE	145	0.33
P-125	397	21.38	20.215	14.94131	J-94	J-95	233.02	-14,028.82	7,613.85	160	0.74	3.32	14.94131	HDPE	145	1.32
P-126	65	20.215	19.902	6.72068	J-95	J-96	232.87	-14,028.82	8,010.66	125	0.55	2.51	6.72068	HDPE	145	0.16

P-127	101.5	19.902	19.685	6.17154	J-96	J-97	233.02	-14,029.43	8,075.79	125	0.5	2.15	6.17154	HDPE	145	0.22
P-128	52	19.685	18.593	-4.28603	J-97	J-98	233.02	-14,130.14	8,061.92	110	0.45	2.04	4.28603	uPVC	145	0.11
P-129	52.5	18.593	20.098	-7.41663	J-98	J-99	234.22	-14,130.14	8,010.06	125	0.6	3.02	7.41663	HDPE	145	0.16
P-13	61.5	20.704	21.991	-3.24145	J-8	J-11	234.75	-13,617.41	8,016.06	125	0.26	0.65	3.24145	HDPE	145	0.04
P-130	49	20.098	20.215	-6.53586	J-99	J-95	232.87	-14,077.67	8,010.06	125	0.53	2.39	6.53586	HDPE	145	0.12
P-131	70	20.098	18.77	-1.44639	J-99	J-100	232.87	-14,077.67	8,010.06	110	0.15	0.27	1.44639	uPVC	145	0.02
P-132	50.5	18.77	19.735	12.55323	J-100	J-101	234.22	-14,080.08	7,940.11	140	0.82	4.61	12.55323	HDPE	145	0.23
P-133	70.5	19.735	18.593	-2.55344	J-101	J-98	233.02	-14,130.74	7,939.50	110	0.27	0.78	2.55344	uPVC	145	0.06
P-134	327.5	18.77	21.275	-15.47672	J-100	J-102	234.22	-14,080.08	7,940.11	160	0.77	3.54	15.47672	HDPE	145	1.16
P-135	52.5	21.275	21.38	-80.03501	J-102	J-94	232.87	-14,081.30	7,612.68	280	1.3	4.86	80.03501	HDPE	145	0.26
P-136	204.5	21.275	20.03	62.63123	J-102	J-103	232.87	-14,081.30	7,612.68	250	1.28	5.36	62.63123	HDPE	145	1.1
P-137	236	20.03	17.94	11.29678	J-103	J-104	233.02	-14,285.74	7,614.49	140	0.73	3.79	11.29678	HDPE	145	0.89
P-138	43.5	17.94	19.081	3.36614	J-104	J-105	234.22	-14,286.34	7,850.28	110	0.35	1.3	3.36614	uPVC	145	0.06
P-139	47.5	19.081	19.267	-3.52891	J-105	J-106	233.02	-14,286.95	7,893.71	125	0.29	0.76	3.52891	HDPE	145	0.04
P-14	109	21.991	21.375	48.33574	J-11	J-12	233.5	-13,555.89	8,012.44	315	0.62	1.08	48.33574	uPVC	145	0.12
P-140	48.5	19.267	19.335	-12.39926	J-106	J-107	232.87	-14,285.74	7,941.35	140	0.81	4.5	12.39926	HDPE	145	0.22
P-141	52	19.335	18.365	-12.20743	J-107	J-108	233.02	-14,237.49	7,943.16	140	0.79	4.37	12.20743	HDPE	145	0.23
P-142	55	18.365	19.735	-14.52621	J-108	J-101	234.22	-14,185.63	7,941.35	160	0.72	3.15	14.52621	HDPE	145	0.17
P-143	113.5	18.365	19.675	1.59163	J-108	J-109	234.22	-14,185.63	7,941.35	110	0.17	0.33	1.59163	uPVC	145	0.04
P-144	55	19.675	19.685	-9.76997	J-109	J-97	232.87	-14,184.42	8,054.72	140	0.63	2.9	9.76997	HDPE	145	0.16
P-145	53	19.675	19.347	10.63116	J-109	J-110	232.87	-14,184.42	8,054.72	140	0.69	3.39	10.63116	HDPE	145	0.18
P-146	104.5	19.347	19.335	0.86788	J-110	J-107	233.02	-14,236.89	8,047.49	110	0.09	0.11	0.86788	uPVC	145	0.01
P-147	114.5	19.347	17.669	8.86636	J-110	J-111	233.02	-14,236.89	8,047.49	125	0.72	4.2	8.86636	HDPE	145	0.48
P-148	95.5	17.669	17.67	-0.2104	J-111	J-112	234.22	-14,350.87	8,035.42	110	0.02	0.01	0.2104	uPVC	145	0
P-149	67	17.67	19.267	-8.33275	J-112	J-106	234.22	-14,352.68	7,940.14	125	0.68	3.74	8.33275	HDPE	145	0.25
P-15	183	21.375	20.966	47.3729	J-12	J-13	234	-13,555.29	8,121.59	315	0.61	1.04	47.3729	uPVC	145	0.19
P-150	61	17.67	18.835	7.38531	J-112	J-113	234.22	-14,352.68	7,940.14	125	0.6	2.99	7.38531	HDPE	145	0.18
P-151	103.5	18.835	17.478	0.7982	J-113	J-114	232.87	-14,403.94	7,929.89	110	0.08	0.09	0.7982	uPVC	145	0.01
P-152	52.5	17.478	17.669	-8.21116	J-114	J-111	234.22	-14,403.34	8,033.62	125	0.67	3.64	8.21116	HDPE	145	0.19
P-153	73	17.478	18.407	8.25419	J-114	J-115	234.22	-14,403.34	8,033.62	125	0.67	3.68	8.25419	HDPE	145	0.27
P-154	93	18.407	18.583	-1.45044	J-115	J-116	233.02	-14,475.70	8,025.17	110	0.15	0.27	1.45044	uPVC	145	0.03
P-155	70.5	18.583	18.835	-5.81216	J-116	J-113	232.87	-14,474.50	7,932.30	110	0.61	3.58	5.81216	uPVC	145	0.25
P-156	188	19.081	17.177	5.97506	J-105	J-117	233.02	-14,286.95	7,893.71	110	0.63	3.77	5.97506	uPVC	145	0.71
P-157	38	17.177	18.583	-3.6972	J-117	J-116	234.22	-14,475.10	7,894.31	110	0.39	1.55	3.6972	uPVC	145	0.06
P-158	41.5	17.177	18.276	8.79018	J-117	J-118	234.22	-14,475.10	7,894.31	140	0.57	2.38	8.79018	HDPE	145	0.1
P-159	38	18.276	16.991	6.38353	J-118	J-119	233.02	-14,516.71	7,894.31	125	0.52	2.29	6.38353	HDPE	145	0.09
P-16	29.5	20.966	20.928	19.34524	J-13	J-14	234.22	-13,372.56	8,116.77	160	0.96	5.35	19.34524	HDPE	145	0.16

P-160	67.5	16.991	18.267	3.02451	J-119	J-120	234.22	-14,554.70	7,892.50	110	0.32	1.07	3.02451	uPVC	145	0.07
P-161	58.5	18.267	18.167	-2.69476	J-120	J-121	232.87	-14,555.91	7,960.04	110	0.28	0.86	2.69476	uPVC	145	0.05
P-162	38	18.167	18.228	-10.07158	J-121	J-122	233.02	-14,554.70	8,018.54	160	0.5	1.6	10.07158	HDPE	145	0.06
P-163	41.5	18.228	18.407	-9.02033	J-122	J-115	233.02	-14,516.71	8,020.35	125	0.74	4.34	9.02033	HDPE	145	0.18
P-164	126	18.228	18.276	-1.72895	J-122	J-118	233.02	-14,516.71	8,020.35	110	0.18	0.38	1.72895	uPVC	145	0.05
P-165	42	16.991	18.298	2.87252	J-119	J-123	234.22	-14,554.70	7,892.50	110	0.3	0.97	2.87252	uPVC	145	0.04
P-166	218.5	18.298	17.811	-6.12264	J-123	J-124	232.87	-14,554.70	7,850.28	110	0.64	3.94	6.12264	uPVC	145	0.86
P-167	50	17.811	17.94	-6.84417	J-124	J-104	234.22	-14,336.40	7,850.28	125	0.56	2.6	6.84417	HDPE	145	0.13
P-168	40.5	18.298	18.008	8.00264	J-123	J-125	232.87	-14,554.70	7,850.28	125	0.65	3.47	8.00264	HDPE	145	0.14
P-169	50	18.008	16.668	7.18332	J-125	J-126	233.02	-14,595.11	7,849.68	125	0.59	2.84	7.18332	HDPE	145	0.14
P-17	269	20.928	20.851	18.36097	J-14	J-15	234.1	-13,373.77	8,146.32	160	0.91	4.86	18.36097	HDPE	145	1.31
P-170	45	16.668	17.982	2.4797	J-126	J-127	234.22	-14,645.16	7,849.08	110	0.26	0.74	2.4797	uPVC	145	0.03
P-171	64.5	17.982	16.685	-2.54729	J-127	J-128	232.87	-14,645.16	7,894.31	110	0.27	0.78	2.54729	uPVC	145	0.05
P-172	52	16.685	18.157	-4.68349	J-128	J-129	234.22	-14,645.77	7,958.84	110	0.49	2.4	4.68349	uPVC	145	0.12
P-173	109	18.157	18.008	-0.16139	J-129	J-125	232.87	-14,593.90	7,958.84	110	0.02	0	0.16139	uPVC	145	0
P-174	38	18.157	18.267	-5.17837	J-129	J-120	232.87	-14,593.90	7,958.84	110	0.54	2.89	5.17837	uPVC	145	0.11
P-175	53	16.685	18.015	1.57718	J-128	J-130	234.22	-14,645.77	7,958.84	110	0.17	0.32	1.57718	uPVC	145	0.02
P-176	33	18.015	18.013	-6.56039	J-130	J-131	232.87	-14,646.37	8,011.91	110	0.69	4.48	6.56039	uPVC	145	0.15
P-177	59	18.013	18.167	-6.86394	J-131	J-121	233.02	-14,613.20	8,012.51	125	0.56	2.62	6.86394	HDPE	145	0.15
P-178	46	18.015	16.519	7.70216	J-130	J-132	232.87	-14,646.37	8,011.91	125	0.63	3.24	7.70216	HDPE	145	0.15
P-179	113	16.519	17.878	-0.84934	J-132	J-133	234.22	-14,692.12	8,006.78	110	0.09	0.1	0.84934	uPVC	145	0.01
P-18	44.5	20.966	20.95	27.18018	J-13	J-16	234.22	-13,372.56	8,116.77	315	0.35	0.37	27.18018	uPVC	145	0.02
P-180	46.5	17.878	17.982	-4.51246	J-133	J-127	232.87	-14,691.79	7,893.98	110	0.47	2.24	4.51246	uPVC	145	0.1
P-181	52.5	16.519	17.691	7.85401	J-132	J-134	234.22	-14,692.12	8,006.78	125	0.64	3.36	7.85401	HDPE	145	0.18
P-182	110	17.691	16.476	-3.22406	J-134	J-135	232.87	-14,744.66	8,002.82	110	0.34	1.2	3.22406	uPVC	145	0.13
P-183	54	16.476	17.878	-2.95905	J-135	J-133	234.22	-14,745.82	7,892.82	110	0.31	1.03	2.95905	uPVC	145	0.06
P-184	43.5	16.476	17.828	-0.9493	J-135	J-136	234.22	-14,745.82	7,892.82	110	0.1	0.12	0.9493	uPVC	145	0.01
P-185	102	17.828	16.668	-4.05394	J-136	J-126	232.87	-14,746.98	7,849.21	110	0.43	1.84	4.05394	uPVC	145	0.19
P-186	56	17.828	17.788	2.44012	J-136	J-137	232.87	-14,746.98	7,849.21	110	0.26	0.72	2.44012	uPVC	145	0.04
P-187	153	17.788	17.181	-9.5801	J-137	J-138	232.87	-14,746.59	7,793.24	125	0.78	4.85	9.5801	HDPE	145	0.74
P-188	63.5	17.181	18.73	-7.63538	J-138	J-139	234.22	-14,593.37	7,793.24	125	0.62	3.19	7.63538	HDPE	145	0.2
P-189	190.5	18.73	19.009	-4.52596	J-139	J-140	232.87	-14,530.07	7,793.24	110	0.48	2.25	4.52596	uPVC	145	0.43
P-19	66	20.95	21.064	6.61192	J-16	J-17	234.22	-13,374.21	8,072.48	250	0.13	0.08	6.61192	uPVC	145	0.01
P-190	54	19.009	17.811	0.34186	J-140	J-124	233.02	-14,339.79	7,796.33	110	0.04	0.02	0.34186	uPVC	145	0
P-191	67	19.009	19.255	-5.89495	J-140	J-141	233.02	-14,339.79	7,796.33	110	0.62	3.68	5.89495	uPVC	145	0.25
P-192	190.5	19.255	17.508	5.17505	J-141	J-142	233.02	-14,339.79	7,729.17	110	0.54	2.89	5.17505	uPVC	145	0.55
P-193	65	17.508	18.73	4.16127	J-142	J-139	234.22	-14,530.07	7,728.40	110	0.44	1.93	4.16127	uPVC	145	0.13

P-194	113	17.181	18.65	-3.03119	J-138	J-143	234.22	-14,593.37	7,793.24	110	0.32	1.07	3.03119	uPVC	145	0.12
P-195	64	18.65	18.706	-7.68734	J-143	J-144	232.87	-14,593.75	7,680.15	125	0.63	3.23	7.68734	HDPE	145	0.21
P-196	47.5	18.706	17.508	-0.01467	J-144	J-142	233.02	-14,529.69	7,680.93	110	0	0	0.01467	uPVC	145	0
P-197	188	18.706	19.61	-8.66025	J-144	J-145	233.02	-14,529.69	7,680.93	125	0.71	4.02	8.66025	HDPE	145	0.76
P-198	48	19.61	19.255	12.07735	J-145	J-141	232.87	-14,341.72	7,681.31	140	0.78	4.29	12.07735	HDPE	145	0.21
P-199	67.5	19.61	18.515	-21.73835	J-145	J-146	232.87	-14,341.72	7,681.31	180	0.85	3.74	21.73835	HDPE	145	0.25
P-2	144	22.695	21.95	167.61075	J-1	J-2	234.22	-13,785.66	7,790.51	355	1.69	6.02	167.61075	HDPE	145	0.87
P-20	65	21.064	22.297	-6.83589	J-17	J-18	234.1	-13,373.27	8,006.52	250	0.14	0.09	6.83589	uPVC	145	0.01
P-200	54.5	18.515	20.03	-49.70241	J-146	J-103	234.22	-14,340.18	7,613.77	225	1.25	5.84	49.70241	HDPE	145	0.32
P-201	65	18.515	19.64	27.34734	J-146	J-147	234.22	-14,340.18	7,613.77	200	0.87	3.43	27.34734	HDPE	145	0.22
P-202	55	19.64	19.238	32.05342	J-147	J-148	232.87	-14,405.07	7,613.24	200	1.02	4.6	32.05342	HDPE	145	0.25
P-203	134	19.238	17.192	11.07545	J-148	J-149	233.02	-14,460.26	7,613.24	125	0.9	6.34	11.07545	HDPE	145	0.85
P-204	66	17.192	18.65	-3.85483	J-149	J-143	234.22	-14,594.48	7,613.91	110	0.41	1.67	3.85483	uPVC	145	0.11
P-205	154.5	17.192	17.697	13.7614	J-149	J-150	234.22	-14,594.48	7,613.91	140	0.89	5.46	13.7614	HDPE	145	0.84
P-206	62	17.697	16.174	5.13565	J-150	J-151	232.87	-14,748.86	7,615.84	110	0.54	2.85	5.13565	uPVC	145	0.18
P-207	64.5	16.174	16.254	-3.28713	J-151	J-152	234.22	-14,749.34	7,678.08	110	0.35	1.25	3.28713	uPVC	145	0.08
P-208	50.5	16.254	17.788	-11.16451	J-152	J-137	234.22	-14,747.41	7,742.73	140	0.73	3.71	11.16451	HDPE	145	0.19
P-209	72.5	16.254	17.242	7.25901	J-152	J-153	234.22	-14,747.41	7,742.73	125	0.59	2.9	7.25901	HDPE	145	0.21
P-21	132.5	22.297	21.036	-20.04885	J-18	J-19	232.87	-13,376.66	7,941.69	250	0.41	0.65	20.04885	uPVC	145	0.09
P-210	53.5	17.242	17.339	2.8905	J-153	J-154	233.02	-14,819.78	7,741.28	110	0.3	0.98	2.8905	uPVC	145	0.05
P-211	201	17.339	16.106	-2.15676	J-154	J-155	232.87	-14,819.78	7,794.83	110	0.23	0.57	2.15676	uPVC	145	0.11
P-212	74.5	16.106	17.691	-10.29653	J-155	J-134	234.22	-14,818.82	7,996.01	140	0.67	3.19	10.29653	HDPE	145	0.24
P-213	53	17.339	17.093	4.03332	J-154	J-156	232.87	-14,819.78	7,794.83	110	0.42	1.82	4.03332	uPVC	145	0.1
P-214	48.5	17.093	15.88	1.56377	J-156	J-157	233.02	-14,872.85	7,794.35	110	0.16	0.31	1.56377	uPVC	145	0.02
P-215	87.5	15.88	17.087	-0.86454	J-157	J-158	234.22	-14,873.33	7,843.07	110	0.09	0.11	0.86454	uPVC	145	0.01
P-216	60.5	17.087	17.308	-3.19378	J-158	J-159	233.02	-14,872.37	7,930.40	110	0.34	1.18	3.19378	uPVC	145	0.07
P-217	53	17.308	16.106	-7.0566	J-159	J-155	232.87	-14,871.40	7,990.70	125	0.58	2.75	7.0566	HDPE	145	0.15
P-218	77	17.308	17.065	3.23457	J-159	J-160	232.87	-14,871.40	7,990.70	110	0.34	1.21	3.23457	uPVC	145	0.09
P-219	53.5	17.065	15.865	0.58021	J-160	J-161	233.02	-14,948.11	7,983.47	110	0.06	0.05	0.58021	uPVC	145	0
P-22	50.5	21.036	21.476	-38.12693	J-19	J-20	234.22	-13,509.34	7,943.95	200	1.21	6.34	38.12693	HDPE	145	0.32
P-220	74.5	15.865	17.087	-1.5955	J-161	J-158	234.22	-14,946.66	7,929.92	110	0.17	0.33	1.5955	uPVC	145	0.02
P-221	73.5	15.88	17.199	1.73742	J-157	J-162	234.22	-14,873.33	7,843.07	110	0.18	0.38	1.73742	uPVC	145	0.03
P-222	49	17.199	15.852	0.08311	J-162	J-163	232.87	-14,946.66	7,842.11	110	0.01	0	0.08311	uPVC	145	0
P-223	38.5	15.852	15.865	-1.62657	J-163	J-161	234.22	-14,947.63	7,891.32	110	0.17	0.34	1.62657	uPVC	145	0.01
P-224	69	17.199	17.04	1.02276	J-162	J-164	232.87	-14,946.66	7,842.11	110	0.11	0.14	1.02276	uPVC	145	0.01
P-225	48.5	17.04	17.182	1.10325	J-164	J-165	233.02	-15,015.66	7,840.66	110	0.12	0.16	1.10325	uPVC	145	0.01
P-226	48	17.182	17.031	0.31612	J-165	J-166	232.87	-15,063.90	7,842.11	110	0.03	0.02	0.31612	uPVC	145	0

P-227	27	17.031	15.836	-0.76894	J-166	J-167	233.02	-15,064.38	7,890.35	110	0.08	0.08	0.76894	uPVC	145	0
P-228	47	15.836	17.04	-1.04317	J-167	J-168	234.22	-15,037.37	7,891.80	110	0.11	0.15	1.04317	uPVC	145	0.01
P-229	43	17.04	15.852	-1.27921	J-168	J-163	233.02	-14,990.57	7,889.39	110	0.13	0.22	1.27921	uPVC	145	0.01
P-23	66.5	21.476	21.991	52.35874	J-20	J-11	234.1	-13,559.84	7,946.21	315	0.67	1.25	52.35874	uPVC	145	0.08
P-230	82.5	15.836	15.837	-0.24195	J-167	J-169	234.22	-15,037.37	7,891.80	110	0.03	0.01	0.24195	uPVC	145	0
P-231	46	15.837	17.192	-1.13419	J-169	J-170	234.22	-15,037.37	7,974.30	110	0.12	0.17	1.13419	uPVC	145	0.01
P-232	43.5	17.192	17.065	-2.08049	J-170	J-160	232.87	-14,991.53	7,979.13	110	0.22	0.53	2.08049	uPVC	145	0.02
P-233	89.5	17.192	17.04	0.35595	J-170	J-168	232.87	-14,991.53	7,979.13	110	0.04	0.02	0.35595	uPVC	145	0
P-234	71	15.836	15.837	-0.23432	J-171	J-169	234.22	-15,108.29	7,967.55	110	0.02	0.01	0.23432	uPVC	145	0
P-235	57	17.031	17.028	0.64965	J-166	J-172	233.02	-15,064.38	7,890.35	110	0.07	0.06	0.64965	uPVC	145	0
P-236	154	17.028	17.177	-0.04618	J-172	J-173	233.02	-15,121.31	7,891.32	110	0	0	0.04618	uPVC	145	0
P-237	52	17.177	15.834	-0.72553	J-173	J-174	232.87	-15,116.85	7,737.30	110	0.08	0.08	0.72553	uPVC	145	0
P-238	102.5	15.834	17.182	-0.13086	J-174	J-165	234.22	-15,064.74	7,739.71	110	0.01	0	0.13086	uPVC	145	0
P-239	49.5	15.834	17.042	-1.26743	J-174	J-175	234.22	-15,064.74	7,739.71	110	0.13	0.21	1.26743	uPVC	145	0.01
P-24	95.5	21.476	23.036	-91.18644	J-20	J-21	234.1	-13,559.84	7,946.21	315	1.17	3.49	91.18644	uPVC	145	0.33
P-240	53.5	17.042	17.192	-0.23068	J-175	J-176	233.02	-15,015.05	7,739.71	110	0.02	0.01	0.23068	uPVC	145	0
P-241	47.5	17.192	17.04	0.62469	J-176	J-164	232.87	-15,016.50	7,793.26	110	0.07	0.06	0.62469	uPVC	145	0
P-242	143.5	17.192	17.093	-1.66163	J-176	J-156	232.87	-15,016.50	7,793.26	110	0.17	0.35	1.66163	uPVC	145	0.05
P-243	73.5	17.042	17.067	-1.61885	J-175	J-177	233.02	-15,015.05	7,739.71	110	0.17	0.34	1.61885	uPVC	145	0.02
P-244	122	17.067	17.242	-3.55071	J-177	J-153	233.02	-14,941.72	7,739.23	110	0.37	1.44	3.55071	uPVC	145	0.18
P-245	61	17.067	17.057	1.08604	J-177	J-178	233.02	-14,941.72	7,739.23	110	0.11	0.16	1.08604	uPVC	145	0.01
P-246	123.5	17.057	17.291	-2.37823	J-178	J-179	233.02	-14,942.68	7,678.44	110	0.25	0.68	2.37823	uPVC	145	0.08
P-247	70	17.291	16.174	-7.77474	J-179	J-151	232.87	-14,819.18	7,676.99	125	0.63	3.29	7.77474	HDPE	145	0.23
P-248	48.5	17.057	17.015	2.69591	J-178	J-180	233.02	-14,942.68	7,678.44	110	0.28	0.86	2.69591	uPVC	145	0.04
P-249	46	17.015	15.773	2.85756	J-180	J-181	233.02	-14,942.68	7,629.71	110	0.3	0.96	2.85756	uPVC	145	0.04
P-25	124.5	23.036	22.126	-91.64486	J-21	J-22	232.87	-13,655.58	7,944.71	315	1.18	3.52	91.64486	HDPE	145	0.44
P-250	42.5	15.773	16.927	2.98585	J-181	J-182	234.22	-14,942.20	7,583.88	110	0.31	1.04	2.98585	uPVC	145	0.04
P-251	52	16.927	16.986	3.94391	J-182	J-183	233.02	-14,942.68	7,541.42	110	0.42	1.75	3.94391	uPVC	145	0.09
P-252	119	16.986	16.975	-3.1776	J-183	J-184	232.87	-14,939.31	7,489.32	110	0.33	1.17	3.1776	uPVC	145	0.14
P-253	48.5	16.975	15.772	0.90197	J-184	J-185	233.02	-14,820.14	7,490.28	110	0.09	0.11	0.90197	uPVC	145	0.01
P-254	121	15.772	16.927	1.66872	J-185	J-182	234.22	-14,821.59	7,539.01	110	0.18	0.36	1.66872	uPVC	145	0.04
P-255	121	15.773	17.132	-0.81918	J-181	J-186	234.22	-14,942.20	7,583.88	110	0.09	0.1	0.81918	uPVC	145	0.01
P-256	45.5	17.132	15.772	1.47577	J-186	J-185	232.87	-14,821.11	7,584.36	110	0.16	0.28	1.47577	uPVC	145	0.01
P-257	125.5	17.015	17.029	-0.88715	J-180	J-187	233.02	-14,942.68	7,629.71	110	0.09	0.11	0.88715	uPVC	145	0.01
P-258	48.5	17.029	17.291	-4.59849	J-187	J-179	233.02	-14,817.25	7,628.75	110	0.48	2.32	4.59849	uPVC	145	0.11
P-259	44.5	17.029	17.132	2.99079	J-187	J-186	233.02	-14,817.25	7,628.75	110	0.31	1.05	2.99079	uPVC	145	0.05
P-26	159	22.126	22.695	-92.57969	J-22	J-1	234.22	-13,779.96	7,949.23	315	1.19	3.59	92.57969	HDPE	145	0.57

P-260	127.5	17.697	15.959	7.49149	J-150	J-188	232.87	-14,748.86	7,615.84	125	0.61	3.07	7.49149	HDPE	145	0.39
P-261	70.5	15.959	16.975	4.86441	J-188	J-184	234.22	-14,749.70	7,488.35	110	0.51	2.58	4.86441	uPVC	145	0.18
P-262	53.5	16.986	16.714	6.38117	J-183	J-189	232.87	-14,939.31	7,489.32	125	0.52	2.28	6.38117	HDPE	145	0.12
P-263	43.5	16.714	16.848	1.68371	J-189	J-190	233.02	-14,941.72	7,435.77	110	0.18	0.36	1.68371	uPVC	145	0.02
P-264	45	16.848	16.77	-3.7553	J-190	J-191	232.87	-14,898.30	7,434.80	110	0.4	1.59	3.7553	uPVC	145	0.07
P-265	103.5	16.77	17.136	-5.77291	J-191	J-192	233.02	-14,853.43	7,434.32	110	0.61	3.54	5.77291	uPVC	145	0.37
P-266	51	17.136	15.959	-1.80598	J-192	J-188	233.02	-14,750.19	7,437.21	110	0.19	0.41	1.80598	uPVC	145	0.02
P-267	206.5	16.714	16.545	3.6967	J-189	J-193	233.02	-14,941.72	7,435.77	110	0.39	1.55	3.6967	uPVC	145	0.32
P-268	65.5	16.545	16.334	2.79979	J-193	J-194	232.87	-15,148.31	7,435.47	110	0.29	0.93	2.79979	uPVC	145	0.06
P-269	38	16.334	15.122	1.77847	J-194	J-195	233.02	-15,163.13	7,371.87	110	0.19	0.4	1.77847	uPVC	145	0.02
P-27	371.5	23.036	23.131	-1.49172	J-21	J-23	232.87	-13,655.58	7,944.71	200	0.05	0.02	1.49172	uPVC	145	0.01
P-270	39.5	15.122	16.303	1.8306	J-195	J-196	234.22	-15,166.53	7,334.20	110	0.19	0.42	1.8306	uPVC	145	0.02
P-271	51.5	16.303	16.406	2.75934	J-196	J-197	233.02	-15,165.29	7,294.68	110	0.29	0.9	2.75934	uPVC	145	0.05
P-272	93	16.406	15.845	1.63298	J-197	J-198	232.87	-15,165.29	7,243.42	110	0.17	0.34	1.63298	uPVC	145	0.03
P-273	91	15.845	16.544	0.14242	J-198	J-199	233.4	-15,164.80	7,150.56	110	0.01	0	0.14242	uPVC	145	0
P-274	197	16.544	16.4	-0.97339	J-199	J-200	232.7	-15,163.29	7,059.35	110	0.1	0.13	0.97339	uPVC	145	0.03
P-275	51.5	16.4	15.892	-1.79284	J-200	J-201	232.87	-14,966.54	7,060.10	110	0.19	0.41	1.79284	uPVC	145	0.02
P-276	143	15.892	15.068	0.47167	J-201	J-202	233.4	-14,968.80	7,111.36	110	0.05	0.03	0.47167	uPVC	145	0
P-277	134	15.845	16.37	0.442	J-198	J-203	233.4	-15,164.80	7,150.56	110	0.05	0.03	0.442	uPVC	145	0
P-278	146	16.406	16.621	-1.55813	J-197	J-204	232.87	-15,165.29	7,243.42	110	0.16	0.31	1.55813	uPVC	145	0.05
P-279	50.5	16.621	15.953	-2.20617	J-204	J-205	232.7	-15,019.31	7,244.03	110	0.23	0.6	2.20617	uPVC	145	0.03
P-28	125	23.131	23.132	-20.0484	J-23	J-24	232.78	-13,663.87	7,573.07	200	0.64	1.93	20.0484	HDPE	145	0.24
P-280	41.5	15.953	16.481	0.32956	J-205	J-206	233.4	-15,019.31	7,294.54	110	0.03	0.02	0.32956	uPVC	145	0
P-281	38.5	16.481	15.941	1.45461	J-206	J-207	232.87	-15,060.77	7,295.29	110	0.15	0.28	1.45461	uPVC	145	0.01
P-282	66	15.941	16.303	1.44656	J-207	J-196	233.4	-15,099.21	7,293.03	110	0.15	0.27	1.44656	uPVC	145	0.02
P-283	42	15.941	16.641	-0.47516	J-207	J-208	233.4	-15,099.21	7,293.03	110	0.05	0.03	0.47516	uPVC	145	0
P-284	66.5	16.641	15.122	0.52709	J-208	J-195	232.7	-15,099.97	7,335.25	110	0.06	0.04	0.52709	uPVC	145	0
P-285	64.5	16.334	16.482	0.46723	J-194	J-209	233.02	-15,163.13	7,371.87	110	0.05	0.03	0.46723	uPVC	145	0
P-286	36	16.482	16.641	1.47887	J-209	J-208	232.87	-15,098.46	7,371.43	110	0.16	0.28	1.47887	uPVC	145	0.01
P-287	36	16.482	16.662	-1.46189	J-209	J-210	232.87	-15,098.46	7,371.43	110	0.15	0.28	1.46189	uPVC	145	0.01
P-288	40	16.662	16.492	0.14264	J-210	J-211	232.7	-15,062.27	7,372.18	110	0.02	0	0.14264	uPVC	145	0
P-289	37	16.492	16.481	1.51101	J-211	J-206	232.87	-15,061.52	7,332.23	110	0.16	0.3	1.51101	uPVC	145	0.01
P-29	100.5	23.132	22.207	-18.27153	J-24	J-25	233.02	-13,789.01	7,573.82	180	0.72	2.71	18.27153	HDPE	145	0.27
P-290	104	16.662	15.206	-2.19817	J-210	J-212	232.7	-15,062.27	7,372.18	110	0.23	0.59	2.19817	uPVC	145	0.06
P-291	38.5	15.206	16.542	1.5321	J-212	J-213	234.22	-14,958.25	7,372.18	110	0.16	0.3	1.5321	uPVC	145	0.01
P-292	104	16.542	16.492	1.96532	J-213	J-211	232.87	-14,957.49	7,333.74	110	0.21	0.48	1.96532	uPVC	145	0.05
P-293	61	15.953	16.717	-3.04036	J-205	J-214	233.4	-15,019.31	7,294.54	110	0.32	1.08	3.04036	uPVC	145	0.07

P-294	38.5	16.717	16.542	1.03015	J-214	J-213	232.7	-14,958.40	7,295.36	110	0.11	0.15	1.03015	uPVC	145	0.01
P-295	27	15.206	16.608	-4.2893	J-212	J-215	234.22	-14,958.25	7,372.18	110	0.45	2.04	4.2893	uPVC	145	0.06
P-296	75.5	16.608	16.778	0.08622	J-215	J-216	232.87	-14,931.26	7,371.13	110	0.01	0	0.08622	uPVC	145	0
P-297	27.5	16.778	16.717	4.48943	J-216	J-214	232.7	-14,930.88	7,295.87	110	0.47	2.22	4.48943	uPVC	145	0.06
P-298	31.5	16.778	16.689	-4.84687	J-216	J-217	232.7	-14,930.88	7,295.87	110	0.51	2.56	4.84687	uPVC	145	0.08
P-299	75.5	16.689	16.856	0.4224	J-217	J-218	232.87	-14,899.61	7,298.18	110	0.04	0.03	0.4224	uPVC	145	0
P-3	69	21.95	22.243	174.39669	J-2	J-3	234.1	-13,929.79	7,791.72	355	1.76	6.48	174.39669	HDPE	145	0.45
P-30	58	22.207	23.725	-25.2363	J-25	J-26	234.22	-13,786.75	7,674.08	200	0.8	2.95	25.2363	HDPE	145	0.17
P-300	31	16.856	16.608	4.81587	J-218	J-215	232.7	-14,900.39	7,373.83	110	0.51	2.53	4.81587	uPVC	145	0.08
P-301	61	16.856	16.848	-4.94591	J-218	J-190	232.7	-14,900.39	7,373.83	110	0.52	2.66	4.94591	uPVC	145	0.16
P-302	60.5	16.77	15.559	1.32837	J-191	J-219	233.02	-14,853.43	7,434.32	110	0.14	0.23	1.32837	uPVC	145	0.01
P-303	76.5	15.559	17.017	2.52668	J-219	J-220	234.22	-14,854.07	7,373.83	110	0.27	0.77	2.52668	uPVC	145	0.06
P-304	45	17.017	16.689	5.77061	J-220	J-217	232.7	-14,854.84	7,297.41	110	0.61	3.53	5.77061	uPVC	145	0.16
P-305	37.5	17.017	16.907	-3.76834	J-220	J-221	232.7	-14,854.84	7,297.41	110	0.4	1.61	3.76834	uPVC	145	0.06
P-306	77.5	16.907	17.089	-1.08478	J-221	J-222	232.87	-14,817.40	7,296.64	110	0.11	0.16	1.08478	uPVC	145	0.01
P-307	35.5	17.089	15.559	1.76723	J-222	J-219	232.7	-14,818.56	7,374.22	110	0.19	0.4	1.76723	uPVC	145	0.01
P-308	39.5	17.089	15.624	-3.355	J-222	J-223	232.7	-14,818.56	7,374.22	110	0.35	1.29	3.355	uPVC	145	0.05
P-309	37.5	15.624	16.972	-0.54509	J-223	J-224	234.22	-14,779.19	7,373.06	110	0.06	0.04	0.54509	uPVC	145	0
P-31	58.5	23.725	22.695	-35.07721	J-26	J-1	232.87	-13,785.99	7,732.13	200	1.12	5.44	35.07721	HDPE	145	0.32
P-310	37.5	16.972	15.604	2.13834	J-224	J-225	232.87	-14,778.42	7,335.62	110	0.23	0.56	2.13834	uPVC	145	0.02
P-311	37.5	15.604	16.907	3.18654	J-225	J-221	234.22	-14,779.97	7,298.18	110	0.34	1.18	3.18654	uPVC	145	0.04
P-312	38	15.604	17.131	-1.42098	J-225	J-226	234.22	-14,779.97	7,298.18	110	0.15	0.26	1.42098	uPVC	145	0.01
P-313	28.5	17.131	17.12	-10.34136	J-226	J-227	232.7	-14,741.76	7,297.41	125	0.84	5.59	10.34136	HDPE	145	0.16
P-314	45	17.12	17.307	-1.7298	J-227	J-228	232.87	-14,713.20	7,296.64	110	0.18	0.38	1.7298	uPVC	145	0.02
P-315	38.5	17.307	17.278	2.5101	J-228	J-229	232.7	-14,668.42	7,297.03	110	0.26	0.76	2.5101	uPVC	145	0.03
P-316	109	17.278	16.972	3.29025	J-229	J-224	232.7	-14,669.58	7,335.62	110	0.35	1.25	3.29025	uPVC	145	0.14
P-317	109.5	15.624	15.771	-3.42499	J-223	J-230	234.22	-14,779.19	7,373.06	110	0.36	1.35	3.42499	uPVC	145	0.15
P-318	37.5	15.771	17.278	1.39028	J-230	J-229	234.22	-14,669.58	7,373.06	110	0.15	0.25	1.39028	uPVC	145	0.01
P-319	43	17.307	17.239	-4.65717	J-228	J-231	232.7	-14,668.42	7,297.03	110	0.49	2.38	4.65717	uPVC	145	0.1
P-32	59.5	21.95	22.142	-7.68452	J-2	J-27	234.1	-13,929.79	7,791.72	125	0.63	3.22	7.68452	HDPE	145	0.19
P-320	76.5	17.239	17.429	-1.39607	J-231	J-232	232.87	-14,625.58	7,297.03	110	0.15	0.26	1.39607	uPVC	145	0.02
P-321	44.5	17.429	15.771	5.44682	J-232	J-230	232.7	-14,625.20	7,373.45	110	0.57	3.18	5.44682	uPVC	145	0.14
P-322	62.5	17.429	17.612	-7.44807	J-232	J-233	232.7	-14,625.20	7,373.45	110	0.78	5.67	7.44807	uPVC	145	0.35
P-323	126	17.612	17.136	4.89186	J-233	J-192	232.87	-14,624.42	7,435.97	110	0.51	2.6	4.89186	uPVC	145	0.33
P-324	108.5	17.612	18.169	-13.31926	J-233	J-234	232.87	-14,624.42	7,435.97	140	0.87	5.14	13.31926	HDPE	145	0.56
P-325	53.5	18.169	18.578	-17.56812	J-234	J-235	232.87	-14,515.97	7,435.97	160	0.87	4.48	17.56812	HDPE	145	0.24
P-326	176	18.578	19.238	-19.77448	J-235	J-148	232.7	-14,462.32	7,437.13	160	0.98	5.58	19.77448	HDPE	145	0.98

P-327	32	17.239	15.943	-3.76079	J-231	J-236	232.87	-14,625.58	7,297.03	110	0.4	1.6	3.76079	uPVC	145	0.05
P-328	62.5	15.943	17.406	-4.07259	J-236	J-237	234.22	-14,624.26	7,265.20	110	0.43	1.85	4.07259	uPVC	145	0.12
P-329	47.5	17.406	17.576	0.15686	J-237	J-238	232.87	-14,564.91	7,285.46	110	0.02	0	0.15686	uPVC	145	0
P-33	144	22.142	23.725	-8.9819	J-27	J-26	234.1	-13,929.97	7,732.13	140	0.58	2.48	8.9819	HDPE	145	0.36
P-330	256.5	18.169	17.921	2.869	J-234	J-239	232.87	-14,515.97	7,435.97	110	0.3	0.97	2.869	uPVC	145	0.25
P-331	47	17.921	17.722	12.02398	J-239	J-240	232.87	-14,517.63	7,179.32	140	0.78	4.25	12.02398	HDPE	145	0.2
P-332	28.5	17.722	16.258	8.72987	J-240	J-241	232.87	-14,564.43	7,178.84	125	0.71	4.08	8.72987	HDPE	145	0.12
P-333	78	16.258	17.406	4.84946	J-241	J-237	234.22	-14,563.95	7,207.30	110	0.51	2.56	4.84946	uPVC	145	0.2
P-334	85.5	16.258	16.154	3.24721	J-241	J-242	234.22	-14,563.95	7,207.30	110	0.34	1.22	3.24721	uPVC	145	0.1
P-335	59	16.154	17.506	-0.75119	J-242	J-243	234.22	-14,649.34	7,205.86	110	0.08	0.08	0.75119	uPVC	145	0
P-336	23.5	17.506	17.17	6.60067	J-243	J-244	232.87	-14,708.20	7,209.71	110	0.69	4.53	6.60067	uPVC	145	0.11
P-337	63.5	17.17	16.886	-2.96248	J-244	J-245	233.1	-14,711.10	7,232.87	110	0.31	1.03	2.96248	uPVC	145	0.07
P-338	26	16.886	16.118	0.08598	J-245	J-246	233.45	-14,647.41	7,232.87	110	0.01	0	0.08598	uPVC	145	0
P-339	27	16.154	16.886	3.43278	J-242	J-245	234.22	-14,649.34	7,205.86	110	0.36	1.35	3.43278	uPVC	145	0.04
P-34	57.5	22.142	22.021	0.43673	J-27	J-28	234.1	-13,929.97	7,732.13	125	0.04	0.02	0.43673	HDPE	145	0
P-340	64	17.17	17.12	9.06511	J-244	J-227	233.1	-14,711.10	7,232.87	125	0.74	4.38	9.06511	HDPE	145	0.28
P-341	32.5	17.506	17.612	-7.73122	J-243	J-247	232.87	-14,708.20	7,209.71	125	0.63	3.26	7.73122	HDPE	145	0.11
P-342	136.5	17.612	17.722	-2.59498	J-247	J-240	232.87	-14,700.96	7,177.87	110	0.27	0.8	2.59498	uPVC	145	0.11
P-343	47.5	17.612	17.475	-5.85021	J-247	J-248	232.87	-14,700.96	7,177.87	125	0.48	1.94	5.85021	HDPE	145	0.09
P-344	188	17.475	17.611	-4.87906	J-248	J-249	233.1	-14,703.38	7,130.59	110	0.51	2.59	4.87906	uPVC	145	0.49
P-345	48.5	17.611	17.921	10.31561	J-249	J-239	233.45	-14,515.22	7,131.08	125	0.84	5.56	10.31561	HDPE	145	0.27
P-346	91	17.475	16.404	-2.04773	J-248	J-250	233.1	-14,703.38	7,130.59	110	0.22	0.52	2.04773	uPVC	145	0.05
P-347	64.5	16.404	17.802	-2.56061	J-250	J-251	234.22	-14,794.56	7,129.15	110	0.27	0.79	2.56061	uPVC	145	0.05
P-348	28.5	17.802	17.6	-2.86746	J-251	J-252	232.87	-14,790.22	7,064.98	110	0.3	0.97	2.86746	uPVC	145	0.03
P-349	302.5	17.6	17.782	-3.95887	J-252	J-253	233.1	-14,761.75	7,063.05	110	0.42	1.76	3.95887	uPVC	145	0.53
P-35	79	22.021	22.185	-2.13816	J-28	J-29	234.22	-13,930.73	7,674.84	110	0.22	0.56	2.13816	uPVC	145	0.04
P-350	68	17.782	18.399	-2.14425	J-253	J-254	233.45	-14,459.26	7,065.46	110	0.23	0.56	2.14425	uPVC	145	0.04
P-351	54.5	18.399	17.611	16.15422	J-254	J-249	232.87	-14,460.71	7,133.49	160	0.8	3.83	16.15422	HDPE	145	0.21
P-352	303.5	18.399	18.578	-0.44906	J-254	J-235	232.87	-14,460.71	7,133.49	110	0.05	0.03	0.44906	uPVC	145	0.01
P-353	265.5	17.782	18.237	-3.91146	J-253	J-255	233.45	-14,459.26	7,065.46	110	0.41	1.72	3.91146	uPVC	145	0.46
P-354	96	18.237	18.856	-5.10341	J-255	J-256	233.45	-14,193.96	7,067.37	110	0.54	2.82	5.10341	uPVC	145	0.27
P-355	172.5	18.856	17.351	4.52599	J-256	J-257	233.1	-14,232.60	7,131.45	110	0.48	2.25	4.52599	uPVC	145	0.39
P-356	55.5	17.351	18.399	19.43693	J-257	J-254	234.22	-14,405.03	7,134.27	160	0.97	5.4	19.43693	HDPE	145	0.3
P-357	120.5	17.351	19.154	-16.06004	J-257	J-258	234.22	-14,405.03	7,134.27	160	0.8	3.79	16.06004	HDPE	145	0.46
P-358	55.5	19.154	18.827	-12.47204	J-258	J-259	232.87	-14,405.98	7,254.89	140	0.81	4.55	12.47204	HDPE	145	0.25
P-359	49	18.827	19.382	-8.86612	J-259	J-260	233.45	-14,406.92	7,310.48	125	0.72	4.2	8.86612	HDPE	145	0.21
P-36	65	22.185	22.207	-6.22773	J-29	J-25	234.1	-13,851.58	7,673.33	125	0.51	2.18	6.22773	HDPE	145	0.14

Distribution Network Design Output: Zone 15

P-360	171.5	19.382	19.719	-2.26869	J-260	J-261	233.1	-14,405.98	7,359.48	110	0.24	0.63	2.26869	uPVC	145	0.11
P-361	82.5	19.719	19.64	5.37389	J-261	J-147	232.87	-14,406.92	7,530.98	140	0.35	0.96	5.37389	HDPE	145	0.08
P-362	159.5	19.154	18.959	-4.69425	J-258	J-262	232.87	-14,405.98	7,254.89	110	0.49	2.41	4.69425	uPVC	145	0.38
P-363	127	18.959	18.856	10.93344	J-262	J-256	233.45	-14,246.73	7,257.71	140	0.71	3.57	10.93344	HDPE	145	0.45
P-364	50.5	18.959	19.515	-16.73888	J-262	J-263	233.45	-14,246.73	7,257.71	160	0.83	4.09	16.73888	HDPE	145	0.21
P-365	154.5	19.515	18.827	4.45998	J-263	J-259	233.1	-14,252.38	7,307.65	110	0.47	2.19	4.45998	uPVC	145	0.34
P-366	54.5	19.382	18.432	-7.50424	J-260	J-264	233.1	-14,405.98	7,359.48	125	0.61	3.08	7.50424	HDPE	145	0.17
P-367	53	18.432	19.329	-6.61259	J-264	J-265	234.22	-14,351.32	7,358.54	125	0.54	2.44	6.61259	HDPE	145	0.13
P-368	48	19.329	19.936	-2.16483	J-265	J-266	233.45	-14,298.56	7,358.54	110	0.23	0.58	2.16483	uPVC	145	0.03
P-369	50	19.936	19.515	22.03974	J-266	J-263	232.87	-14,250.50	7,357.59	180	0.87	3.84	22.03974	HDPE	145	0.19
P-37	47	22.021	23.346	1.96971	J-28	J-30	234.22	-13,930.73	7,674.84	110	0.21	0.48	1.96971	uPVC	145	0.02
P-370	174.5	18.432	19.273	-1.82153	J-264	J-267	234.22	-14,351.32	7,358.54	110	0.19	0.42	1.82153	uPVC	145	0.07
P-371	57.5	19.273	19.719	8.66971	J-267	J-261	233.45	-14,349.44	7,532.86	140	0.56	2.32	8.66971	HDPE	145	0.13
P-372	48.5	19.273	20.039	-11.41618	J-267	J-268	233.45	-14,349.44	7,532.86	140	0.74	3.86	11.41618	HDPE	145	0.19
P-373	72.5	20.039	19.884	-2.9735	J-268	J-269	232.87	-14,301.09	7,532.92	110	0.31	1.04	2.9735	uPVC	145	0.08
P-374	29	19.884	20.107	1.3022	J-269	J-270	233.1	-14,301.68	7,460.60	110	0.14	0.22	1.3022	uPVC	145	0.01
P-375	73	20.107	19.329	5.02162	J-270	J-265	232.87	-14,301.48	7,431.35	110	0.53	2.73	5.02162	uPVC	145	0.2
P-376	70	20.039	19.766	-9.07259	J-268	J-271	232.87	-14,301.09	7,532.92	125	0.74	4.38	9.07259	HDPE	145	0.31
P-377	73	19.766	20.058	2.55915	J-271	J-272	233.45	-14,231.27	7,532.19	110	0.27	0.78	2.55915	uPVC	145	0.06
P-378	68.5	20.058	19.884	4.83637	J-272	J-269	233.1	-14,233.20	7,459.34	110	0.51	2.55	4.83637	uPVC	145	0.17
P-379	97	20.107	18.965	-4.3757	J-270	J-273	232.87	-14,301.48	7,431.35	110	0.46	2.12	4.3757	uPVC	145	0.21
P-38	82	23.346	22.001	-0.46067	J-30	J-31	232.87	-13,932.24	7,628.10	110	0.05	0.03	0.46067	uPVC	145	0
P-380	26	18.965	20.086	-0.95271	J-273	J-274	234.22	-14,204.73	7,431.35	110	0.1	0.13	0.95271	uPVC	145	0
P-381	29	20.086	20.058	2.83955	J-274	J-272	233.1	-14,204.25	7,457.41	110	0.3	0.95	2.83955	uPVC	145	0.03
P-382	26.5	19.766	20.461	-12.19077	J-271	J-275	233.45	-14,231.27	7,532.19	140	0.79	4.36	12.19077	HDPE	145	0.12
P-383	73.5	20.461	20.086	4.21613	J-275	J-274	232.87	-14,204.73	7,530.74	110	0.44	1.98	4.21613	uPVC	145	0.15
P-384	38.5	18.965	20.15	-3.95565	J-273	J-276	234.22	-14,204.73	7,431.35	110	0.42	1.76	3.95565	uPVC	145	0.07
P-385	103	20.15	20.618	-4.59407	J-276	J-277	233.1	-14,166.14	7,429.91	110	0.48	2.32	4.59407	uPVC	145	0.24
P-386	38	20.618	20.461	16.86208	J-277	J-275	232.87	-14,166.62	7,532.67	160	0.84	4.15	16.86208	HDPE	145	0.16
P-387	26	20.15	20.15	0.08598	J-276	J-278	233.1	-14,166.14	7,429.91	110	0.01	0	0.08598	uPVC	145	0
P-388	39	20.618	20.768	-22.04979	J-277	J-279	232.87	-14,166.62	7,532.67	180	0.87	3.84	22.04979	HDPE	145	0.15
P-389	45.5	20.768	20.781	-28.01726	J-279	J-92	232.87	-14,127.54	7,531.70	200	0.89	3.58	28.01726	HDPE	145	0.16
P-39	47	22.001	22.185	-3.45966	J-31	J-29	234.22	-13,850.07	7,626.59	110	0.36	1.37	3.45966	uPVC	145	0.06
P-390	121	19.936	20.055	-24.92678	J-266	J-280	232.87	-14,250.50	7,357.59	200	0.79	2.89	24.92678	HDPE	145	0.35
P-391	47	20.055	20.448	-20.91633	J-280	J-91	233.1	-14,129.47	7,361.40	180	0.82	3.49	20.91633	HDPE	145	0.16
P-392	170.5	20.055	20.768	-5.12658	J-280	J-279	233.1	-14,129.47	7,361.40	110	0.54	2.84	5.12658	uPVC	145	0.48
P-393	51	16.544	16.144	-0.00197	J-199	J-281	232.7	-15,163.29	7,059.35	110	0	0	0.00197	uPVC	145	0

P-394	184	16.144	15.042	-0.77692	J-281	J-282	233.1	-15,214.35	7,057.52	110	0.08	0.09	0.77692	uPVC	145	0.02
P-395	52	15.042	16.406	-1.55516	J-282	J-197	234.22	-15,217.37	7,241.45	110	0.16	0.31	1.55516	uPVC	145	0.02
P-396	131.5	15.892	16.589	-3.33944	J-201	J-283	233.4	-14,968.80	7,111.36	110	0.35	1.28	3.33944	uPVC	145	0.17
P-397	92	16.589	16.358	0.30355	J-283	J-284	232.87	-14,904.07	7,196.80	110	0.03	0.02	0.30355	uPVC	145	0
P-398	24.5	16.589	16.643	-4.46079	J-283	J-285	232.87	-14,904.07	7,196.80	110	0.47	2.19	4.46079	uPVC	145	0.05
P-399	84	16.643	16.412	0.27718	J-285	J-286	232.87	-14,881.03	7,204.52	110	0.03	0.01	0.27718	uPVC	145	0
P-4	320.5	22.243	21.63	4.02263	J-3	J-4	233.36	-13,998.54	7,792.32	160	0.2	0.29	4.02263	HDPE	145	0.09
P-40	55	23.346	22.095	1.82355	J-30	J-32	232.87	-13,932.24	7,628.10	110	0.19	0.42	1.82355	uPVC	145	0.02
P-400	27	16.643	16.721	-5.18492	J-285	J-287	232.87	-14,881.03	7,204.52	110	0.55	2.9	5.18492	uPVC	145	0.08
P-401	29.5	16.721	16.528	-3.30517	J-287	J-288	232.87	-14,854.79	7,209.77	110	0.35	1.26	3.30517	uPVC	145	0.04
P-402	25	16.528	15.418	-1.56125	J-288	J-289	233.1	-14,859.42	7,238.80	110	0.16	0.31	1.56125	uPVC	145	0.01
P-403	23.5	15.418	16.536	0.07774	J-289	J-290	234.22	-14,862.81	7,263.81	110	0.01	0	0.07774	uPVC	145	0
P-404	123	16.528	16.839	-2.32932	J-288	J-291	233.1	-14,859.42	7,238.80	110	0.25	0.66	2.32932	uPVC	145	0.08
P-405	123	16.839	15.418	2.20462	J-291	J-289	232.87	-14,739.61	7,266.28	110	0.23	0.59	2.20462	uPVC	145	0.07
P-406	119.5	16.721	16.578	-2.46021	J-287	J-292	232.87	-14,854.79	7,209.77	110	0.26	0.73	2.46021	uPVC	145	0.09
P-407	28.5	16.578	16.839	-3.05742	J-292	J-291	233.1	-14,738.38	7,237.87	110	0.32	1.09	3.05742	uPVC	145	0.03
P-408	31	16.839	17.131	-8.5987	J-291	J-226	232.87	-14,739.61	7,266.28	125	0.7	3.97	8.5987	HDPE	145	0.12
P-409	16.5	16.578	16.229	0.05467	J-292	J-293	233.1	-14,738.38	7,237.87	110	0.01	0	0.05467	uPVC	145	0
P-41	80.5	22.095	23.312	0.97416	J-32	J-33	234.1	-13,932.99	7,573.07	110	0.1	0.13	0.97416	uPVC	145	0.01
P-410	38	20.849	20.257	14.28009	J-294	J-295	232.87	-13,100.33	8,199.98	250	0.29	0.35	14.28009	uPVC	145	0.01
P-411	145	20.257	20.239	4.53175	J-295	J-296	233.45	-13,062.35	8,199.98	200	0.14	0.12	4.53175	uPVC	145	0.02
P-412	58	20.239	19.466	3.86229	J-296	J-297	233.45	-13,064.82	8,054.86	200	0.12	0.09	3.86229	uPVC	145	0.01
P-413	44	19.466	20.8	1.53772	J-297	J-298	234.22	-13,006.77	8,053.31	110	0.16	0.31	1.53772	uPVC	145	0.01
P-414	46.5	20.8	20.218	0.58943	J-298	J-299	232.87	-13,004.30	8,097.16	110	0.06	0.05	0.58943	uPVC	145	0
P-415	54.5	20.218	19.48	-2.11048	J-299	J-300	233.45	-13,001.52	8,143.47	110	0.22	0.55	2.11048	uPVC	145	0.03
P-416	62	19.48	20.257	-8.94043	J-300	J-295	234.22	-13,000.29	8,198.12	250	0.18	0.15	8.94043	uPVC	145	0.01
P-417	95.5	19.48	20.806	6.13082	J-300	J-301	234.22	-13,000.29	8,198.12	200	0.2	0.21	6.13082	uPVC	145	0.02
P-418	72.5	20.806	19.415	2.24373	J-301	J-302	232.87	-12,904.57	8,196.27	110	0.24	0.61	2.24373	uPVC	145	0.04
P-419	59.5	19.415	19.39	1.80832	J-302	J-303	234.22	-12,903.03	8,268.52	110	0.19	0.41	1.80832	uPVC	145	0.02
P-42	52	23.312	22.001	-2.40206	J-33	J-31	232.87	-13,852.33	7,574.58	110	0.25	0.7	2.40206	uPVC	145	0.04
P-420	52.5	19.39	20.157	0.50236	J-303	J-304	234.22	-12,845.90	8,285.50	110	0.05	0.04	0.50236	uPVC	145	0
P-421	37	20.157	20.742	-1.10594	J-304	J-305	233.45	-12,847.45	8,233.01	110	0.12	0.17	1.10594	uPVC	145	0.01
P-422	56.5	20.742	20.806	-3.14676	J-305	J-301	232.87	-12,848.07	8,195.96	110	0.33	1.15	3.14676	uPVC	145	0.06
P-423	98	20.157	20.143	0.98994	J-304	J-306	233.45	-12,847.45	8,233.01	110	0.1	0.13	0.98994	uPVC	145	0.01
P-424	53.5	20.143	19.375	0.17664	J-306	J-307	233.45	-12,752.96	8,259.57	110	0.02	0.01	0.17664	uPVC	145	0
P-425	142	19.39	20.154	0.46838	J-303	J-308	234.22	-12,845.90	8,285.50	110	0.05	0.03	0.46838	uPVC	145	0
P-426	46	20.742	20.148	1.58068	J-305	J-309	232.87	-12,848.07	8,195.96	110	0.17	0.32	1.58068	uPVC	145	0.01

Distribution Network Design Output: Zone 15

P-427	54.5	20.148	19.379	0.26728	J-309	J-310	233.45	-12,802.06	8,193.80	110	0.03	0.01	0.26728	uPVC	145	0
P-428	48	19.379	20.732	-0.88931	J-310	J-311	234.22	-12,804.22	8,139.46	110	0.09	0.11	0.88931	uPVC	145	0.01
P-429	149	20.732	20.218	-1.87551	J-311	J-299	232.87	-12,852.39	8,140.69	110	0.2	0.44	1.87551	uPVC	145	0.07
P-43	63.5	23.312	23.132	2.72983	J-33	J-24	232.87	-13,852.33	7,574.58	125	0.22	0.47	2.72983	HDPE	145	0.03
P-430	98.5	20.8	20.219	0.32498	J-298	J-312	232.87	-13,004.30	8,097.16	110	0.03	0.02	0.32498	uPVC	145	0
P-431	51	20.732	19.384	0.16839	J-311	J-313	232.87	-12,852.39	8,140.69	110	0.02	0.01	0.16839	uPVC	145	0
P-432	301.5	19.466	20.811	0.99416	J-297	J-314	234.22	-13,006.77	8,053.31	200	0.03	0.01	0.99416	uPVC	145	0
P-433	50.5	19.379	20.144	0.65196	J-310	J-315	234.22	-12,804.22	8,139.46	110	0.07	0.06	0.65196	uPVC	145	0
P-434	49	20.144	19.375	0.32368	J-315	J-316	233.45	-12,805.15	8,089.13	110	0.03	0.02	0.32368	uPVC	145	0
P-435	107.5	19.375	20.722	-0.19249	J-316	J-317	234.22	-12,756.05	8,086.66	225	0	0	0.19249	uPVC	145	0
P-436	48	20.722	20.148	-0.8236	J-317	J-309	232.87	-12,754.03	8,194.31	110	0.09	0.1	0.8236	uPVC	145	0
P-437	65.5	20.722	20.143	-0.09769	J-317	J-306	232.87	-12,754.03	8,194.31	160	0	0	0.09769	uPVC	145	0
P-438	49	18.176	17.408	-0.1618	J-318	J-319	233.45	-12,700.86	8,162.22	110	0.02	0	0.1618	uPVC	145	0
P-439	51	17.408	18.756	-0.40205	J-319	J-320	234.22	-12,652.13	8,160.29	110	0.04	0.03	0.40205	uPVC	145	0
P-44	61	21.975	22.095	-0.20136	J-34	J-32	234.22	-13,933.74	7,512.01	110	0.02	0.01	0.20136	uPVC	145	0
P-440	95	18.756	18.188	-0.88361	J-320	J-321	232.87	-12,600.99	8,161.25	110	0.09	0.11	0.88361	uPVC	145	0.01
P-441	47	18.188	17.41	1.21432	J-321	J-322	233.45	-12,605.33	8,066.21	110	0.13	0.2	1.21432	uPVC	145	0.01
P-442	52	17.41	18.757	0.17169	J-322	J-323	234.22	-12,652.13	8,065.24	160	0.01	0	0.17169	uPVC	145	0
P-443	95	17.408	17.41	-0.40284	J-319	J-322	234.22	-12,652.13	8,160.29	110	0.04	0.03	0.40284	uPVC	145	0
P-444	65.5	18.188	18.248	-2.78223	J-321	J-324	233.45	-12,605.33	8,066.21	110	0.29	0.92	2.78223	uPVC	145	0.06
P-445	71	18.248	17.565	-3.23248	J-324	J-325	233.45	-12,539.72	8,065.24	110	0.34	1.21	3.23248	uPVC	145	0.09
P-446	82	17.565	18.463	-3.73711	J-325	J-326	234.22	-12,540.20	7,994.32	110	0.39	1.58	3.73711	HDPE	145	0.13
P-447	53.5	18.463	19.146	-4.18406	J-326	J-327	233.45	-12,622.22	7,993.84	110	0.44	1.95	4.18406	uPVC	145	0.1
P-448	103	19.146	19.554	-22.4375	J-327	J-328	232.87	-12,660.82	7,956.69	180	0.88	3.97	22.4375	HDPE	145	0.41
P-449	342.5	19.554	19.493	-51.71851	J-328	J-329	232.87	-12,763.58	7,959.59	250	1.05	3.76	51.71851	HDPE	145	1.29
P-45	189.5	21.064	20.214	12.39101	J-17	J-35	234.1	-13,373.27	8,006.52	140	0.8	4.5	12.39101	HDPE	145	0.85
P-450	483	19.554	19.177	26.21995	J-328	J-330	232.87	-12,763.58	7,959.59	315	0.34	0.35	26.21995	uPVC	145	0.17
P-451	105	19.177	18.725	24.28134	J-330	J-331	233.08	-12,774.34	7,476.63	180	0.95	4.59	24.28134	HDPE	145	0.48
P-452	56	18.725	18.654	5.62677	J-331	J-332	233.05	-12,669.56	7,475.12	125	0.46	1.81	5.62677	HDPE	145	0.1
P-453	53	18.654	17.428	2.0779	J-332	J-333	233.02	-12,670.31	7,530.91	110	0.22	0.53	2.0779	uPVC	145	0.03
P-454	56	17.428	18.655	1.71831	J-333	J-334	234.22	-12,669.56	7,583.68	110	0.18	0.37	1.71831	uPVC	145	0.02
P-455	29.5	18.655	18.625	0.09752	J-334	J-335	232.97	-12,613.78	7,583.68	110	0.01	0	0.09752	uPVC	145	0
P-456	56	18.654	18.595	3.00467	J-332	J-336	233.02	-12,670.31	7,530.91	110	0.32	1.06	3.00467	uPVC	145	0.06
P-457	54.5	18.595	18.655	-1.15901	J-336	J-334	233.02	-12,614.53	7,529.40	110	0.12	0.18	1.15901	uPVC	145	0.01
P-458	154.5	18.595	18.403	3.28984	J-336	J-337	233.02	-12,614.53	7,529.40	110	0.35	1.25	3.28984	uPVC	145	0.19
P-459	37	18.403	18.413	0.12224	J-337	J-338	233.02	-12,460.00	7,527.89	110	0.01	0	0.12224	uPVC	145	0
P-46	70.5	20.214	19.915	6.77274	J-35	J-36	234.1	-13,184.09	7,999.91	125	0.55	2.55	6.77274	HDPE	145	0.18

Distribution Network Design Output: Zone 15

P-460	95	18.725	18.27	17.81039	J-331	J-339	233.05	-12,669.56	7,475.12	160	0.89	4.59	17.81039	HDPE	145	0.44
P-461	110	18.27	18.295	-1.79406	J-339	J-340	233.07	-12,574.58	7,473.62	110	0.19	0.41	1.79406	uPVC	145	0.04
P-462	57.5	18.295	18.403	-2.3465	J-340	J-337	233.09	-12,464.52	7,470.60	110	0.25	0.67	2.3465	uPVC	145	0.04
P-463	37.5	18.27	18.11	18.80479	J-339	J-341	233.07	-12,574.58	7,473.62	160	0.94	5.08	18.80479	HDPE	145	0.19
P-464	87.5	18.11	17.4	10.47184	J-341	J-342	233.04	-12,573.82	7,435.92	200	0.33	0.58	10.47184	uPVC	145	0.05
P-465	34.5	17.4	17.647	8.39198	J-342	J-343	233.7	-12,573.07	7,348.48	200	0.27	0.38	8.39198	uPVC	145	0.01
P-466	68.5	17.647	17.801	6.27463	J-343	J-344	233.44	-12,575.33	7,313.80	200	0.2	0.22	6.27463	uPVC	145	0.02
P-467	43	17.801	17.725	3.96026	J-344	J-345	233.27	-12,576.84	7,245.21	110	0.42	1.76	3.96026	uPVC	145	0.08
P-468	118.5	17.725	17.698	1.56431	J-345	J-346	233.27	-12,574.58	7,202.24	110	0.16	0.32	1.56431	uPVC	145	0.04
P-469	39	17.698	17.692	1.04484	J-346	J-347	233.26	-12,573.82	7,083.89	110	0.11	0.15	1.04484	uPVC	145	0.01
P-47	83.5	19.915	20.851	25.21917	J-36	J-37	234.22	-13,184.70	8,070.47	180	0.99	4.93	25.21917	HDPE	145	0.41
P-470	103	17.692	17.682	0.16665	J-347	J-348	233.26	-12,534.62	7,083.89	110	0.02	0.01	0.16665	uPVC	145	0
P-471	34.5	17.682	17.663	-0.53837	J-348	J-349	233.27	-12,497.69	7,159.27	110	0.06	0.04	0.53837	uPVC	145	0
P-472	40	17.663	17.663	-1.35595	J-349	J-350	233.29	-12,463.01	7,159.27	110	0.14	0.24	1.35595	uPVC	145	0.01
P-473	112.5	17.663	17.725	-1.49244	J-350	J-345	233.3	-12,462.26	7,199.22	110	0.16	0.29	1.49244	uPVC	145	0.03
P-474	40	17.692	17.692	0.27796	J-347	J-351	233.26	-12,534.62	7,083.89	110	0.03	0.01	0.27796	uPVC	145	0
P-475	74	17.692	17.682	-0.00754	J-351	J-348	233.26	-12,494.67	7,085.40	110	0	0	0.00754	uPVC	145	0
P-476	33	17.692	17.682	-0.19936	J-351	J-352	233.26	-12,494.67	7,085.40	110	0.02	0.01	0.19936	uPVC	145	0
P-477	75.5	17.682	17.663	-0.32283	J-352	J-349	233.27	-12,461.50	7,083.89	110	0.03	0.02	0.32283	uPVC	145	0
P-478	38.5	17.682	17.673	-0.36139	J-352	J-353	233.27	-12,461.50	7,083.89	110	0.04	0.02	0.36139	uPVC	145	0
P-479	112.5	17.673	17.645	-0.85943	J-353	J-354	233.28	-12,423.06	7,085.40	110	0.09	0.1	0.85943	uPVC	145	0.01
P-48	189.5	20.95	19.915	19.57905	J-16	J-36	234.22	-13,374.21	8,072.48	160	0.97	5.47	19.57905	HDPE	145	1.04
P-480	40.5	17.645	17.663	0.50001	J-354	J-350	233.32	-12,421.55	7,197.72	110	0.05	0.04	0.50001	uPVC	145	0
P-481	127.5	17.801	17.713	1.52623	J-344	J-355	233.27	-12,576.84	7,245.21	110	0.16	0.3	1.52623	uPVC	145	0.04
P-482	38	17.713	17.667	2.36445	J-355	J-356	233.32	-12,449.30	7,242.22	110	0.25	0.68	2.36445	uPVC	145	0.03
P-483	10	17.667	17.668	-0.68876	J-356	J-357	233.34	-12,411.36	7,240.48	110	0.07	0.07	0.68876	uPVC	145	0
P-484	137.5	17.668	18.031	-4.2287	J-357	J-358	233.34	-12,409.14	7,250.12	160	0.21	0.32	4.2287	uPVC	145	0.04
P-485	45	18.031	17.571	-3.67358	J-358	J-359	233.02	-12,408.50	7,387.79	110	0.39	1.53	3.67358	uPVC	145	0.07
P-486	112	17.571	18.242	-4.1914	J-359	J-360	233.55	-12,407.72	7,432.56	200	0.13	0.11	4.1914	uPVC	145	0.01
P-487	54	18.242	18.11	-7.7426	J-360	J-341	232.89	-12,519.65	7,435.26	200	0.25	0.33	7.7426	uPVC	145	0.02
P-488	48	18.242	18.056	2.84548	J-360	J-361	232.89	-12,519.65	7,435.26	110	0.3	0.95	2.84548	uPVC	145	0.05
P-489	71	18.056	18.03	1.69472	J-361	J-362	233.03	-12,520.43	7,387.40	110	0.18	0.37	1.69472	uPVC	145	0.03
P-49	112	22.297	20.582	12.19242	J-18	J-38	232.87	-13,376.66	7,941.69	140	0.79	4.36	12.19242	HDPE	145	0.49
P-490	41	18.03	18.031	1.29216	J-362	J-358	233.03	-12,449.41	7,386.63	110	0.14	0.22	1.29216	uPVC	145	0.01
P-491	39	18.03	17.232	-0.09548	J-362	J-363	233.03	-12,449.41	7,386.63	110	0.01	0	0.09548	uPVC	145	0
P-492	72	17.232	17.335	-1.59803	J-363	J-364	233.83	-12,449.41	7,347.65	110	0.17	0.33	1.59803	uPVC	145	0.02
P-493	52	17.335	17.4	-1.506	J-364	J-342	233.75	-12,521.20	7,348.42	110	0.16	0.29	1.506	uPVC	145	0.02

P-494	39	18.056	17.335	0.62964	J-361	J-364	233.03	-12,520.43	7,387.40	110	0.07	0.06	0.62964	uPVC	145	0
P-495	126.5	17.647	17.476	1.36053	J-343	J-365	233.44	-12,575.33	7,313.80	110	0.14	0.24	1.36053	uPVC	145	0.03
P-496	36.5	17.476	17.232	-1.01604	J-365	J-363	233.58	-12,448.64	7,311.37	110	0.11	0.14	1.01604	uPVC	145	0.01
P-497	69	17.476	17.713	1.61152	J-365	J-355	233.58	-12,448.64	7,311.37	110	0.17	0.33	1.61152	uPVC	145	0.02
P-498	10.5	17.645	17.649	-1.89869	J-354	J-366	233.32	-12,421.55	7,197.72	110	0.2	0.45	1.89869	uPVC	145	0
P-499	42	17.649	17.667	-2.75625	J-366	J-356	233.32	-12,411.20	7,198.28	110	0.29	0.9	2.75625	uPVC	145	0.04
P-5	215	21.63	20.311	2.25708	J-4	J-5	233.88	-13,993.11	8,112.55	125	0.18	0.33	2.25708	HDPE	145	0.07
P-50	59.5	20.582	20.225	11.6268	J-38	J-39	234.1	-13,264.90	7,940.21	140	0.76	4	11.6268	HDPE	145	0.24
P-500	33.5	17.668	17.614	2.943	J-357	J-367	233.34	-12,409.14	7,250.12	110	0.31	1.02	2.943	uPVC	145	0.03
P-501	31.5	17.614	17.593	1.63391	J-367	J-368	233.36	-12,375.69	7,250.38	110	0.17	0.34	1.63391	uPVC	145	0.01
P-502	28.5	17.593	17.579	1.03621	J-368	J-369	233.37	-12,344.04	7,249.23	110	0.11	0.15	1.03621	uPVC	145	0
P-503	28	17.579	17.557	0.6421	J-369	J-370	233.38	-12,315.48	7,250.00	110	0.07	0.06	0.6421	uPVC	145	0
P-504	30	17.557	17.557	0.27456	J-370	J-371	233.4	-12,287.69	7,250.00	110	0.03	0.01	0.27456	uPVC	145	0
P-505	54.5	17.557	17.567	-0.00427	J-371	J-372	233.4	-12,257.59	7,251.16	110	0	0	0.00427	uPVC	145	0
P-506	28.5	17.567	17.577	-0.27815	J-372	J-373	233.39	-12,257.97	7,196.74	110	0.03	0.01	0.27815	uPVC	145	0
P-507	29	17.577	17.589	-0.62814	J-373	J-374	233.38	-12,286.15	7,199.05	110	0.07	0.06	0.62814	uPVC	145	0
P-508	29.5	17.589	17.613	-0.95651	J-374	J-375	233.37	-12,315.09	7,197.89	110	0.1	0.13	0.95651	uPVC	145	0
P-509	31	17.613	17.628	-1.09612	J-375	J-376	233.35	-12,344.43	7,197.89	110	0.12	0.16	1.09612	uPVC	145	0.01
P-51	44	20.225	21.397	16.5376	J-39	J-40	234.22	-13,264.90	7,880.51	160	0.82	4	16.5376	HDPE	145	0.18
P-510	36	17.628	17.649	-0.56555	J-376	J-366	233.34	-12,375.30	7,198.28	110	0.06	0.05	0.56555	uPVC	145	0
P-511	52	17.614	17.628	0.92313	J-367	J-376	233.36	-12,375.69	7,250.38	110	0.1	0.12	0.92313	uPVC	145	0.01
P-512	51.5	17.593	17.613	0.22987	J-368	J-375	233.37	-12,344.04	7,249.23	110	0.02	0.01	0.22987	uPVC	145	0
P-513	52	17.579	17.589	0.03617	J-369	J-374	233.38	-12,315.48	7,250.00	110	0	0	0.03617	uPVC	145	0
P-514	51	17.557	17.577	0.00795	J-370	J-373	233.4	-12,287.69	7,250.00	110	0	0	0.00795	uPVC	145	0
P-515	30	19.146	17.663	17.63837	J-327	J-377	232.87	-12,660.82	7,956.69	160	0.88	4.51	17.63837	uPVC	145	0.14
P-516	50	17.663	19.136	11.65169	J-377	J-378	234.22	-12,662.58	7,926.76	160	0.58	2.09	11.65169	uPVC	145	0.1
P-517	52	19.136	18.964	5.74475	J-378	J-379	232.64	-12,662.58	7,877.01	110	0.6	3.51	5.74475	uPVC	145	0.18
P-518	51.5	18.964	18.868	2.38587	J-379	J-380	232.63	-12,664.09	7,824.99	110	0.25	0.69	2.38587	uPVC	145	0.04
P-519	120.5	18.868	18.798	1.8186	J-380	J-381	232.69	-12,665.60	7,773.73	110	0.19	0.42	1.8186	uPVC	145	0.05
P-52	80	21.397	19.887	10.88317	J-40	J-41	232.87	-13,265.51	7,836.48	140	0.71	3.54	10.88317	HDPE	145	0.28
P-520	53	18.798	18.847	1.24639	J-381	J-382	232.71	-12,544.99	7,771.47	110	0.13	0.21	1.24639	uPVC	145	0.01
P-521	46.5	18.847	18.853	3.16415	J-382	J-383	232.65	-12,547.25	7,824.24	110	0.33	1.16	3.16415	uPVC	145	0.05
P-522	114.5	18.853	19.136	-5.19298	J-383	J-378	232.59	-12,548.00	7,870.98	110	0.55	2.91	5.19298	uPVC	145	0.33
P-523	117	18.964	18.847	2.63173	J-379	J-382	232.63	-12,664.09	7,824.99	110	0.28	0.83	2.63173	uPVC	145	0.1
P-524	38	18.853	18.731	7.70086	J-383	J-384	232.59	-12,548.00	7,870.98	125	0.63	3.24	7.70086	HDPE	145	0.12
P-525	14.5	18.731	18.66	11.91815	J-384	J-385	232.59	-12,510.15	7,874.30	140	0.77	4.18	11.91815	HDPE	145	0.06
P-526	29.5	18.66	18.63	0.09752	J-385	J-386	232.6	-12,495.63	7,872.45	110	0.01	0	0.09752	uPVC	145	0

Distribution Network Design Output: Zone 15

P-527	150.5	17.663	18.758	5.22656	J-377	J-387	234.22	-12,662.58	7,926.76	110	0.55	2.94	5.22656	uPVC	145	0.44
P-528	51.5	18.758	18.731	4.5604	J-387	J-384	232.68	-12,512.31	7,925.55	110	0.48	2.29	4.5604	uPVC	145	0.12
P-53	76.5	19.887	19.541	14.03348	J-41	J-42	234.1	-13,185.30	7,834.07	160	0.7	2.95	14.03348	HDPE	145	0.23
P-54	166	19.887	20.214	-4.21369	J-41	J-35	234.1	-13,185.30	7,834.07	110	0.44	1.97	4.21369	uPVC	145	0.33
P-55	61.5	20.225	20.54	-5.45499	J-39	J-43	234.22	-13,264.90	7,880.51	110	0.57	3.18	5.45499	uPVC	145	0.2
P-56	117.5	20.54	20.738	-4.99831	J-43	J-44	234.1	-13,326.42	7,882.31	110	0.53	2.71	4.99831	uPVC	145	0.32
P-569	180	22.243	20.293	168.49646	J-3	J-421	233.36	-13,998.54	7,792.32	355	1.7	6.08	168.49646	HDPE	145	1.09
P-57	64	20.738	21.015	-12.72428	J-44	J-45	234.22	-13,444.01	7,883.52	160	0.63	2.46	12.72428	uPVC	145	0.16
P-570	209.5	20.293	20.824	29.32918	J-421	J-67	234.22	-14,002.45	7,612.45	200	0.93	3.9	29.32918	HDPE	145	0.82
P-58	57.5	21.015	21.036	-17.285	J-45	J-19	234.1	-13,507.94	7,886.54	180	0.68	2.45	17.285	HDPE	145	0.14
P-59	243	21.015	20.845	3.35887	J-45	J-46	234.1	-13,507.94	7,886.54	160	0.17	0.21	3.35887	uPVC	145	0.05
P-6	56	20.311	21.157	0.52146	J-5	J-6	235.13	-13,778.42	8,122.20	110	0.05	0.04	0.52146	uPVC	145	0
P-60	67.5	20.845	22.111	7.94187	J-46	J-47	234.22	-13,513.36	7,643.50	125	0.65	3.43	7.94187	HDPE	145	0.23
P-61	63.5	22.111	21.921	5.12715	J-47	J-48	232.72	-13,445.82	7,642.90	110	0.54	2.84	5.12715	uPVC	145	0.18
P-62	53.5	21.921	21.761	5.10761	J-48	J-49	232.73	-13,382.50	7,641.09	110	0.54	2.82	5.10761	uPVC	145	0.15
P-63	61.5	21.761	21.575	7.19631	J-49	J-50	232.74	-13,328.83	7,640.49	125	0.59	2.85	7.19631	HDPE	145	0.18
P-64	56	21.575	21.52	8.49544	J-50	J-51	232.75	-13,267.32	7,639.88	140	0.55	2.23	8.49544	HDPE	145	0.13
P-65	62	21.52	20.056	2.534	J-51	J-52	232.68	-13,267.32	7,695.97	110	0.27	0.77	2.534	uPVC	145	0.05
P-66	78.5	20.056	21.397	-4.98661	J-52	J-40	234.1	-13,266.11	7,758.08	125	0.41	1.45	4.98661	HDPE	145	0.11
P-67	52.5	20.738	20.598	6.95432	J-44	J-53	234.22	-13,444.01	7,883.52	125	0.57	2.68	6.95432	HDPE	145	0.14
P-68	119.5	20.598	21.779	3.49574	J-53	J-54	234.22	-13,445.22	7,831.05	110	0.37	1.4	3.49574	uPVC	145	0.17
P-69	53.5	21.779	20.54	1.22339	J-54	J-43	232.87	-13,325.81	7,828.64	110	0.13	0.2	1.22339	uPVC	145	0.01
P-7	49	21.157	21.986	-0.12759	J-6	J-7	234.28	-13,779.03	8,066.11	110	0.01	0	0.12759	uPVC	145	0
P-70	53.5	20.598	20.671	2.71495	J-53	J-55	234.22	-13,445.22	7,831.05	110	0.29	0.87	2.71495	uPVC	145	0.05
P-71	63.5	20.671	20.447	3.82484	J-55	J-56	234.1	-13,444.62	7,777.38	110	0.4	1.65	3.82484	uPVC	145	0.1
P-72	54.5	20.447	20.534	2.1857	J-56	J-57	234.22	-13,381.29	7,774.97	110	0.23	0.59	2.1857	uPVC	145	0.03
P-73	55.5	20.534	21.779	-1.51883	J-57	J-54	234.1	-13,327.02	7,773.16	110	0.16	0.3	1.51883	uPVC	145	0.02
P-74	134.5	22.111	20.671	1.93923	J-47	J-55	232.72	-13,445.82	7,642.90	110	0.2	0.47	1.93923	uPVC	145	0.06
P-75	134	20.447	21.921	0.80816	J-56	J-48	234.22	-13,381.29	7,774.97	110	0.09	0.09	0.80816	uPVC	145	0.01
P-76	132.5	20.534	21.761	2.90485	J-57	J-49	234.1	-13,327.02	7,773.16	110	0.31	0.99	2.90485	uPVC	145	0.13
P-77	73.5	20.845	22.538	-5.84913	J-46	J-58	234.22	-13,513.36	7,643.50	110	0.62	3.62	5.84913	uPVC	145	0.27
P-78	245.5	22.538	21.521	8.57431	J-58	J-59	232.79	-13,513.36	7,569.93	125	0.7	3.95	8.57431	HDPE	145	0.97
P-79	75	21.521	21.575	1.93398	J-59	J-50	232.84	-13,267.92	7,565.10	110	0.2	0.47	1.93398	uPVC	145	0.03
P-8	162	21.986	20.704	-0.82342	J-7	J-8	233.45	-13,779.63	8,017.26	110	0.09	0.1	0.82342	uPVC	145	0.02
P-80	154.5	20.056	21.053	6.54788	J-52	J-60	234.1	-13,266.11	7,758.08	125	0.53	2.4	6.54788	HDPE	145	0.37
P-81	70	21.52	21.296	5.34143	J-51	J-61	232.68	-13,267.32	7,695.97	110	0.56	3.06	5.34143	uPVC	145	0.21
P-82	85	21.296	21.081	8.63968	J-61	J-62	232.69	-13,197.36	7,694.16	140	0.56	2.31	8.63968	HDPE	145	0.2

Distribution Network Design Output: Zone 15

P-83	69	21.521	21.397	5.35608	J-59	J-63	232.84	-13,267.92	7,565.10	125	0.44	1.65	5.35608	HDPE	145	0.11

Distribution Network Design Output: Zone 15

P-84	130.5	21.397	21.296	4.23967	J-63	J-61	232.85	-13,199.17	7,563.90	110	0.45	2	4.23967	uPVC	145	0.26
P-85	69.5	21.397	21.207	0.22938	J-63	J-64	232.85	-13,199.17	7,563.90	110	0.02	0.01	0.22938	uPVC	145	0
P-86	97	23.131	22.741	16.59994	J-23	J-65	232.78	-13,663.87	7,573.07	160	0.83	4.03	16.59994	HDPE	145	0.39
P-87	53.5	22.741	22.538	15.65165	J-65	J-58	232.78	-13,566.68	7,570.32	160	0.78	3.62	15.65165	HDPE	145	0.19
P-88	68.5	22.511	22.741	-0.22608	J-66	J-65	233.01	-13,568.22	7,502.01	110	0.02	0.01	0.22608	uPVC	145	0
P-9	47.5	20.704	21.338	1.52441	J-8	J-9	234.75	-13,617.41	8,016.06	110	0.16	0.3	1.52441	uPVC	145	0.01
P-90	61	20.824	19.405	19.82167	J-67	J-68	232.87	-14,006.84	7,402.88	180	0.78	3.16	19.82167	HDPE	145	0.19
P-91	149	19.405	20.467	3.08699	J-68	J-69	234.1	-14,008.04	7,341.97	110	0.32	1.11	3.08699	uPVC	145	0.17
P-92	70.5	20.467	19.072	2.36314	J-69	J-70	232.87	-14,009.85	7,193.02	110	0.25	0.68	2.36314	uPVC	145	0.05
P-93	64.5	19.072	19.207	-1.30592	J-70	J-71	234.22	-13,939.29	7,191.21	110	0.14	0.23	1.30592	uPVC	145	0.01
P-94	85.5	19.207	19.153	-2.53422	J-71	J-72	234.1	-13,937.49	7,255.74	110	0.27	0.77	2.53422	uPVC	145	0.07
P-95	71	19.153	19.405	-4.08983	J-72	J-68	234.22	-13,936.88	7,341.37	110	0.43	1.87	4.08983	uPVC	145	0.13
P-96	132	19.072	19.173	2.78862	J-70	J-73	234.22	-13,939.29	7,191.21	160	0.14	0.15	2.78862	uPVC	145	0.02
P-97	68	19.173	20.394	2.12905	J-73	J-74	234.1	-13,807.22	7,185.18	160	0.11	0.09	2.12905	uPVC	145	0.01
P-98	61.5	20.394	19.204	-2.23513	J-74	J-75	232.87	-13,806.62	7,253.32	110	0.24	0.61	2.23513	uPVC	145	0.04
P-99	69.5	19.204	19.207	-0.50445	J-75	J-71	234.1	-13,868.13	7,254.53	110	0.05	0.04	0.50445	uPVC	145	0
PP-529	61.5	21.081	21.053	8.15647	J-62	J-60	232.71	-13,112.33	7,693.56	250	0.17	0.12	8.15647	HDPE	145	0.01
PP-530	77.5	21.053	19.541	13.73655	J-60	J-42	232.73	-13,111.73	7,755.07	250	0.28	0.32	13.73655	HDPE	145	0.03
PP-531	135.5	19.541	19.493	26.81542	J-42	J-329	234.22	-13,108.71	7,832.26	315	0.34	0.36	26.81542	HDPE	145	0.05
PP-532	100.5	19.493	20.851	-26.81038	J-329	J-37	234.22	-13,105.76	7,967.74	400	0.21	0.11	26.81038	HDPE	145	0.01
PP-533	74.5	20.851	20.851	-2.44363	J-37	J-15	232.87	-13,101.47	8,068.06	400	0.02	0	2.44363	HDPE	145	0
PP-534	57.5	20.851	20.849	14.59518	J-15	J-294	232.87	-13,104.80	8,142.70	400	0.12	0.04	14.59518	HDPE	145	0
PP-535	99	18.66	18.263	11.34896	J-385	PJ-388	232.6	-12,495.63	7,872.45	140	0.74	3.82	11.34896	HDPE	145	0.38
PP-536	99	18.263	17.815	10.69598	PJ-388	PJ-389	232.62	-12,398.01	7,872.35	140	0.69	3.42	10.69598	HDPE	145	0.34
PP-537	41	17.815	17.546	10.08558	PJ-389	PJ-390	232.73	-12,411.29	7,774.16	125	0.82	5.33	10.08558	HDPE	145	0.22
PP-538	26.5	17.546	17.552	1.09718	PJ-390	PJ-391	232.78	-12,419.32	7,733.71	110	0.12	0.16	1.09718	HDPE	145	0
PP-539	104.5	17.552	17.59	0.34476	PJ-391	PJ-392	232.77	-12,445.56	7,736.80	110	0.04	0.02	0.34476	HDPE	145	0
PP-540	22	17.572	17.552	-0.0728	PJ-393	PJ-391	232.75	-12,442.78	7,758.42	110	0.01	0	0.0728	HDPE	145	0
PP-541	26.5	17.552	17.522	0.08763	PJ-391	PJ-394	232.77	-12,445.56	7,736.80	110	0.01	0	0.08763	HDPE	145	0
PP-542	22.5	17.825	17.815	-0.07445	PJ-395	PJ-389	232.72	-12,433.52	7,778.49	110	0.01	0	0.07445	HDPE	145	0
PP-543	46	17.546	17.314	8.61398	PJ-390	PJ-396	232.78	-12,419.32	7,733.71	125	0.7	3.98	8.61398	HDPE	145	0.18
PP-544	131.5	17.314	17.39	0.43376	PJ-396	PJ-397	232.83	-12,426.11	7,688.33	110	0.05	0.03	0.43376	HDPE	145	0
PP-545	43.5	17.314	17.017	7.45142	PJ-396	PJ-398	232.83	-12,426.11	7,688.33	110	0.78	5.67	7.45142	HDPE	145	0.25
PP-546	39	17.017	16.979	3.27576	PJ-398	PJ-399	232.88	-12,435.37	7,646.02	110	0.34	1.24	3.27576	HDPE	145	0.05

Distribution Network Design Output: Zone 15

PP-547	54.5	16.979	16.84	2.7692	PJ-399	PJ-400	232.87	-12,473.35	7,655.91	110	0.29	0.91	2.7692	HDPE	145	0.05
PP-548	42	16.84	16.835	-2.18183	PJ-400	PJ-401	232.96	-12,488.79	7,603.41	110	0.23	0.58	2.18183	HDPE	145	0.02
PP-549	46	16.835	17.017	-3.75178	PJ-401	PJ-398	232.99	-12,446.80	7,601.25	110	0.39	1.59	3.75178	HDPE	145	0.07
PP-550	30	16.979	17.019	0.09917	PJ-399	PJ-402	232.87	-12,473.35	7,655.91	110	0.01	0	0.09917	HDPE	145	0
PP-551	82.5	16.835	16.784	0.27223	PJ-401	PJ-403	232.99	-12,446.80	7,601.25	110	0.03	0.01	0.27223	HDPE	145	0
PP-552	111.5	16.835	16.822	0.36783	PJ-401	PJ-404	232.99	-12,446.80	7,601.25	110	0.04	0.02	0.36783	HDPE	145	0
PP-553	89.5	16.84	16.704	4.33762	PJ-400	PJ-405	232.96	-12,488.79	7,603.41	110	0.46	2.08	4.33762	HDPE	145	0.19
PP-554	37.5	16.704	16.697	1.87267	PJ-405	PJ-406	232.91	-12,578.33	7,605.27	110	0.2	0.44	1.87267	HDPE	145	0.02
PP-555	46.5	16.697	16.705	0.56287	PJ-406	PJ-407	232.9	-12,616.00	7,607.12	110	0.06	0.05	0.56287	HDPE	145	0
PP-556	46.5	16.705	16.765	0.15356	PJ-407	PJ-408	232.89	-12,662.32	7,609.90	110	0.02	0	0.15356	HDPE	145	0
PP-557	15.5	16.685	16.705	-0.05137	PJ-409	PJ-407	232.91	-12,664.79	7,594.46	110	0.01	0	0.05137	HDPE	145	0
PP-558	10.5	16.687	16.697	-0.03489	PJ-410	PJ-406	232.91	-12,617.86	7,596.93	110	0	0	0.03489	HDPE	145	0
PP-559	65.5	16.697	16.772	0.7472	PJ-406	PJ-411	232.9	-12,616.00	7,607.12	110	0.08	0.08	0.7472	HDPE	145	0.01
PP-560	80.5	16.772	16.791	0.26564	PJ-411	PJ-412	232.82	-12,608.59	7,671.96	110	0.03	0.01	0.26564	HDPE	145	0
PP-561	13	16.664	16.704	-0.04313	PJ-413	PJ-405	232.95	-12,580.19	7,592.30	110	0	0	0.04313	HDPE	145	0
PP-562	73	16.704	16.766	1.71939	PJ-405	PJ-414	232.91	-12,578.33	7,605.27	110	0.18	0.38	1.71939	HDPE	145	0.03
PP-563	23	16.766	16.746	0.44914	PJ-414	PJ-415	232.82	-12,563.82	7,676.59	110	0.05	0.03	0.44914	HDPE	145	0
PP-564	29.5	16.746	16.716	0.09752	PJ-415	PJ-416	232.84	-12,543.44	7,666.40	110	0.01	0	0.09752	HDPE	145	0
PP-565	27	16.726	16.746	-0.08928	PJ-417	PJ-415	232.86	-12,518.12	7,656.52	110	0.01	0	0.08928	HDPE	145	0
PP-566	60	16.766	16.801	0.75572	PJ-414	PJ-418	232.82	-12,563.82	7,676.59	110	0.08	0.08	0.75572	HDPE	145	0
PP-567	26.5	16.801	16.83	0.4703	PJ-418	PJ-419	232.78	-12,618.16	7,701.60	110	0.05	0.03	0.4703	HDPE	145	0
PP-568	58	16.83	16.84	0.19147	PJ-419	PJ-420	232.75	-12,615.08	7,728.16	110	0.02	0.01	0.19147	HDPE	145	0
PP-569	22	20.606	19.405	-11.64574	J-89	J-68	232.87	-14,030.10	7,343.38	180	0.46	1.18	11.64574	HDPE	145	0.03
PP-571	26.5	21.38	20.293	-137.7957	J-94	J-421	233.02	-14,028.82	7,613.85	355	1.39	4.19	137.79568	HDPE	145	0.11
	44983.5															

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	35	110	PVC	400	HDPE	Replacement
P-10	J-9	J-6	161	110	PVC	110	uPVC	Retained
P-100	J-72	J-76	70	110	PVC	110	uPVC	Retained
P-101	J-76	J-75	86	110	PVC	110	uPVC	Retained
P-102	J-67	J-77	141	110	PVC	140	HDPE	Replacement
P-103	J-77	J-76	59.5	110	PVC	110	uPVC	Retained
P-104	J-77	J-78	61	110	PVC	110	uPVC	Retained
P-105	J-78	J-79	52	160	PVC	160	uPVC	Retained
P-106	J-79	J-74	93.5	160	PVC	160	uPVC	Retained
P-107	J-78	J-80	69	200	PVC	200	uPVC	Retained
P-108	J-80	J-81	39	110	PVC	110	uPVC	Retained
P-109	J-80	J-82	70	110	PVC	110	uPVC	Retained
P-11	J-5	J-10	164	110	PVC	110	uPVC	Retained
P-110	J-82	J-83	64.5	110	PVC	110	uPVC	Retained
P-111	J-83	J-84	53.5	110	PVC	110	uPVC	Retained
P-112	J-84	J-79	72	110	PVC	110	uPVC	Retained
P-113	J-84	J-85	213.5	110	PVC	110	uPVC	Retained
P-114	J-85	J-86	55	160	PVC	160	uPVC	Retained
P-115	J-86	J-83	214	110	PVC	110	uPVC	Retained
P-116	J-82	J-87	216	110	PVC	110	uPVC	Retained
P-117	J-87	J-86	61.5	160	PVC	160	uPVC	Retained
P-118	J-88	J-87	42	160	PVC	160	uPVC	Retained
P-119	J-89	J-90	19.5	110	PVC	160	HDPE	Replacement
P-12	J-10	J-9	56	110	PVC	110	uPVC	Retained
P-120	J-90	J-91	52	110	PVC	180	HDPE	Replacement
P-121	J-91	J-92	169	110	PVC	110	uPVC	Retained
P-122	J-92	J-93	52	110	PVC	200	HDPE	Replacement
P-123	J-93	J-90	169.5	110	PVC	110	uPVC	Retained
P-124	J-93	J-94	81.5	110	PVC	225	HDPE	Replacement
P-125	J-94	J-95	397	110	PVC	160	HDPE	Replacement
P-126	J-95	J-96	65	110	PVC	125	HDPE	Replacement
P-127	J-96	J-97	101.5	110	PVC	125	HDPE	Replacement
P-128	J-97	J-98	52	110	PVC	110	uPVC	Retained
P-129	J-98	J-99	52.5	110	PVC	125	HDPE	Replacement
P-13	J-8	J-11	61.5	110	PVC	125	HDPE	Replacement
P-130	J-99	J-95	49	110	PVC	125	HDPE	Replacement
P-131	J-99	J-100	70	110	PVC	110	uPVC	Retained
P-132	J-100	J-101	50.5	110	PVC	140	HDPE	Replacement
P-133	J-101	J-98	70.5	110	PVC	110	uPVC	Retained
P-134	J-100	J-102	327.5	110	PVC	160	HDPE	Replacement
P-135	J-102	J-94	52.5	110	PVC	280	HDPE	Replacement
P-136	J-102	J-103	204.5	110	PVC	250	HDPE	Replacement
P-137	J-103	J-104	236	110	PVC	140	HDPE	Replacement
P-138	J-104	J-105	43.5	110	PVC	110	uPVC	Retained
P-139	J-105	J-106	47.5	110	PVC	125	HDPE	Replacement
P-14	J-11	J-12	109	315	PVC	315	uPVC	Retained
P-140	J-106	J-107	48.5	110	PVC	140	HDPE	Replacement
P-141	J-107	J-108	52	110	PVC	140	HDPE	Replacement
P-142	J-108	J-101	55	110	PVC	160	HDPE	Replacement
P-143	J-108	J-109	113.5	110	PVC	110	uPVC	Retained
P-144	J-109	J-97	55	110	PVC	140	HDPE	Replacement
P-145	J-109	J-110	53	110	PVC	140	HDPE	Replacement
P-146	J-110	J-107	104.5	110	PVC	110	uPVC	Retained
P-147	J-110	J-111	114.5	110	PVC	125	HDPE	Replacement
P-148	J-111	J-112	95.5	110	PVC	110	uPVC	Retained
P-149	J-112	J-106	67	110	PVC	125	HDPE	Replacement
P-15	J-12	J-13	183	315	PVC	315	uPVC	Retained
P-150	J-112	J-113	61	110	PVC	125	HDPE	Replacement
P-151	J-113	J-114	103.5	110	PVC	110	uPVC	Retained

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-114	J-111	52.5	110	PVC	125	HDPE	Replacement
P-153	J-114	J-115	73	110	PVC	125	HDPE	Replacement
P-154	J-115	J-116	93	110	PVC	110	uPVC	Retained
P-155	J-116	J-113	70.5	110	PVC	110	uPVC	Retained
P-156	J-105	J-117	188	110	PVC	110	uPVC	Retained
P-157	J-117	J-116	38	110	PVC	110	uPVC	Retained
P-158	J-117	J-118	41.5	110	PVC	140	HDPE	Replacement
P-159	J-118	J-119	38	110	PVC	125	HDPE	Replacement
P-16	J-13	J-14	29.5	110	PVC	160	HDPE	Replacement
P-160	J-119	J-120	67.5	110	PVC	110	uPVC	Retained
P-161	J-120	J-121	58.5	110	PVC	110	uPVC	Retained
P-162	J-121	J-122	38	110	PVC	160	HDPE	Replacement
P-163	J-122	J-115	41.5	110	PVC	125	HDPE	Replacement
P-164	J-122	J-118	126	110	PVC	110	uPVC	Retained
P-165	J-119	J-123	42	110	PVC	110	uPVC	Retained
P-166	J-123	J-124	218.5	110	PVC	110	uPVC	Retained
P-167	J-124	J-104	50	110	PVC	125	HDPE	Replacement
P-168	J-123	J-125	40.5	110	PVC	125	HDPE	Replacement
P-169	J-125	J-126	50	110	PVC	125	HDPE	Replacement
P-17	J-14	J-15	269	110	PVC	160	HDPE	Replacement
P-170	J-126	J-127	45	110	PVC	110	uPVC	Retained
P-171	J-127	J-128	64.5	110	PVC	110	uPVC	Retained
P-172	J-128	J-129	52	110	PVC	110	uPVC	Retained
P-173	J-129	J-125	109	110	PVC	110	uPVC	Retained
P-174	J-129	J-120	38	110	PVC	110	uPVC	Retained
P-175	J-128	J-130	53	110	PVC	110	uPVC	Retained
P-176	J-130	J-131	33	110	PVC	110	uPVC	Retained
P-177	J-131	J-121	59	110	PVC	125	HDPE	Replacement
P-178	J-130	J-132	46	110	PVC	125	HDPE	Replacement
P-179	J-132	J-133	113	110	PVC	110	uPVC	Retained
P-18	J-13	J-16	44.5	315	PVC	315	uPVC	Retained
P-180	J-133	J-127	46.5	110	PVC	110	uPVC	Retained
P-181	J-132	J-134	52.5	110	PVC	125	HDPE	Replacement
P-182	J-134	J-135	110	110	PVC	110	uPVC	Retained
P-183	J-135	J-133	54	110	PVC	110	uPVC	Retained
P-184	J-135	J-136	43.5	110	PVC	110	uPVC	Retained
P-185	J-136	J-126	102	110	PVC	110	uPVC	Retained
P-186	J-136	J-137	56	110	PVC	110	uPVC	Retained
P-187	J-137	J-138	153	110	PVC	125	HDPE	Replacement
P-188	J-138	J-139	63.5	110	PVC	125	HDPE	Replacement
P-189	J-139	J-140	190.5	110	PVC	110	uPVC	Retained
P-19	J-16	J-17	66	250	PVC	250	uPVC	Retained
P-190	J-140	J-124	54	110	PVC	110	uPVC	Retained
P-191	J-140	J-141	67	110	PVC	110	uPVC	Retained
P-192	J-141	J-142	190.5	110	PVC	110	uPVC	Retained
P-193	J-142	J-139	65	110	PVC	110	uPVC	Retained
P-194	J-138	J-143	113	110	PVC	110	uPVC	Retained
P-195	J-143	J-144	64	110	PVC	125	HDPE	Replacement
P-196	J-144	J-142	47.5	110	PVC	110	uPVC	Retained
P-197	J-144	J-145	188	110	PVC	125	HDPE	Replacement
P-198	J-145	J-141	48	110	PVC	140	HDPE	Replacement
P-199	J-145	J-146	67.5	110	PVC	180	HDPE	Replacement
P-2	J-1	J-2	144	160	PVC	355	HDPE	Replacement
P-20	J-17	J-18	65	250	PVC	250	uPVC	Retained
P-200	J-146	J-103	54.5	110	PVC	225	HDPE	Replacement
P-201	J-146	J-147	65	110	PVC	200	HDPE	Replacement
P-202	J-147	J-148	55	110	PVC	200	HDPE	Replacement
P-203	J-148	J-149	134	110	PVC	125	HDPE	Replacement
P-204	J-149	J-143	66	110	PVC	110	uPVC	Retained
P-205	J-149	J-150	154.5	110	PVC	140	HDPE	Replacement

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-206	J-150	J-151	62	110	PVC	110	uPVC	Retained
P-207	J-151	J-152	64.5	110	PVC	110	uPVC	Retained
P-208	J-152	J-137	50.5	110	PVC	140	HDPE	Replacement
P-209	J-152	J-153	72.5	110	PVC	125	HDPE	Replacement
P-21	J-18	J-19	132.5	250	PVC	250	uPVC	Retained
P-210	J-153	J-154	53.5	110	PVC	110	uPVC	Retained
P-211	J-154	J-155	201	110	PVC	110	uPVC	Retained
P-212	J-155	J-134	74.5	110	PVC	140	HDPE	Replacement
P-213	J-154	J-156	53	110	PVC	110	uPVC	Retained
P-214	J-156	J-157	48.5	110	PVC	110	uPVC	Retained
P-215	J-157	J-158	87.5	110	PVC	110	uPVC	Retained
P-216	J-158	J-159	60.5	110	PVC	110	uPVC	Retained
P-217	J-159	J-155	53	110	PVC	125	HDPE	Replacement
P-218	J-159	J-160	77	110	PVC	110	uPVC	Retained
P-219	J-160	J-161	53.5	110	PVC	110	uPVC	Retained
P-22	J-19	J-20	50.5	110	PVC	200	HDPE	Replacement
P-220	J-161	J-158	74.5	110	PVC	110	uPVC	Retained
P-221	J-157	J-162	73.5	110	PVC	110	uPVC	Retained
P-222	J-162	J-163	49	110	PVC	110	uPVC	Retained
P-223	J-163	J-161	38.5	110	PVC	110	uPVC	Retained
P-224	J-162	J-164	69	110	PVC	110	uPVC	Retained
P-225	J-164	J-165	48.5	110	PVC	110	uPVC	Retained
P-226	J-165	J-166	48	110	PVC	110	uPVC	Retained
P-227	J-166	J-167	27	110	PVC	110	uPVC	Retained
P-228	J-167	J-168	47	110	PVC	110	uPVC	Retained
P-229	J-168	J-163	43	110	PVC	110	uPVC	Retained
P-23	J-20	J-11	66.5	315	PVC	315	uPVC	Retained
P-230	J-167	J-169	82.5	110	PVC	110	uPVC	Retained
P-231	J-169	J-170	46	110	PVC	110	uPVC	Retained
P-232	J-170	J-160	43.5	110	PVC	110	uPVC	Retained
P-233	J-170	J-168	89.5	110	PVC	110	uPVC	Retained
P-234	J-171	J-169	71	110	PVC	110	uPVC	Retained
P-235	J-166	J-172	57	110	PVC	110	uPVC	Retained
P-236	J-172	J-173	154	110	PVC	110	uPVC	Retained
P-237	J-173	J-174	52	110	PVC	110	uPVC	Retained
P-238	J-174	J-165	102.5	110	PVC	110	uPVC	Retained
P-239	J-174	J-175	49.5	110	PVC	110	uPVC	Retained
P-24	J-20	J-21	95.5	315	PVC	315	uPVC	Retained
P-240	J-175	J-176	53.5	110	PVC	110	uPVC	Retained
P-241	J-176	J-164	47.5	110	PVC	110	uPVC	Retained
P-242	J-176	J-156	143.5	110	PVC	110	uPVC	Retained
P-243	J-175	J-177	73.5	110	PVC	110	uPVC	Retained
P-244	J-177	J-153	122	110	PVC	110	uPVC	Retained
P-245	J-177	J-178	61	110	PVC	110	uPVC	Retained
P-246	J-178	J-179	123.5	110	PVC	110	uPVC	Retained
P-247	J-179	J-151	70	110	PVC	125	HDPE	Replacement
P-248	J-178	J-180	48.5	110	PVC	110	uPVC	Retained
P-249	J-180	J-181	46	110	PVC	110	uPVC	Retained
P-25	J-21	J-22	124.5	250	PVC	315	HDPE	Replacement
P-250	J-181	J-182	42.5	110	PVC	110	uPVC	Retained
P-251	J-182	J-183	52	110	PVC	110	uPVC	Retained
P-252	J-183	J-184	119	110	PVC	110	uPVC	Retained
P-253	J-184	J-185	48.5	110	PVC	110	uPVC	Retained
P-254	J-185	J-182	121	110	PVC	110	uPVC	Retained
P-255	J-181	J-186	121	110	PVC	110	uPVC	Retained
P-256	J-186	J-185	45.5	110	PVC	110	uPVC	Retained
P-257	J-180	J-187	125.5	110	PVC	110	uPVC	Retained
P-258	J-187	J-179	48.5	110	PVC	110	uPVC	Retained
P-259	J-187	J-186	44.5	110	PVC	110	uPVC	Retained
P-26	J-22	J-1	159	110	PVC	315	HDPE	Replacement

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-260	J-150	J-188	127.5	110	PVC	125	HDPE	Replacement
P-261	J-188	J-184	70.5	110	PVC	110	uPVC	Retained
P-262	J-183	J-189	53.5	110	PVC	125	HDPE	Replacement
P-263	J-189	J-190	43.5	110	PVC	110	uPVC	Retained
P-264	J-190	J-191	45	110	PVC	110	uPVC	Retained
P-265	J-191	J-192	103.5	110	PVC	110	uPVC	Retained
P-266	J-192	J-188	51	110	PVC	110	uPVC	Retained
P-267	J-189	J-193	206.5	110	PVC	110	uPVC	Retained
P-268	J-193	J-194	65.5	110	PVC	110	uPVC	Retained
P-269	J-194	J-195	38	110	PVC	110	uPVC	Retained
P-27	J-21	J-23	371.5	200	PVC	200	uPVC	Retained
P-270	J-195	J-196	39.5	110	PVC	110	uPVC	Retained
P-271	J-196	J-197	51.5	110	PVC	110	uPVC	Retained
P-272	J-197	J-198	93	110	PVC	110	uPVC	Retained
P-273	J-198	J-199	91	110	PVC	110	uPVC	Retained
P-274	J-199	J-200	197	110	PVC	110	uPVC	Retained
P-275	J-200	J-201	51.5	110	PVC	110	uPVC	Retained
P-276	J-201	J-202	143	110	PVC	110	uPVC	Retained
P-277	J-198	J-203	134	110	PVC	110	uPVC	Retained
P-278	J-197	J-204	146	110	PVC	110	uPVC	Retained
P-279	J-204	J-205	50.5	110	PVC	110	uPVC	Retained
P-28	J-23	J-24	125	110	PVC	200	HDPE	Replacement
P-280	J-205	J-206	41.5	110	PVC	110	uPVC	Retained
P-281	J-206	J-207	38.5	110	PVC	110	uPVC	Retained
P-282	J-207	J-196	66	110	PVC	110	uPVC	Retained
P-283	J-207	J-208	42	110	PVC	110	uPVC	Retained
P-284	J-208	J-195	66.5	110	PVC	110	uPVC	Retained
P-285	J-194	J-209	64.5	110	PVC	110	uPVC	Retained
P-286	J-209	J-208	36	110	PVC	110	uPVC	Retained
P-287	J-209	J-210	36	110	PVC	110	uPVC	Retained
P-288	J-210	J-211	40	110	PVC	110	uPVC	Retained
P-289	J-211	J-206	37	110	PVC	110	uPVC	Retained
P-29	J-24	J-25	100.5	110	PVC	180	HDPE	Replacement
P-290	J-210	J-212	104	110	PVC	110	uPVC	Retained
P-291	J-212	J-213	38.5	110	PVC	110	uPVC	Retained
P-292	J-213	J-211	104	110	PVC	110	uPVC	Retained
P-293	J-205	J-214	61	110	PVC	110	uPVC	Retained
P-294	J-214	J-213	38.5	110	PVC	110	uPVC	Retained
P-295	J-212	J-215	27	110	PVC	110	uPVC	Retained
P-296	J-215	J-216	75.5	110	PVC	110	uPVC	Retained
P-297	J-216	J-214	27.5	110	PVC	110	uPVC	Retained
P-298	J-216	J-217	31.5	110	PVC	110	uPVC	Retained
P-299	J-217	J-218	75.5	110	PVC	110	uPVC	Retained
P-3	J-2	J-3	69	160	PVC	355	HDPE	Replacement
P-30	J-25	J-26	58	110	PVC	200	HDPE	Replacement
P-300	J-218	J-215	31	110	PVC	110	uPVC	Retained
P-301	J-218	J-190	61	110	PVC	110	uPVC	Retained
P-302	J-191	J-219	60.5	110	PVC	110	uPVC	Retained
P-303	J-219	J-220	76.5	110	PVC	110	uPVC	Retained
P-304	J-220	J-217	45	110	PVC	110	uPVC	Retained
P-305	J-220	J-221	37.5	110	PVC	110	uPVC	Retained
P-306	J-221	J-222	77.5	110	PVC	110	uPVC	Retained
P-307	J-222	J-219	35.5	110	PVC	110	uPVC	Retained
P-308	J-222	J-223	39.5	110	PVC	110	uPVC	Retained
P-309	J-223	J-224	37.5	110	PVC	110	uPVC	Retained
P-31	J-26	J-1	58.5	160	PVC	200	HDPE	Replacement
P-310	J-224	J-225	37.5	110	PVC	110	uPVC	Retained
P-311	J-225	J-221	37.5	110	PVC	110	uPVC	Retained
P-312	J-225	J-226	38	110	PVC	110	uPVC	Retained
P-313	J-226	J-227	28.5	110	PVC	125	HDPE	Replacement

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-314	J-227	J-228	45	110	PVC	110	uPVC	Retained
P-315	J-228	J-229	38.5	110	PVC	110	uPVC	Retained
P-316	J-229	J-224	109	110	PVC	110	uPVC	Retained
P-317	J-223	J-230	109.5	110	PVC	110	uPVC	Retained
P-318	J-230	J-229	37.5	110	PVC	110	uPVC	Retained
P-319	J-228	J-231	43	110	PVC	110	uPVC	Retained
P-32	J-2	J-27	59.5	110	PVC	125	HDPE	Replacement
P-320	J-231	J-232	76.5	110	PVC	110	uPVC	Retained
P-321	J-232	J-230	44.5	110	PVC	110	uPVC	Retained
P-322	J-232	J-233	62.5	110	PVC	110	uPVC	Retained
P-323	J-233	J-192	126	110	PVC	110	uPVC	Retained
P-324	J-233	J-234	108.5	110	PVC	140	HDPE	Replacement
P-325	J-234	J-235	53.5	110	PVC	160	HDPE	Replacement
P-326	J-235	J-148	176	110	PVC	160	HDPE	Replacement
P-327	J-231	J-236	32	110	PVC	110	uPVC	Retained
P-328	J-236	J-237	62.5	110	PVC	110	uPVC	Retained
P-329	J-237	J-238	47.5	110	PVC	110	uPVC	Retained
P-33	J-27	J-26	144	110	PVC	140	HDPE	Replacement
P-330	J-234	J-239	256.5	110	PVC	110	uPVC	Retained
P-331	J-239	J-240	47	110	PVC	140	HDPE	Replacement
P-332	J-240	J-241	28.5	110	PVC	125	HDPE	Replacement
P-333	J-241	J-237	78	110	PVC	110	uPVC	Retained
P-334	J-241	J-242	85.5	110	PVC	110	uPVC	Retained
P-335	J-242	J-243	59	110	PVC	110	uPVC	Retained
P-336	J-243	J-244	23.5	110	PVC	110	uPVC	Retained
P-337	J-244	J-245	63.5	110	PVC	110	uPVC	Retained
P-338	J-245	J-246	26	110	PVC	110	uPVC	Retained
P-339	J-242	J-245	27	110	PVC	110	uPVC	Retained
P-34	J-27	J-28	57.5	110	PVC	125	HDPE	Replacement
P-340	J-244	J-227	64	110	PVC	125	HDPE	Replacement
P-341	J-243	J-247	32.5	110	PVC	125	HDPE	Replacement
P-342	J-247	J-240	136.5	110	PVC	110	uPVC	Retained
P-343	J-247	J-248	47.5	110	PVC	125	HDPE	Replacement
P-344	J-248	J-249	188	110	PVC	110	uPVC	Retained
P-345	J-249	J-239	48.5	110	PVC	125	HDPE	Replacement
P-346	J-248	J-250	91	110	PVC	110	uPVC	Retained
P-347	J-250	J-251	64.5	110	PVC	110	uPVC	Retained
P-348	J-251	J-252	28.5	110	PVC	110	uPVC	Retained
P-349	J-252	J-253	302.5	110	PVC	110	uPVC	Retained
P-35	J-28	J-29	79	110	PVC	110	uPVC	Retained
P-350	J-253	J-254	68	110	PVC	110	uPVC	Retained
P-351	J-254	J-249	54.5	110	PVC	160	HDPE	Replacement
P-352	J-254	J-235	303.5	110	PVC	110	uPVC	Retained
P-353	J-253	J-255	265.5	110	PVC	110	uPVC	Retained
P-354	J-255	J-256	96	110	PVC	110	uPVC	Retained
P-355	J-256	J-257	172.5	110	PVC	110	uPVC	Retained
P-356	J-257	J-254	55.5	110	PVC	160	HDPE	Replacement
P-357	J-257	J-258	120.5	110	PVC	160	HDPE	Replacement
P-358	J-258	J-259	55.5	110	PVC	140	HDPE	Replacement
P-359	J-259	J-260	49	110	PVC	125	HDPE	Replacement
P-36	J-29	J-25	65	110	PVC	125	HDPE	Replacement
P-360	J-260	J-261	171.5	110	PVC	110	uPVC	Retained
P-361	J-261	J-147	82.5	110	PVC	140	HDPE	Replacement
P-362	J-258	J-262	159.5	110	PVC	110	uPVC	Retained
P-363	J-262	J-256	127	110	PVC	140	HDPE	Replacement
P-364	J-262	J-263	50.5	110	PVC	160	HDPE	Replacement
P-365	J-263	J-259	154.5	110	PVC	110	uPVC	Retained
P-366	J-260	J-264	54.5	110	PVC	125	HDPE	Replacement
P-367	J-264	J-265	53	110	PVC	125	HDPE	Replacement
P-368	J-265	J-266	48	110	PVC	110	uPVC	Retained

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-369	J-266	J-263	50	110	PVC	180	HDPE	Replacement
P-37	J-28	J-30	47	110	PVC	110	uPVC	Retained
P-370	J-264	J-267	174.5	110	PVC	110	uPVC	Retained
P-371	J-267	J-261	57.5	110	PVC	140	HDPE	Replacement
P-372	J-267	J-268	48.5	110	PVC	140	HDPE	Replacement
P-373	J-268	J-269	72.5	110	PVC	110	uPVC	Retained
P-374	J-269	J-270	29	110	PVC	110	uPVC	Retained
P-375	J-270	J-265	73	110	PVC	110	uPVC	Retained
P-376	J-268	J-271	70	110	PVC	125	HDPE	Replacement
P-377	J-271	J-272	73	110	PVC	110	uPVC	Retained
P-378	J-272	J-269	68.5	110	PVC	110	uPVC	Retained
P-379	J-270	J-273	97	110	PVC	110	uPVC	Retained
P-38	J-30	J-31	82	110	PVC	110	uPVC	Retained
P-380	J-273	J-274	26	110	PVC	110	uPVC	Retained
P-381	J-274	J-272	29	110	PVC	110	uPVC	Retained
P-382	J-271	J-275	26.5	110	PVC	140	HDPE	Replacement
P-383	J-275	J-274	73.5	110	PVC	110	uPVC	Retained
P-384	J-273	J-276	38.5	110	PVC	110	uPVC	Retained
P-385	J-276	J-277	103	110	PVC	110	uPVC	Retained
P-386	J-277	J-275	38	110	PVC	160	HDPE	Replacement
P-387	J-276	J-278	26	110	PVC	110	uPVC	Retained
P-388	J-277	J-279	39	110	PVC	180	HDPE	Replacement
P-389	J-279	J-92	45.5	110	PVC	200	HDPE	Replacement
P-39	J-31	J-29	47	110	PVC	110	uPVC	Retained
P-390	J-266	J-280	121	110	PVC	200	HDPE	Replacement
P-391	J-280	J-91	47	110	PVC	180	HDPE	Replacement
P-392	J-280	J-279	170.5	110	PVC	110	uPVC	Retained
P-393	J-199	J-281	51	110	PVC	110	uPVC	Retained
P-394	J-281	J-282	184	110	PVC	110	uPVC	Retained
P-395	J-282	J-197	52	110	PVC	110	uPVC	Retained
P-396	J-201	J-283	131.5	110	PVC	110	uPVC	Retained
P-397	J-283	J-284	92	110	PVC	110	uPVC	Retained
P-398	J-283	J-285	24.5	110	PVC	110	uPVC	Retained
P-399	J-285	J-286	84	110	PVC	110	uPVC	Retained
P-4	J-3	J-4	320.5	200	PVC	160	HDPE	Replacement
P-40	J-30	J-32	55	110	PVC	110	uPVC	Retained
P-400	J-285	J-287	27	110	PVC	110	uPVC	Retained
P-401	J-287	J-288	29.5	110	PVC	110	uPVC	Retained
P-402	J-288	J-289	25	110	PVC	110	uPVC	Retained
P-403	J-289	J-290	23.5	110	PVC	110	uPVC	Retained
P-404	J-288	J-291	123	110	PVC	110	uPVC	Retained
P-405	J-291	J-289	123	110	PVC	110	uPVC	Retained
P-406	J-287	J-292	119.5	110	PVC	110	uPVC	Retained
P-407	J-292	J-291	28.5	110	PVC	110	uPVC	Retained
P-408	J-291	J-226	31	110	PVC	125	HDPE	Replacement
P-409	J-292	J-293	16.5	110	PVC	110	uPVC	Retained
P-41	J-32	J-33	80.5	110	PVC	110	uPVC	Retained
P-410	J-294	J-295	38	250	PVC	250	uPVC	Retained
P-411	J-295	J-296	145	200	PVC	200	uPVC	Retained
P-412	J-296	J-297	58	200	PVC	200	uPVC	Retained
P-413	J-297	J-298	44	110	PVC	110	uPVC	Retained
P-414	J-298	J-299	46.5	110	PVC	110	uPVC	Retained
P-415	J-299	J-300	54.5	110	PVC	110	uPVC	Retained
P-416	J-300	J-295	62	250	PVC	250	uPVC	Retained
P-417	J-300	J-301	95.5	200	PVC	200	uPVC	Retained
P-418	J-301	J-302	72.5	110	PVC	110	uPVC	Retained
P-419	J-302	J-303	59.5	110	PVC	110	uPVC	Retained
P-42	J-33	J-31	52	110	PVC	110	uPVC	Retained
P-420	J-303	J-304	52.5	110	PVC	110	uPVC	Retained
P-421	J-304	J-305	37	110	PVC	110	uPVC	Retained

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-422	J-305	J-301	56.5	110	PVC	110	uPVC	Retained
P-423	J-304	J-306	98	110	PVC	110	uPVC	Retained
P-424	J-306	J-307	53.5	110	PVC	110	uPVC	Retained
P-425	J-303	J-308	142	110	PVC	110	uPVC	Retained
P-426	J-305	J-309	46	110	PVC	110	uPVC	Retained
P-427	J-309	J-310	54.5	110	PVC	110	uPVC	Retained
P-428	J-310	J-311	48	110	PVC	110	uPVC	Retained
P-429	J-311	J-299	149	110	PVC	110	uPVC	Retained
P-43	J-33	J-24	63.5	110	PVC	125	HDPE	Replacement
P-430	J-298	J-312	98.5	110	PVC	110	uPVC	Retained
P-431	J-311	J-313	51	110	PVC	110	uPVC	Retained
P-432	J-297	J-314	301.5	200	PVC	200	uPVC	Retained
P-433	J-310	J-315	50.5	110	PVC	110	uPVC	Retained
P-434	J-315	J-316	49	110	PVC	110	uPVC	Retained
P-435	J-316	J-317	107.5	225	PVC	225	uPVC	Retained
P-436	J-317	J-309	48	110	PVC	110	uPVC	Retained
P-437	J-317	J-306	65.5	160	PVC	160	uPVC	Retained
P-438	J-318	J-319	49	110	PVC	110	uPVC	Retained
P-439	J-319	J-320	51	110	PVC	110	uPVC	Retained
P-44	J-34	J-32	61	110	PVC	110	uPVC	Retained
P-440	J-320	J-321	95	110	PVC	110	uPVC	Retained
P-441	J-321	J-322	47	110	PVC	110	uPVC	Retained
P-442	J-322	J-323	52	160	PVC	160	uPVC	Retained
P-443	J-319	J-322	95	110	PVC	110	uPVC	Retained
P-444	J-321	J-324	65.5	110	PVC	110	uPVC	Retained
P-445	J-324	J-325	71	110	PVC	110	uPVC	Retained
P-446	J-325	J-326	82			110	HDPE	Replacement
P-447	J-326	J-327	53.5	110	PVC	110	uPVC	Retained
P-448	J-327	J-328	103	110	PVC	180	HDPE	Replacement
P-449	J-328	J-329	342.5	200	PVC	250	HDPE	Replacement
P-45	J-17	J-35	189.5	110	PVC	140	HDPE	Replacement
P-450	J-328	J-330	483	315	PVC	315	uPVC	Retained
P-451	J-330	J-331	105	110	PVC	180	HDPE	Replacement
P-452	J-331	J-332	56	110	PVC	125	HDPE	Replacement
P-453	J-332	J-333	53	110	PVC	110	uPVC	Retained
P-454	J-333	J-334	56	110	PVC	110	uPVC	Retained
P-455	J-334	J-335	29.5	110	PVC	110	uPVC	Retained
P-456	J-332	J-336	56	110	PVC	110	uPVC	Retained
P-457	J-336	J-334	54.5	110	PVC	110	uPVC	Retained
P-458	J-336	J-337	154.5	110	PVC	110	uPVC	Retained
P-459	J-337	J-338	37	110	PVC	110	uPVC	Retained
P-46	J-35	J-36	70.5	110	PVC	125	HDPE	Replacement
P-460	J-331	J-339	95	110	PVC	160	HDPE	Replacement
P-461	J-339	J-340	110	110	PVC	110	uPVC	Retained
P-462	J-340	J-337	57.5	110	PVC	110	uPVC	Retained
P-463	J-339	J-341	37.5	110	PVC	160	HDPE	Replacement
P-464	J-341	J-342	87.5	200	PVC	200	uPVC	Retained
P-465	J-342	J-343	34.5	200	PVC	200	uPVC	Retained
P-466	J-343	J-344	68.5	200	PVC	200	uPVC	Retained
P-467	J-344	J-345	43	110	PVC	110	uPVC	Retained
P-468	J-345	J-346	118.5	110	PVC	110	uPVC	Retained
P-469	J-346	J-347	39	110	PVC	110	uPVC	Retained
P-47	J-36	J-37	83.5	110	PVC	180	HDPE	Replacement
P-470	J-347	J-348	103	110	PVC	110	uPVC	Retained
P-471	J-348	J-349	34.5	110	PVC	110	uPVC	Retained
P-472	J-349	J-350	40	110	PVC	110	uPVC	Retained
P-473	J-350	J-345	112.5	110	PVC	110	uPVC	Retained
P-474	J-347	J-351	40	110	PVC	110	uPVC	Retained
P-475	J-351	J-348	74	110	PVC	110	uPVC	Retained
P-476	J-351	J-352	33	110	PVC	110	uPVC	Retained

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-477	J-352	J-349	75.5	110	PVC	110	uPVC	Retained
P-478	J-352	J-353	38.5	110	PVC	110	uPVC	Retained
P-479	J-353	J-354	112.5	110	PVC	110	uPVC	Retained
P-48	J-16	J-36	189.5	110	PVC	160	HDPE	Replacement
P-480	J-354	J-350	40.5	110	PVC	110	uPVC	Retained
P-481	J-344	J-355	127.5	110	PVC	110	uPVC	Retained
P-482	J-355	J-356	38	110	PVC	110	uPVC	Retained
P-483	J-356	J-357	10	110	PVC	110	uPVC	Retained
P-484	J-357	J-358	137.5	160	PVC	160	uPVC	Retained
P-485	J-358	J-359	45	110	PVC	110	uPVC	Retained
P-486	J-359	J-360	112	200	PVC	200	uPVC	Retained
P-487	J-360	J-341	54	200	PVC	200	uPVC	Retained
P-488	J-360	J-361	48	110	PVC	110	uPVC	Retained
P-489	J-361	J-362	71	110	PVC	110	uPVC	Retained
P-49	J-18	J-38	112	110	PVC	140	HDPE	Replacement
P-490	J-362	J-358	41	110	PVC	110	uPVC	Retained
P-491	J-362	J-363	39	110	PVC	110	uPVC	Retained
P-492	J-363	J-364	72	110	PVC	110	uPVC	Retained
P-493	J-364	J-342	52	110	PVC	110	uPVC	Retained
P-494	J-361	J-364	39	110	PVC	110	uPVC	Retained
P-495	J-343	J-365	126.5	110	PVC	110	uPVC	Retained
P-496	J-365	J-363	36.5	110	PVC	110	uPVC	Retained
P-497	J-365	J-355	69	110	PVC	110	uPVC	Retained
P-498	J-354	J-366	10.5	110	PVC	110	uPVC	Retained
P-499	J-366	J-356	42	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	215	110	PVC	125	HDPE	Replacement
P-50	J-38	J-39	59.5	110	PVC	140	HDPE	Replacement
P-500	J-357	J-367	33.5	110	PVC	110	uPVC	Retained
P-501	J-367	J-368	31.5	110	PVC	110	uPVC	Retained
P-502	J-368	J-369	28.5	110	PVC	110	uPVC	Retained
P-503	J-369	J-370	28	110	PVC	110	uPVC	Retained
P-504	J-370	J-371	30	110	PVC	110	uPVC	Retained
P-505	J-371	J-372	54.5	110	PVC	110	uPVC	Retained
P-506	J-372	J-373	28.5	110	PVC	110	uPVC	Retained
P-507	J-373	J-374	29	110	PVC	110	uPVC	Retained
P-508	J-374	J-375	29.5	110	PVC	110	uPVC	Retained
P-509	J-375	J-376	31	110	PVC	110	uPVC	Retained
P-51	J-39	J-40	44	110	PVC	160	HDPE	Replacement
P-510	J-376	J-366	36	110	PVC	110	uPVC	Retained
P-511	J-367	J-376	52	110	PVC	110	uPVC	Retained
P-512	J-368	J-375	51.5	110	PVC	110	uPVC	Retained
P-513	J-369	J-374	52	110	PVC	110	uPVC	Retained
P-514	J-370	J-373	51	110	PVC	110	uPVC	Retained
P-515	J-327	J-377	30	160	PVC	160	uPVC	Retained
P-516	J-377	J-378	50	160	PVC	160	uPVC	Retained
P-517	J-378	J-379	52	110	PVC	110	uPVC	Retained
P-518	J-379	J-380	51.5	110	PVC	110	uPVC	Retained
P-519	J-380	J-381	120.5	110	PVC	110	uPVC	Retained
P-52	J-40	J-41	80	110	PVC	140	HDPE	Replacement
P-520	J-381	J-382	53	110	PVC	110	uPVC	Retained
P-521	J-382	J-383	46.5	110	PVC	110	uPVC	Retained
P-522	J-383	J-378	114.5	110	PVC	110	uPVC	Retained
P-523	J-379	J-382	117	110	PVC	110	uPVC	Retained
P-524	J-383	J-384	38	110	PVC	125	HDPE	Replacement
P-525	J-384	J-385	14.5	110	PVC	140	HDPE	Replacement
P-526	J-385	J-386	29.5	110	PVC	110	uPVC	Retained
P-527	J-377	J-387	150.5	110	PVC	110	uPVC	Retained
P-528	J-387	J-384	51.5	110	PVC	110	uPVC	Retained
P-53	J-41	J-42	76.5	110	PVC	160	HDPE	Replacement
P-54	J-41	J-35	166	110	PVC	110	uPVC	Retained

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-55	J-39	J-43	61.5	110	PVC	110	uPVC	Retained
P-56	J-43	J-44	117.5	110	PVC	110	uPVC	Retained
P-569	J-3	J-421	180	160	PVC	355	HDPE	Replacement
P-57	J-44	J-45	64	160	PVC	160	uPVC	Retained
P-570	J-421	J-67	209.5	160	PVC	200	HDPE	Replacement
P-58	J-45	J-19	57.5	110	PVC	180	HDPE	Replacement
P-59	J-45	J-46	243	160	PVC	160	uPVC	Retained
P-6	J-5	J-6	56	110	PVC	110	uPVC	Retained
P-60	J-46	J-47	67.5	110	PVC	125	HDPE	Replacement
P-61	J-47	J-48	63.5	110	PVC	110	uPVC	Retained
P-62	J-48	J-49	53.5	110	PVC	110	uPVC	Retained
P-63	J-49	J-50	61.5	110	PVC	125	HDPE	Replacement
P-64	J-50	J-51	56	110	PVC	140	HDPE	Replacement
P-65	J-51	J-52	62	110	PVC	110	uPVC	Retained
P-66	J-52	J-40	78.5	110	PVC	125	HDPE	Replacement
P-67	J-44	J-53	52.5	110	PVC	125	HDPE	Replacement
P-68	J-53	J-54	119.5	110	PVC	110	uPVC	Retained
P-69	J-54	J-43	53.5	110	PVC	110	uPVC	Retained
P-7	J-6	J-7	49	110	PVC	110	uPVC	Retained
P-70	J-53	J-55	53.5	110	PVC	110	uPVC	Retained
P-71	J-55	J-56	63.5	110	PVC	110	uPVC	Retained
P-72	J-56	J-57	54.5	110	PVC	110	uPVC	Retained
P-73	J-57	J-54	55.5	110	PVC	110	uPVC	Retained
P-74	J-47	J-55	134.5	110	PVC	110	uPVC	Retained
P-75	J-56	J-48	134	110	PVC	110	uPVC	Retained
P-76	J-57	J-49	132.5	110	PVC	110	uPVC	Retained
P-77	J-46	J-58	73.5	110	PVC	110	uPVC	Retained
P-78	J-58	J-59	245.5	110	PVC	125	HDPE	Replacement
P-79	J-59	J-50	75	110	PVC	110	uPVC	Retained
P-8	J-7	J-8	162	110	PVC	110	uPVC	Retained
P-80	J-52	J-60	154.5	110	PVC	125	HDPE	Replacement
P-81	J-51	J-61	70	110	PVC	110	uPVC	Retained
P-82	J-61	J-62	85	110	PVC	140	HDPE	Replacement
P-83	J-59	J-63	69	110	PVC	125	HDPE	Replacement
P-84	J-63	J-61	130.5	110	PVC	110	uPVC	Retained
P-85	J-63	J-64	69.5	110	PVC	110	uPVC	Retained
P-86	J-23	J-65	97	110	PVC	160	HDPE	Replacement
P-87	J-65	J-58	53.5	110	PVC	160	HDPE	Replacement
P-88	J-66	J-65	68.5	110	PVC	110	uPVC	Retained
P-9	J-8	J-9	47.5	110	PVC	110	uPVC	Retained
P-90	J-67	J-68	61	110	PVC	180	HDPE	Replacement
P-91	J-68	J-69	149	110	PVC	110	uPVC	Retained
P-92	J-69	J-70	70.5	110	PVC	110	uPVC	Retained
P-93	J-70	J-71	64.5	110	PVC	110	uPVC	Retained
P-94	J-71	J-72	85.5	110	PVC	110	uPVC	Retained
P-95	J-72	J-68	71	110	PVC	110	uPVC	Retained
P-96	J-70	J-73	132	160	PVC	160	uPVC	Retained
P-97	J-73	J-74	68	160	PVC	160	uPVC	Retained
P-98	J-74	J-75	61.5	110	PVC	110	uPVC	Retained
P-99	J-75	J-71	69.5	110	PVC	110	uPVC	Retained
PP-529	J-62	J-60	61.5	#N/A	#N/A	250	HDPE	New
PP-530	J-60	J-42	77.5	#N/A	#N/A	250	HDPE	New
PP-531	J-42	J-329	135.5	#N/A	#N/A	315	HDPE	New
PP-532	J-329	J-37	100.5	#N/A	#N/A	400	HDPE	New
PP-533	J-37	J-15	74.5	#N/A	#N/A	400	HDPE	New
PP-534	J-15	J-294	57.5	#N/A	#N/A	400	HDPE	New
PP-535	J-385	PJ-388	99	#N/A	#N/A	140	HDPE	New
PP-536	PJ-388	PJ-389	99	#N/A	#N/A	140	HDPE	New
PP-537	PJ-389	PJ-390	41	#N/A	#N/A	125	HDPE	New
PP-538	PJ-390	PJ-391	26.5	#N/A	#N/A	110	HDPE	New

BOQ for Z15								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-539	PJ-391	PJ-392	104.5	#N/A	#N/A	110	HDPE	New
PP-540	PJ-393	PJ-391	22	#N/A	#N/A	110	HDPE	New
PP-541	PJ-391	PJ-394	26.5	#N/A	#N/A	110	HDPE	New
PP-542	PJ-395	PJ-389	22.5	#N/A	#N/A	110	HDPE	New
PP-543	PJ-390	PJ-396	46	#N/A	#N/A	125	HDPE	New
PP-544	PJ-396	PJ-397	131.5	#N/A	#N/A	110	HDPE	New
PP-545	PJ-396	PJ-398	43.5	#N/A	#N/A	110	HDPE	New
PP-546	PJ-398	PJ-399	39	#N/A	#N/A	110	HDPE	New
PP-547	PJ-399	PJ-400	54.5	#N/A	#N/A	110	HDPE	New
PP-548	PJ-400	PJ-401	42	#N/A	#N/A	110	HDPE	New
PP-549	PJ-401	PJ-398	46	#N/A	#N/A	110	HDPE	New
PP-550	PJ-399	PJ-402	30	#N/A	#N/A	110	HDPE	New
PP-551	PJ-401	PJ-403	82.5	#N/A	#N/A	110	HDPE	New
PP-552	PJ-401	PJ-404	111.5	#N/A	#N/A	110	HDPE	New
PP-553	PJ-400	PJ-405	89.5	#N/A	#N/A	110	HDPE	New
PP-554	PJ-405	PJ-406	37.5	#N/A	#N/A	110	HDPE	New
PP-555	PJ-406	PJ-407	46.5	#N/A	#N/A	110	HDPE	New
PP-556	PJ-407	PJ-408	46.5	#N/A	#N/A	110	HDPE	New
PP-557	PJ-409	PJ-407	15.5	#N/A	#N/A	110	HDPE	New
PP-558	PJ-410	PJ-406	10.5	#N/A	#N/A	110	HDPE	New
PP-559	PJ-406	PJ-411	65.5	#N/A	#N/A	110	HDPE	New
PP-560	PJ-411	PJ-412	80.5	#N/A	#N/A	110	HDPE	New
PP-561	PJ-413	PJ-405	13	#N/A	#N/A	110	HDPE	New
PP-562	PJ-405	PJ-414	73	#N/A	#N/A	110	HDPE	New
PP-563	PJ-414	PJ-415	23	#N/A	#N/A	110	HDPE	New
PP-564	PJ-415	PJ-416	29.5	#N/A	#N/A	110	HDPE	New
PP-565	PJ-417	PJ-415	27	#N/A	#N/A	110	HDPE	New
PP-566	PJ-414	PJ-418	60	#N/A	#N/A	110	HDPE	New
PP-567	PJ-418	PJ-419	26.5	#N/A	#N/A	110	HDPE	New
PP-568	PJ-419	PJ-420	58	#N/A	#N/A	110	HDPE	New
PP-569	J-89	J-68	22	#N/A	#N/A	180	HDPE	New
PP-571	J-94	J-421	26.5	#N/A	#N/A	355	HDPE	New
			44983.5					

Zone -16

Distribution Network Design Output: Zone 16

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	101.5	22.514	21.947	129.37592	J-1	J-2	232.28	-10,509.81	9,848.42	355	1.31	3.73	129.3759	HDPE	145	0.38
P-10	107.5	21.382	21.841	-41.5869	J-9	J-10	232.47	-10,352.47	9,714.29	250	0.85	2.51	41.5869	HDPE	145	0.27
P-100	24	15.456	15.266	0.19225	J-91	J-92	232.28	-11,100.91	9,043.33	110	0.02	0.01	0.19225	HDPE	145	0
P-101	56.5	15.266	15.264	0.45674	J-92	J-93	232.47	-11,124.84	9,041.40	110	0.05	0.03	0.45674	uPVC	145	0
P-102	151	15.264	15.519	-0.84188	J-93	J-81	232.47	-11,136.04	9,096.98	110	0.09	0.1	0.84188	uPVC	145	0.02
P-103	78	15.495	15.493	0.29977	J-78	J-94	232.23	-11,171.93	9,247.12	110	0.03	0.01	0.29977	uPVC	145	0
P-104	57	15.493	15.254	-0.08926	J-94	J-95	232.23	-11,169.23	9,169.15	110	0.01	0	0.08926	uPVC	145	0
P-105	17.5	15.254	15.494	-0.36363	J-95	J-96	232.47	-11,167.30	9,112.42	110	0.04	0.02	0.36363	uPVC	145	0
P-106	12	15.494	15.442	1.09581	J-96	J-97	232.23	-11,166.53	9,095.05	110	0.12	0.16	1.09581	uPVC	145	0
P-107	46	15.442	15.255	-0.59572	J-97	J-98	232.28	-11,164.98	9,083.08	110	0.06	0.05	0.59572	uPVC	145	0
P-108	39	15.255	15.266	-1.475	J-98	J-92	232.47	-11,163.44	9,037.15	110	0.16	0.28	1.475	HDPE	145	0.01
P-109	84	15.255	15.476	1.29516	J-98	J-99	232.47	-11,163.44	9,037.15	110	0.14	0.22	1.29516	HDPE	145	0.02
P-11	44.5	21.841	22.128	-84.12856	J-10	J-3	232.28	-10,353.24	9,821.97	280	1.37	5.33	84.12856	HDPE	145	0.24
P-110	12.5	15.476	15.235	0.81567	J-99	J-100	232.23	-11,247.19	9,032.91	110	0.09	0.09	0.81567	HDPE	145	0
P-111	20.5	15.235	15.474	0.30926	J-100	J-101	232.47	-11,259.54	9,032.91	110	0.03	0.01	0.30926	HDPE	145	0
P-112	15	15.474	15.235	0.02757	J-101	J-102	232.23	-11,280.00	9,031.36	110	0	0	0.02757	HDPE	145	0
P-113	47.5	15.473	15.412	1.38589	J-103	J-104	232.23	-11,231.37	9,080.38	110	0.15	0.25	1.38589	uPVC	145	0.01
P-114	155	15.412	15.213	0.62816	J-104	J-105	232.28	-11,230.98	9,127.85	110	0.07	0.06	0.62816	HDPE	145	0.01
P-115	57	15.412	15.461	0.28162	J-104	J-106	232.28	-11,230.98	9,127.85	110	0.03	0.01	0.28162	uPVC	145	0
P-116	23.5	15.461	15.219	0.7319	J-106	J-107	232.23	-11,229.82	9,184.98	110	0.08	0.08	0.7319	HDPE	145	0
P-117	29.5	15.219	15.456	0.82885	J-107	J-108	232.47	-11,253.37	9,183.43	110	0.09	0.1	0.82885	HDPE	145	0
P-118	31.5	15.456	15.214	0.75766	J-108	J-109	232.23	-11,283.09	9,182.28	110	0.08	0.08	0.75766	HDPE	145	0
P-119	60	15.214	15.403	0.15916	J-109	J-110	232.47	-11,314.74	9,182.66	110	0.02	0	0.15916	HDPE	145	0
P-12	35	21.841	21.801	42.19855	J-10	J-11	232.28	-10,353.24	9,821.97	250	0.86	2.58	42.19855	HDPE	145	0.09
P-120	13	15.403	15.212	2.33256	J-110	J-111	232.28	-11,315.89	9,242.87	160	0.12	0.11	2.33256	uPVC	145	0
P-122	71	15.212	15.212	0.13031	J-111	J-113	232.47	-11,329.02	9,243.64	110	0.01	0	0.13031	HDPE	145	0
P-123	29	15.403	15.407	-2.36058	J-110	J-114	232.28	-11,315.89	9,242.87	160	0.12	0.11	2.36058	uPVC	145	0
P-124	60	15.407	15.457	-0.47414	J-114	J-115	232.28	-11,286.88	9,246.13	160	0.02	0.01	0.47414	uPVC	145	0
P-125	73.5	15.213	15.214	-0.29575	J-116	J-109	232.47	-11,388.16	9,182.52	110	0.03	0.01	0.29575	HDPE	145	0
P-126	64	15.456	15.407	-0.15818	J-108	J-114	232.23	-11,283.09	9,182.28	110	0.02	0	0.15818	HDPE	145	0

P-127	32	15.407	15.41	-2.38406	J-114	J-117	232.28	-11,286.88	9,246.13	160	0.12	0.11	2.38406	uPVC	145	0
P-128	62	15.41	15.219	0.30797	J-117	J-107	232.28	-11,255.08	9,245.51	110	0.03	0.02	0.30797	HDPE	145	0
P-129	25.5	15.41	15.226	-3.33155	J-117	J-118	232.28	-11,255.08	9,245.51	160	0.17	0.21	3.33155	uPVC	145	0.01
P-13	104	21.801	21.262	18.89177	J-11	J-12	232.23	-10,318.50	9,817.73	180	0.74	2.89	18.89177	HDPE	145	0.3
P-130	60.5	15.226	15.461	0.70901	J-118	J-106	232.47	-11,229.76	9,245.51	110	0.07	0.07	0.70901	HDPE	145	0
P-131	6.5	15.226	15.467	-4.2103	J-118	J-119	232.47	-11,229.76	9,245.51	160	0.21	0.32	4.2103	uPVC	145	0
P-132	33.5	15.467	15.433	-5.24051	J-119	J-77	232.23	-11,223.28	9,246.13	160	0.26	0.48	5.24051	uPVC	145	0.02
P-133	36	16.224	16.464	-0.0661	J-120	J-121	232.47	-10,827.59	9,174.44	110	0.01	0	0.0661	HDPE	145	0
P-134	31	16.464	16.188	3.16048	J-121	J-122	232.23	-10,792.17	9,168.37	110	0.33	1.16	3.16048	HDPE	145	0.04
P-135	28.5	16.188	16.422	1.20752	J-122	J-123	232.47	-10,761.29	9,168.89	110	0.13	0.19	1.20752	HDPE	145	0.01
P-136	110	16.422	16.169	0.95338	J-123	J-124	232.23	-10,732.67	9,168.25	110	0.1	0.13	0.95338	HDPE	145	0.01
P-137	74.5	16.169	16.063	6.14628	J-124	J-125	232.47	-10,730.22	9,058.75	110	0.65	3.97	6.14628	HDPE	145	0.3
P-138	38.5	16.063	15.73	5.94138	J-125	J-126	232.28	-10,735.02	8,984.34	110	0.63	3.73	5.94138	HDPE	145	0.14
P-139	60.5	15.73	15.942	1.92541	J-126	J-127	232.47	-10,773.69	8,983.25	110	0.2	0.46	1.92541	HDPE	145	0.03
P-14	33	21.262	21.382	-28.29227	J-12	J-9	232.47	-10,319.66	9,713.90	200	0.9	3.65	28.29227	HDPE	145	0.12
P-140	23	15.942	15.705	-0.91074	J-127	J-128	232.23	-10,797.97	8,968.33	110	0.1	0.12	0.91074	HDPE	145	0
P-141	15.5	15.705	15.73	-3.80586	J-128	J-126	232.47	-10,775.08	8,967.57	110	0.4	1.64	3.80586	HDPE	145	0.03
P-142	19	15.705	15.687	2.78958	J-128	J-129	232.47	-10,775.08	8,967.57	110	0.29	0.92	2.78958	HDPE	145	0.02
P-143	35.5	15.687	15.927	0.12399	J-129	J-130	232.47	-10,774.70	8,948.47	110	0.01	0	0.12399	HDPE	145	0
P-144	39	15.927	16.063	-6.79909	J-130	J-131	232.23	-10,772.93	8,913.18	110	0.72	4.79	6.79909	HDPE	145	0.19
P-145	69.5	16.063	16.063	0.12996	J-131	J-125	232.28	-10,734.11	8,914.70	110	0.01	0	0.12996	uPVC	145	0
P-146	129.5	15.927	15.601	2.34987	J-130	J-132	232.23	-10,772.93	8,913.18	110	0.25	0.67	2.34987	HDPE	145	0.09
P-147	132.5	15.601	15.687	-2.32247	J-132	J-129	232.47	-10,902.19	8,912.61	110	0.24	0.66	2.32247	HDPE	145	0.09
P-148	106.5	15.942	15.813	2.48754	J-127	J-133	232.23	-10,797.97	8,968.33	110	0.26	0.74	2.48754	HDPE	145	0.08
P-149	16	15.813	15.873	-2.33033	J-133	J-134	232.28	-10,904.40	8,966.84	110	0.25	0.66	2.33033	HDPE	145	0.01
P-15	34.5	21.255	21.269	11.01055	J-8	J-13	232.28	-10,352.85	9,639.41	180	0.43	1.06	11.01055	HDPE	145	0.04
P-150	56	15.873	15.706	-3.34989	J-134	J-135	232.23	-10,902.82	8,982.65	110	0.35	1.29	3.34989	HDPE	145	0.07
P-151	33.5	15.706	16.075	-6.07732	J-135	J-136	232.47	-10,865.51	9,024.70	110	0.64	3.89	6.07732	HDPE	145	0.13
P-152	80	16.075	16.316	-5.8614	J-136	J-137	232.23	-10,842.74	9,049.36	110	0.62	3.64	5.8614	HDPE	145	0.29
P-153	51	15.706	15.706	-0.09362	J-138	J-135	232.47	-10,827.57	8,990.71	110	0.01	0	0.09362	HDPE	145	0
P-154	33	15.706	15.924	2.31547	J-135	J-139	232.47	-10,865.51	9,024.70	110	0.24	0.65	2.31547	HDPE	145	0.02
P-155	34	15.924	15.875	-0.52873	J-139	J-140	232.23	-10,890.80	9,046.20	110	0.06	0.04	0.52873	HDPE	145	0
P-156	29.5	15.875	15.757	-4.70399	J-140	J-141	232.28	-10,916.57	9,068.49	110	0.49	2.42	4.70399	HDPE	145	0.07
P-157	34.5	15.757	16.084	-4.82146	J-141	J-142	232.47	-10,937.44	9,089.36	110	0.51	2.53	4.82146	HDPE	145	0.09
P-158	96	16.084	16.075	0.78566	J-142	J-136	232.23	-10,913.41	9,114.18	110	0.08	0.09	0.78566	HDPE	145	0.01
P-159	50.5	16.075	15.836	0.0927	J-136	J-143	232.23	-10,842.74	9,049.36	110	0.01	0	0.0927	HDPE	145	0

P-16	74.5	21.269	21.262	-46.79598	J-13	J-12	232.23	-10,318.50	9,639.41	250	0.95	3.13	46.79598	HDPE	145	0.23
P-160	77.5	16.084	16.327	-5.98875	J-142	J-144	232.23	-10,913.41	9,114.18	110	0.63	3.79	5.98875	HDPE	145	0.29
P-161	63.5	15.875	15.575	3.94223	J-140	J-145	232.28	-10,916.57	9,068.49	110	0.41	1.75	3.94223	HDPE	145	0.11
P-162	9.5	15.575	15.529	6.87193	J-145	J-146	232.47	-10,958.63	9,021.33	110	0.72	4.89	6.87193	HDPE	145	0.05
P-163	29	15.529	15.705	4.47252	J-146	J-147	232.47	-10,968.12	9,020.45	110	0.47	2.2	4.47252	HDPE	145	0.06
P-164	60.5	15.705	15.609	3.74735	J-147	J-148	232.23	-10,996.95	9,019.44	110	0.39	1.59	3.74735	HDPE	145	0.1
P-165	91	15.705	15.702	0.39399	J-147	J-149	232.23	-10,996.95	9,019.44	110	0.04	0.02	0.39399	HDPE	145	0
P-166	121	15.702	15.529	-2.10674	J-149	J-146	232.23	-10,997.58	8,928.86	110	0.22	0.55	2.10674	HDPE	145	0.07
P-167	24.5	15.575	15.603	-3.10862	J-145	J-150	232.47	-10,958.63	9,021.33	110	0.33	1.12	3.10862	HDPE	145	0.03
P-168	23.5	15.603	15.82	-3.19673	J-150	J-151	232.47	-10,956.95	8,996.68	110	0.34	1.18	3.19673	HDPE	145	0.03
P-169	67	15.82	15.924	-2.59832	J-151	J-139	232.28	-10,933.71	8,994.78	110	0.27	0.81	2.59832	HDPE	145	0.05
P-17	119.5	21.255	20.874	47.38458	J-8	J-14	232.28	-10,352.85	9,639.41	250	0.97	3.2	47.38458	HDPE	145	0.38
P-170	33.5	15.82	15.873	-0.82595	J-151	J-134	232.28	-10,933.71	8,994.78	110	0.09	0.1	0.82595	HDPE	145	0
P-171	14.5	15.712	15.831	-0.02666	J-152	J-153	232.35	-10,957.50	8,965.64	110	0	0	0.02666	HDPE	145	0
P-172	38.5	15.831	15.813	-2.61739	J-153	J-133	232.23	-10,942.88	8,965.05	110	0.28	0.82	2.61739	HDPE	145	0.03
P-173	54.5	15.813	15.601	1.80509	J-133	J-132	232.28	-10,904.40	8,966.84	110	0.19	0.41	1.80509	HDPE	145	0.02
P-174	42.5	15.601	15.666	3.34348	J-132	J-154	232.47	-10,902.19	8,912.61	110	0.35	1.29	3.34348	HDPE	145	0.05
P-175	67	15.666	15.831	-2.37053	J-154	J-153	232.35	-10,941.89	8,898.06	110	0.25	0.68	2.37053	HDPE	145	0.05
P-176	59	15.559	15.666	-4.02933	J-155	J-154	232.35	-10,998.60	8,882.45	110	0.42	1.82	4.02933	HDPE	145	0.11
P-177	49.5	15.666	15.775	1.2847	J-154	J-156	232.35	-10,941.89	8,898.06	110	0.14	0.22	1.2847	HDPE	145	0.01
P-178	21.5	15.775	15.725	0.0395	J-156	J-157	232.23	-10,942.09	8,848.46	110	0	0	0.0395	HDPE	145	0
P-179	39	15.775	15.649	1.04335	J-156	J-158	232.23	-10,942.09	8,848.46	110	0.11	0.15	1.04335	HDPE	145	0.01
P-18	21.5	20.874	20.596	30.12763	J-14	J-15	232.28	-10,352.85	9,520.15	200	0.96	4.1	30.12763	HDPE	145	0.09
P-180	30.5	15.649	15.816	-3.68871	J-158	J-159	232.35	-10,902.96	8,847.27	110	0.39	1.54	3.68871	HDPE	145	0.05
P-181	34.5	15.816	15.601	-2.41202	J-159	J-132	232.23	-10,902.96	8,877.90	110	0.25	0.7	2.41202	HDPE	145	0.02
P-182	47	15.649	15.578	3.65716	J-158	J-160	232.35	-10,902.96	8,847.27	110	0.38	1.52	3.65716	HDPE	145	0.07
P-183	37.5	15.578	15.697	0.42233	J-160	J-161	232.35	-10,903.95	8,800.04	110	0.04	0.03	0.42233	HDPE	145	0
P-184	22	15.697	15.556	2.87745	J-161	J-162	232.23	-10,903.35	8,762.30	110	0.3	0.97	2.87745	uPVC	145	0.02
P-185	31.5	15.697	15.644	0.88162	J-161	J-163	232.23	-10,903.35	8,762.30	110	0.09	0.11	0.88162	HDPE	145	0
P-186	18	15.644	15.549	3.48481	J-163	J-164	232.28	-10,907.11	8,731.08	110	0.37	1.39	3.48481	HDPE	145	0.03
P-187	63	15.549	15.664	0.67381	J-164	J-165	232.35	-10,908.29	8,713.29	110	0.07	0.07	0.67381	HDPE	145	0
P-188	23.5	15.664	15.557	-5.49611	J-165	J-166	232.23	-10,914.03	8,651.64	160	0.27	0.52	5.49611	uPVC	145	0.01
P-189	27	15.557	15.589	-8.66936	J-166	J-167	232.35	-10,890.31	8,651.64	160	0.43	1.21	8.66936	uPVC	145	0.03
P-19	33.5	20.874	20.784	16.93678	J-14	J-16	232.28	-10,352.85	9,520.15	160	0.84	4.19	16.93678	HDPE	145	0.14
P-190	38	15.589	15.754	-8.58123	J-167	J-168	232.35	-10,863.24	8,651.04	160	0.43	1.19	8.58123	uPVC	145	0.05
P-191	46	15.754	15.768	-9.29131	J-168	J-169	232.23	-10,825.30	8,650.06	160	0.46	1.38	9.29131	uPVC	145	0.06

P-192	40	15.768	15.722	-5.98928	J-169	J-170	232.28	-10,779.25	8,649.07	160	0.3	0.61	5.98928	uPVC	145	0.02
P-193	22	15.722	15.856	-6.10307	J-170	J-171	232.35	-10,778.66	8,609.15	160	0.3	0.63	6.10307	uPVC	145	0.01
P-194	10.5	15.856	15.748	-8.33511	J-171	J-172	232.23	-10,757.91	8,601.25	160	0.41	1.13	8.33511	uPVC	145	0.01
P-195	37.5	15.748	15.918	-9.19967	J-172	J-173	232.35	-10,748.03	8,598.08	160	0.46	1.35	9.19967	uPVC	145	0.05
P-196	36	15.918	15.957	-8.14807	J-173	J-174	232.23	-10,711.28	8,593.54	160	0.41	1.08	8.14807	uPVC	145	0.04
P-197	34	15.957	15.883	-9.21746	J-174	J-175	232.23	-10,675.90	8,585.83	160	0.46	1.36	9.21746	uPVC	145	0.05
P-198	46.5	15.883	16.021	-9.60191	J-175	J-176	232.35	-10,643.89	8,574.96	160	0.48	1.46	9.60191	uPVC	145	0.07
P-199	18	16.021	15.96	-5.25268	J-176	J-177	232.28	-10,605.55	8,548.88	160	0.26	0.48	5.25268	uPVC	145	0.01
P-2	12.5	21.947	22.128	147.20551	J-2	J-3	232.47	-10,409.59	9,832.39	355	1.49	4.73	147.2055	HDPE	145	0.06
P-20	118.5	20.784	21.269	-30.125	J-16	J-13	232.23	-10,319.27	9,520.92	200	0.96	4.1	30.125	HDPE	145	0.49
P-200	28	15.96	16.101	-6.81041	J-177	J-178	232.35	-10,590.93	8,538.60	160	0.34	0.77	6.81041	uPVC	145	0.02
P-201	127	16.101	16.241	-4.29725	J-178	J-179	232.23	-10,567.81	8,522.99	110	0.45	2.05	4.29725	uPVC	145	0.26
P-202	38	16.241	16.312	3.31726	J-179	J-180	232.35	-10,569.12	8,649.80	110	0.35	1.27	3.31726	uPVC	145	0.05
P-203	102	16.312	16.021	4.65473	J-180	J-176	232.23	-10,607.26	8,650.79	110	0.49	2.37	4.65473	uPVC	145	0.24
P-204	64.5	15.883	15.883	0.11838	J-175	J-181	232.35	-10,643.89	8,574.96	110	0.01	0	0.11838	uPVC	145	0
P-205	105.5	15.957	15.962	-2.05143	J-174	J-182	232.23	-10,675.90	8,585.83	110	0.22	0.52	2.05143	HDPE	145	0.05
P-206	98.5	15.918	15.832	-1.64977	J-173	J-183	232.23	-10,711.28	8,593.54	110	0.17	0.35	1.64977	HDPE	145	0.03
P-207	77	15.918	15.499	0.14131	J-173	J-184	232.23	-10,711.28	8,593.54	110	0.01	0	0.14131	HDPE	145	0
P-208	149.5	15.856	15.788	1.8981	J-171	J-185	232.23	-10,757.91	8,601.25	110	0.2	0.45	1.8981	HDPE	145	0.07
P-209	10.5	15.788	15.375	-2.01612	J-185	J-186	232.23	-10,753.27	8,452.05	110	0.21	0.5	2.01612	uPVC	145	0.01
P-21	64.5	21.269	20.812	27.14579	J-13	J-17	232.23	-10,318.50	9,639.41	200	0.86	3.38	27.14579	HDPE	145	0.22
P-210	20.5	15.375	15.386	-2.09168	J-186	J-187	232.65	-10,742.89	8,450.57	110	0.22	0.54	2.09168	uPVC	145	0.01
P-211	64	15.386	15.755	0.11746	J-187	J-188	232.65	-10,722.64	8,450.82	110	0.01	0	0.11746	HDPE	145	0
P-212	26.5	15.386	15.404	-2.41283	J-187	J-189	232.65	-10,722.64	8,450.82	110	0.25	0.7	2.41283	uPVC	145	0.02
P-213	77	15.404	15.886	-2.60276	J-189	J-190	232.65	-10,695.96	8,451.31	110	0.27	0.81	2.60276	HDPE	145	0.06
P-214	86	15.886	15.957	-2.64104	J-190	J-174	232.23	-10,668.54	8,500.22	110	0.28	0.83	2.64104	uPVC	145	0.07
P-215	17	15.886	15.467	-0.29199	J-190	J-191	232.23	-10,668.54	8,500.22	110	0.03	0.01	0.29199	uPVC	145	0
P-216	80.5	15.467	15.768	2.86855	J-191	J-192	232.65	-10,667.55	8,483.42	110	0.3	0.97	2.86855	uPVC	145	0.08
P-217	75.5	15.768	15.744	1.18412	J-192	J-193	232.27	-10,666.07	8,402.90	110	0.12	0.19	1.18412	uPVC	145	0.01
P-218	48	15.744	15.375	0.06943	J-193	J-186	232.28	-10,741.66	8,402.65	110	0.01	0	0.06943	uPVC	145	0
P-219	19	15.788	15.341	3.58578	J-185	J-194	232.23	-10,753.27	8,452.05	110	0.38	1.46	3.58578	uPVC	145	0.03
P-22	117.5	20.812	20.664	26.81185	J-17	J-18	232.47	-10,254.05	9,639.41	200	0.85	3.3	26.81185	HDPE	145	0.39
P-220	17	15.341	15.745	2.76548	J-194	J-195	232.65	-10,772.04	8,452.55	110	0.29	0.91	2.76548	uPVC	145	0.02
P-221	101.5	15.745	15.326	0.18626	J-195	J-196	232.23	-10,789.08	8,450.82	110	0.02	0.01	0.18626	HDPE	145	0
P-222	86	15.682	15.314	-0.15782	J-197	J-198	232.28	-10,816.50	8,537.02	110	0.02	0	0.15782	HDPE	145	0
P-223	10.5	15.314	15.736	-1.65428	J-198	J-199	232.65	-10,812.80	8,451.06	110	0.17	0.35	1.65428	uPVC	145	0

P-224	13.5	15.736	15.745	-2.337	J-199	J-195	232.23	-10,802.42	8,450.57	110	0.25	0.66	2.337	uPVC	145	0.01
P-225	59.5	15.736	15.315	0.52948	J-199	J-200	232.23	-10,802.42	8,450.57	110	0.06	0.04	0.52948	uPVC	145	0
P-226	44.5	15.315	15.684	0.08169	J-200	J-201	232.65	-10,832.81	8,399.19	110	0.01	0	0.08169	uPVC	145	0
P-227	15	15.315	15.315	0.22943	J-200	J-202	232.65	-10,832.81	8,399.19	110	0.02	0.01	0.22943	uPVC	145	0
P-228	55	15.315	15.664	0.10095	J-202	J-203	232.65	-10,846.39	8,405.61	110	0.01	0	0.10095	uPVC	145	0
P-229	77	15.566	15.666	-0.14131	J-204	J-205	232.42	-10,768.58	8,269.51	110	0.01	0	0.14131	uPVC	145	0
P-23	68	20.664	20.784	-5.56271	J-18	J-16	232.23	-10,251.52	9,522.17	125	0.45	1.77	5.56271	HDPE	145	0.12
P-230	41.5	15.666	15.717	-0.35876	J-205	J-206	232.32	-10,768.83	8,346.58	110	0.04	0.02	0.35876	uPVC	145	0
P-231	64.5	15.717	15.341	-0.63588	J-206	J-194	232.27	-10,769.32	8,388.07	110	0.07	0.06	0.63588	uPVC	145	0
P-232	22.5	15.338	15.717	-0.04133	J-207	J-206	232.65	-10,792.05	8,389.06	110	0	0	0.04133	uPVC	145	0
P-233	148	15.744	15.576	0.61657	J-193	J-208	232.28	-10,741.66	8,402.65	110	0.06	0.06	0.61657	uPVC	145	0.01
P-234	72.5	15.645	15.566	-0.13306	J-209	J-210	232.37	-10,721.90	8,319.16	110	0.01	0	0.13306	uPVC	145	0
P-235	111.5	15.564	15.695	-0.2046	J-211	J-212	232.47	-10,690.03	8,236.16	110	0.02	0.01	0.2046	uPVC	145	0
P-236	41	15.695	15.744	0.07527	J-212	J-213	232.34	-10,691.27	8,347.81	110	0.01	0	0.07527	uPVC	145	0
P-237	27	15.695	15.696	-0.60923	J-212	J-214	232.34	-10,691.27	8,347.81	110	0.06	0.05	0.60923	uPVC	145	0
P-238	56	15.696	15.768	-1.29545	J-214	J-192	232.34	-10,664.34	8,347.07	160	0.06	0.04	1.29545	uPVC	145	0
P-239	145.5	15.696	15.536	0.26698	J-214	J-215	232.34	-10,664.34	8,347.07	160	0.01	0	0.26698	uPVC	145	0
P-24	34	20.784	20.461	41.03305	J-16	J-19	232.23	-10,319.27	9,520.92	250	0.84	2.45	41.03305	HDPE	145	0.08
P-240	41.5	15.747	15.797	-0.07619	J-216	J-217	232.51	-10,624.33	8,210.47	110	0.01	0	0.07619	HDPE	145	0
P-241	114.5	15.797	15.925	0.31453	J-217	J-218	232.46	-10,624.57	8,251.97	110	0.03	0.02	0.31453	HDPE	145	0
P-242	65	15.925	15.96	1.2946	J-218	J-219	232.33	-10,626.55	8,366.34	110	0.14	0.22	1.2946	HDPE	145	0.01
P-243	52	15.96	15.825	3.57067	J-219	J-220	232.28	-10,628.28	8,431.55	110	0.38	1.45	3.57067	HDPE	145	0.08
P-244	52	15.73	15.79	-0.09545	J-221	J-222	232.53	-10,590.24	8,200.59	110	0.01	0	0.09545	HDPE	145	0
P-245	60.5	15.79	15.862	-0.54366	J-222	J-223	232.47	-10,591.47	8,252.71	110	0.06	0.04	0.54366	HDPE	145	0
P-246	52	15.862	15.933	-0.34714	J-223	J-224	232.4	-10,592.46	8,313.23	110	0.04	0.02	0.34714	uPVC	145	0
P-247	29	15.933	15.966	-0.82356	J-224	J-225	232.33	-10,593.45	8,365.35	110	0.09	0.1	0.82356	HDPE	145	0
P-248	38.5	15.966	16.016	0.0536	J-225	J-226	232.3	-10,593.70	8,394.50	110	0.01	0	0.0536	HDPE	145	0
P-249	30.5	16.016	15.892	-2.68304	J-226	J-227	232.25	-10,595.67	8,433.03	110	0.28	0.86	2.68304	HDPE	145	0.03
P-25	66	20.461	20.51	18.89173	J-19	J-20	232.47	-10,319.10	9,487.00	180	0.74	2.89	18.89173	HDPE	145	0.19
P-250	75.5	15.892	15.96	-1.33477	J-227	J-177	232.4	-10,595.92	8,463.66	110	0.14	0.23	1.33477	HDPE	145	0.02
P-251	46	16.101	16.012	-5.09043	J-178	J-228	232.23	-10,567.81	8,522.99	160	0.25	0.45	5.09043	uPVC	145	0.02
P-252	154	16.012	16.179	-3.60106	J-228	J-229	232.34	-10,530.46	8,495.77	110	0.38	1.48	3.60106	uPVC	145	0.23
P-253	35.5	16.179	16.241	-1.62214	J-229	J-179	232.4	-10,533.67	8,649.91	110	0.17	0.34	1.62214	uPVC	145	0.01
P-254	93	16.241	16.391	-9.77514	J-179	J-230	232.35	-10,569.12	8,649.80	160	0.49	1.51	9.77514	uPVC	145	0.14
P-255	44.5	16.391	16.402	-10.02744	J-230	J-231	232.34	-10,571.96	8,742.79	160	0.5	1.59	10.02744	uPVC	145	0.07
P-256	38	16.402	16.399	-15.0522	J-231	J-232	232.4	-10,572.21	8,787.50	160	0.75	3.36	15.0522	HDPE	145	0.13

P-257	19.5	16.399	16.588	-9.97857	J-232	J-233	232.53	-10,534.41	8,786.51	140	0.65	3.01	9.97857	HDPE	145	0.06
P-258	85	16.588	16.649	-4.52898	J-233	J-234	232.4	-10,515.14	8,787.25	110	0.48	2.26	4.52898	uPVC	145	0.19
P-259	21	16.649	16.729	-11.29341	J-234	J-235	232.53	-10,430.17	8,787.00	140	0.73	3.79	11.29341	HDPE	145	0.08
P-26	33.5	20.51	20.664	-31.97274	J-20	J-18	232.23	-10,253.30	9,488.77	200	1.02	4.58	31.97274	HDPE	145	0.15
P-260	62	16.729	16.604	8.76792	J-235	J-236	232.53	-10,409.18	8,787.74	125	0.71	4.12	8.76792	HDPE	145	0.26
P-261	46	16.604	16.393	3.97486	J-236	J-237	232.4	-10,385.46	8,730.44	110	0.42	1.77	3.97486	uPVC	145	0.08
P-262	23	16.393	16.57	10.20167	J-237	J-238	232.53	-10,431.65	8,728.21	140	0.66	3.14	10.20167	HDPE	145	0.07
P-263	41	16.57	16.189	10.3405	J-238	J-239	232.28	-10,432.64	8,704.99	140	0.67	3.22	10.3405	HDPE	145	0.13
P-264	37.5	16.189	16.295	6.32745	J-239	J-240	232.53	-10,473.65	8,704.01	125	0.52	2.25	6.32745	HDPE	145	0.08
P-265	22.5	16.295	16.276	2.62117	J-240	J-241	232.34	-10,511.19	8,703.02	110	0.28	0.82	2.62117	uPVC	145	0.02
P-266	53	16.276	16.179	2.42385	J-241	J-229	232.34	-10,533.67	8,703.02	110	0.26	0.71	2.42385	uPVC	145	0.04
P-267	16	16.276	16.087	0.02941	J-241	J-242	232.34	-10,533.67	8,703.02	110	0	0	0.02941	uPVC	145	0
P-268	22	16.399	16.589	0.04041	J-232	J-243	232.53	-10,534.41	8,786.51	110	0	0	0.04041	uPVC	145	0
P-269	54	16.588	16.648	0.09912	J-233	J-244	232.4	-10,515.14	8,787.25	110	0.01	0	0.09912	uPVC	145	0
P-27	33.5	20.461	20.524	21.89635	J-19	J-21	232.47	-10,319.10	9,487.00	180	0.86	3.79	21.89635	HDPE	145	0.13
P-270	87	16.729	16.754	-1.50101	J-235	J-245	232.53	-10,409.18	8,787.74	110	0.16	0.29	1.50101	uPVC	145	0.03
P-271	38	16.754	17.071	-7.85794	J-245	J-246	232.53	-10,468.71	8,849.99	125	0.64	3.36	7.85794	HDPE	145	0.13
P-272	44.5	17.071	16.769	12.93943	J-246	J-247	232.34	-10,498.10	8,874.45	160	0.64	2.54	12.93943	HDPE	145	0.11
P-273	11	16.769	16.927	7.15384	J-247	J-248	232.53	-10,533.18	8,901.86	125	0.58	2.82	7.15384	HDPE	145	0.03
P-274	29.5	16.927	16.854	6.69051	J-248	J-249	232.34	-10,542.07	8,908.29	125	0.55	2.49	6.69051	HDPE	145	0.07
P-275	9	16.854	16.623	24.14085	J-249	J-250	232.34	-10,566.28	8,925.58	180	0.95	4.55	24.14085	HDPE	145	0.04
P-276	81	16.623	16.443	13.57012	J-250	J-251	232.53	-10,573.19	8,920.14	140	0.88	5.32	13.57012	HDPE	145	0.43
P-277	42.5	16.443	16.19	9.26849	J-251	J-252	232.28	-10,654.21	8,917.43	125	0.76	4.56	9.26849	HDPE	145	0.19
P-278	37.5	16.19	16.063	9.70946	J-252	J-131	232.34	-10,696.70	8,916.69	125	0.79	4.97	9.70946	HDPE	145	0.19
P-279	132.5	16.063	15.731	2.26944	J-131	J-253	232.28	-10,734.11	8,914.70	110	0.24	0.63	2.26944	HDPE	145	0.08
P-28	87	20.51	19.958	50.52227	J-20	J-22	232.23	-10,253.30	9,488.77	250	1.03	3.6	50.52227	HDPE	145	0.31
P-280	39	15.731	16.022	-4.90558	J-253	J-254	232.53	-10,732.27	8,782.06	110	0.52	2.62	4.90558	uPVC	145	0.1
P-281	41.5	16.022	15.974	-5.65323	J-254	J-255	232.34	-10,693.49	8,782.80	110	0.59	3.4	5.65323	uPVC	145	0.14
P-282	37	15.974	16.322	-6.94665	J-255	J-256	232.53	-10,651.86	8,784.33	125	0.57	2.67	6.94665	HDPE	145	0.1
P-283	42.5	16.322	16.402	-9.42444	J-256	J-231	232.28	-10,614.81	8,787.03	125	0.77	4.7	9.42444	HDPE	145	0.2
P-284	62.5	16.262	16.322	-0.11471	J-257	J-256	232.34	-10,615.58	8,849.55	110	0.01	0	0.11471	HDPE	145	0
P-285	138.5	16.322	16.312	1.84843	J-256	J-180	232.28	-10,614.81	8,787.03	110	0.19	0.43	1.84843	HDPE	145	0.06
P-286	41.5	15.763	15.953	-0.07619	J-258	J-259	232.53	-10,649.98	8,650.89	110	0.01	0	0.07619	HDPE	145	0
P-287	92	15.953	15.974	-4.56761	J-259	J-255	232.34	-10,651.56	8,692.46	110	0.48	2.29	4.56761	HDPE	145	0.21
P-288	133	15.974	16.443	-3.83103	J-255	J-251	232.53	-10,651.86	8,784.33	110	0.4	1.66	3.83103	HDPE	145	0.22
P-289	109.5	16.476	16.19	4.32681	J-260	J-252	232.28	-10,690.33	9,025.12	110	0.46	2.07	4.32681	uPVC	145	0.23

P-29	18.5	19.958	20.122	22.84852	J-22	J-23	232.47	-10,253.81	9,401.74	180	0.9	4.1	22.84852	HDPE	145	0.08
P-290	134	16.19	16.022	3.29231	J-252	J-254	232.34	-10,696.70	8,916.69	110	0.35	1.25	3.29231	HDPE	145	0.17
P-291	91	16.022	15.956	3.47946	J-254	J-261	232.34	-10,693.49	8,782.80	110	0.37	1.39	3.47946	HDPE	145	0.13
P-292	85	15.73	15.731	-0.15599	J-262	J-253	232.53	-10,732.18	8,696.85	110	0.02	0	0.15599	HDPE	145	0
P-293	23	15.731	15.879	6.50622	J-253	J-263	232.53	-10,732.27	8,782.06	110	0.68	4.41	6.50622	uPVC	145	0.1
P-294	82	15.879	15.629	0.15049	J-263	J-264	232.28	-10,755.33	8,781.45	110	0.02	0	0.15049	HDPE	145	0
P-295	16.5	15.879	15.814	6.13278	J-263	J-265	232.28	-10,755.33	8,781.45	110	0.65	3.96	6.13278	uPVC	145	0.07
P-296	63.5	15.814	15.792	1.66086	J-265	J-266	232.28	-10,772.01	8,781.45	110	0.17	0.35	1.66086	HDPE	145	0.02
P-297	33.5	15.792	15.561	-2.13785	J-266	J-267	232.28	-10,773.55	8,844.75	110	0.22	0.56	2.13785	HDPE	145	0.02
P-298	35	15.561	15.927	-4.1347	J-267	J-130	232.53	-10,773.55	8,878.40	110	0.44	1.91	4.1347	HDPE	145	0.07
P-299	129.5	15.561	15.816	1.63356	J-267	J-159	232.53	-10,773.55	8,878.40	110	0.17	0.34	1.63356	HDPE	145	0.04
P-3	31	22.128	21.982	62.91545	J-3	J-4	232.23	-10,397.24	9,829.69	280	1.02	3.11	62.91545	HDPE	145	0.1
P-30	36.5	19.958	20.072	27.4132	J-22	J-24	232.47	-10,253.81	9,401.74	200	0.87	3.44	27.4132	HDPE	145	0.13
P-300	30.5	15.649	15.716	0.80516	J-158	J-268	232.35	-10,902.96	8,847.27	110	0.08	0.09	0.80516	HDPE	145	0
P-301	32.5	15.716	15.722	-1.07041	J-268	J-269	232.28	-10,872.36	8,845.67	110	0.11	0.16	1.07041	HDPE	145	0.01
P-302	36	15.722	15.498	-2.44879	J-269	J-270	232.28	-10,839.94	8,845.36	110	0.26	0.72	2.44879	HDPE	145	0.03
P-303	30.5	15.498	15.792	-3.56475	J-270	J-266	232.53	-10,804.12	8,843.51	110	0.38	1.45	3.56475	HDPE	145	0.04
P-304	29	15.697	15.689	-3.55694	J-161	J-271	232.23	-10,903.35	8,762.30	110	0.37	1.44	3.55694	uPVC	145	0.04
P-305	84	15.689	15.716	-1.60584	J-271	J-268	232.28	-10,874.21	8,761.69	110	0.17	0.33	1.60584	HDPE	145	0.03
P-306	31.5	15.689	15.708	-2.21624	J-271	J-272	232.28	-10,874.21	8,761.69	110	0.23	0.6	2.21624	uPVC	145	0.02
P-307	85.5	15.708	15.722	-1.0958	J-272	J-269	232.28	-10,842.71	8,759.83	110	0.12	0.16	1.0958	HDPE	145	0.01
P-308	40	15.708	15.49	-2.5777	J-272	J-273	232.28	-10,842.71	8,759.83	110	0.27	0.79	2.5777	uPVC	145	0.03
P-309	81	15.49	15.498	-0.84532	J-273	J-270	232.53	-10,802.88	8,762.61	110	0.09	0.1	0.84532	HDPE	145	0.01
P-31	109.5	20.072	20.022	0.20094	J-24	J-25	232.23	-10,217.70	9,398.68	110	0.02	0.01	0.20094	uPVC	145	0
P-310	16.5	15.49	15.498	-1.98468	J-273	J-274	232.53	-10,802.88	8,762.61	110	0.21	0.49	1.98468	uPVC	145	0.01
P-311	33	15.498	15.814	-4.26457	J-274	J-265	232.53	-10,786.21	8,763.54	110	0.45	2.02	4.26457	uPVC	145	0.07
P-312	88	15.498	15.453	2.02758	J-274	J-275	232.53	-10,786.21	8,763.54	110	0.21	0.51	2.02758	HDPE	145	0.04
P-313	63.5	15.453	15.644	2.81055	J-275	J-163	232.53	-10,843.64	8,730.19	110	0.3	0.93	2.81055	HDPE	145	0.06
P-314	74.5	15.403	15.233	0.13673	J-276	J-277	232.28	-11,387.92	9,157.19	110	0.01	0	0.13673	HDPE	145	0
P-315	20	15.272	15.351	-0.03675	J-278	J-279	232.53	-11,046.89	8,491.10	110	0	0	0.03675	uPVC	145	0
P-316	53	15.351	15.277	-0.8237	J-279	J-280	232.45	-11,039.48	8,509.87	110	0.09	0.1	0.8237	uPVC	145	0.01
P-317	82	15.277	15.357	-0.04235	J-280	J-281	232.53	-10,987.11	8,500.24	110	0	0	0.04235	uPVC	145	0
P-318	31.5	15.357	15.354	0.7169	J-281	J-282	232.45	-10,998.48	8,581.51	110	0.08	0.07	0.7169	uPVC	145	0
P-319	69	15.354	15.351	0.51535	J-282	J-279	232.45	-11,029.85	8,578.29	110	0.05	0.04	0.51535	uPVC	145	0
P-32	37.5	20.072	19.708	26.87557	J-24	J-26	232.23	-10,217.70	9,398.68	200	0.86	3.32	26.87557	HDPE	145	0.12
P-320	96.5	15.274	15.537	-1.00628	J-283	J-284	232.53	-11,032.81	8,601.02	110	0.11	0.14	1.00628	uPVC	145	0.01

P-321	35.5	15.357	15.362	-1.03264	J-281	J-285	232.45	-10,998.48	8,581.51	110	0.11	0.15	1.03264	uPVC	145	0.01
P-322	31	15.362	15.29	-1.40352	J-285	J-286	232.45	-10,963.15	8,582.99	110	0.15	0.26	1.40352	uPVC	145	0.01
P-323	28.5	15.29	15.392	-2.57337	J-286	J-287	232.53	-10,932.28	8,587.19	110	0.27	0.79	2.57337	uPVC	145	0.02
P-324	31.5	15.277	15.362	-1.08685	J-280	J-288	232.53	-10,987.11	8,500.24	110	0.11	0.16	1.08685	uPVC	145	0.01
P-325	80.5	15.362	15.362	-0.10115	J-288	J-285	232.45	-10,955.49	8,502.71	110	0.01	0	0.10115	uPVC	145	0
P-326	38	15.362	15.29	-1.26094	J-288	J-289	232.45	-10,955.49	8,502.71	110	0.13	0.21	1.26094	uPVC	145	0.01
P-327	25.5	15.29	15.548	-1.67072	J-289	J-290	232.53	-10,918.44	8,511.60	110	0.18	0.36	1.67072	uPVC	145	0.01
P-328	29	15.496	15.416	-0.05326	J-291	J-292	232.45	-10,883.12	8,505.92	110	0.01	0	0.05326	uPVC	145	0
P-329	43	15.416	15.502	-0.99272	J-292	J-293	232.53	-10,859.65	8,488.63	110	0.1	0.14	0.99272	uPVC	145	0.01
P-33	18.5	19.708	19.898	0.03399	J-26	J-27	232.47	-10,180.05	9,399.24	110	0	0	0.03399	HDPE	145	0
P-330	10	15.502	15.502	-0.0184	J-294	J-293	232.45	-10,880.16	8,450.83	110	0	0	0.0184	uPVC	145	0
P-331	57.5	15.502	15.314	-1.21389	J-293	J-198	232.45	-10,870.28	8,451.33	110	0.13	0.2	1.21389	uPVC	145	0.01
P-332	163.5	15.416	15.589	0.50738	J-292	J-167	232.53	-10,859.65	8,488.63	110	0.05	0.04	0.50738	uPVC	145	0.01
P-333	151.5	15.754	15.453	0.27799	J-168	J-295	232.23	-10,825.30	8,650.06	110	0.03	0.01	0.27799	uPVC	145	0
P-334	32	16.012	15.918	-5.28006	J-228	J-296	232.34	-10,530.46	8,495.77	160	0.26	0.48	5.28006	uPVC	145	0.02
P-335	33	15.918	16.092	-2.63981	J-296	J-297	232.45	-10,505.90	8,475.31	160	0.13	0.13	2.63981	uPVC	145	0
P-336	153	16.092	16.102	-3.18465	J-297	J-298	232.28	-10,481.44	8,453.33	110	0.34	1.18	3.18465	uPVC	145	0.18
P-337	110	16.102	16.189	-3.66719	J-298	J-239	232.45	-10,484.94	8,606.54	110	0.39	1.53	3.66719	uPVC	145	0.17
P-338	96.5	16.295	15.976	3.41911	J-240	J-299	232.34	-10,511.19	8,703.02	110	0.36	1.34	3.41911	uPVC	145	0.13
P-339	131.5	15.976	15.918	3.00079	J-299	J-296	232.53	-10,507.88	8,606.69	110	0.32	1.05	3.00079	uPVC	145	0.14
P-34	27	19.708	19.86	26.68926	J-26	J-28	232.47	-10,180.05	9,399.24	200	0.85	3.28	26.68926	HDPE	145	0.09
P-340	59	16.393	16.649	-6.46168	J-237	J-234	232.53	-10,431.65	8,728.21	110	0.68	4.36	6.46168	uPVC	145	0.26
P-341	86	16.57	16.403	-0.41407	J-238	J-300	232.28	-10,432.64	8,704.99	110	0.04	0.03	0.41407	uPVC	145	0
P-342	71.5	16.403	16.57	0.47806	J-300	J-301	232.45	-10,429.89	8,618.97	110	0.05	0.04	0.47806	uPVC	145	0
P-343	14	16.57	16.321	0.02574	J-301	J-302	232.28	-10,428.65	8,547.34	110	0	0	0.02574	uPVC	145	0
P-344	80.5	16.57	16.57	0.14773	J-301	J-303	232.28	-10,428.65	8,547.34	110	0.02	0	0.14773	uPVC	145	0
P-345	89.5	16.495	16.486	-0.16425	J-304	J-305	232.22	-10,402.41	8,484.35	110	0.02	0	0.16425	uPVC	145	0
P-346	55	16.486	16.316	-2.77563	J-305	J-306	232.23	-10,316.26	8,491.45	110	0.29	0.91	2.77563	uPVC	145	0.05
P-347	74.5	16.316	16.636	-3.23713	J-306	J-307	232.45	-10,317.19	8,546.41	110	0.34	1.21	3.23713	uPVC	145	0.09
P-348	62.5	16.636	16.414	-0.92239	J-307	J-308	232.22	-10,317.81	8,620.83	110	0.1	0.12	0.92239	uPVC	145	0.01
P-349	49.5	16.414	16.403	1.27193	J-308	J-300	232.45	-10,380.48	8,620.83	110	0.13	0.21	1.27193	uPVC	145	0.01
P-35	21.5	19.86	19.62	0.0395	J-28	J-29	232.23	-10,180.05	9,372.43	110	0	0	0.0395	HDPE	145	0
P-350	58.5	16.636	16.685	-2.67344	J-307	J-309	232.22	-10,317.81	8,620.83	110	0.28	0.85	2.67344	uPVC	145	0.05
P-351	61.5	16.685	16.477	-1.65655	J-309	J-310	232.22	-10,316.57	8,679.18	110	0.17	0.35	1.65655	uPVC	145	0.02
P-352	34	16.477	16.604	-4.5325	J-310	J-236	232.45	-10,372.46	8,698.95	110	0.48	2.26	4.5325	uPVC	145	0.08
P-353	32.5	16.685	16.693	-1.29671	J-309	J-311	232.22	-10,316.57	8,679.18	110	0.14	0.22	1.29671	uPVC	145	0.01

P-354	117	16.693	16.752	-2.95846	J-311	J-312	232.22	-10,284.46	8,673.63	110	0.31	1.03	2.95846	uPVC	145	0.12
P-355	129.5	16.752	16.985	-3.41073	J-312	J-313	232.28	-10,300.82	8,783.55	110	0.36	1.33	3.41073	uPVC	145	0.17
P-356	73.5	16.985	17.103	-3.78319	J-313	J-314	232.22	-10,301.75	8,913.23	110	0.4	1.62	3.78319	uPVC	145	0.12
P-357	37.5	17.103	17.17	-3.98688	J-314	J-315	232.22	-10,302.37	8,986.72	110	0.42	1.78	3.98688	uPVC	145	0.07
P-358	46.5	17.17	17.199	-4.14104	J-315	J-316	232.22	-10,302.68	9,024.39	110	0.44	1.91	4.14104	uPVC	145	0.09
P-359	34.5	17.199	17.188	4.31057	J-316	J-317	232.28	-10,256.36	9,022.53	110	0.45	2.06	4.31057	uPVC	145	0.07
P-36	51	19.86	19.646	26.46717	J-28	J-30	232.23	-10,180.05	9,372.43	200	0.84	3.23	26.46717	HDPE	145	0.16
P-360	77	17.188	17.043	4.10596	J-317	J-318	232.22	-10,256.67	8,988.26	110	0.43	1.88	4.10596	uPVC	145	0.14
P-361	130.5	17.043	16.839	3.72524	J-318	J-319	232.22	-10,256.05	8,911.38	110	0.39	1.57	3.72524	uPVC	145	0.21
P-362	128	16.839	16.683	3.25096	J-319	J-320	232.22	-10,246.79	8,783.24	110	0.34	1.22	3.25096	uPVC	145	0.16
P-363	44	16.683	16.693	-1.30671	J-320	J-311	232.22	-10,244.63	8,655.41	110	0.14	0.23	1.30671	uPVC	145	0.01
P-364	158	16.683	16.504	3.03123	J-320	J-321	232.22	-10,244.63	8,655.41	110	0.32	1.07	3.03123	uPVC	145	0.17
P-365	44	16.504	16.467	2.6606	J-321	J-322	232.23	-10,243.39	8,497.63	110	0.28	0.84	2.6606	uPVC	145	0.04
P-366	30	16.467	16.486	-2.29121	J-322	J-305	232.23	-10,287.24	8,497.32	110	0.24	0.64	2.29121	uPVC	145	0.02
P-367	61	16.316	16.486	0.11196	J-306	J-323	232.45	-10,317.19	8,546.41	110	0.01	0	0.11196	uPVC	145	0
P-368	77.5	16.119	16.257	-1.98562	J-324	J-325	232.38	-10,357.45	8,360.76	110	0.21	0.49	1.98562	uPVC	145	0.04
P-369	53	16.257	16.281	-2.31136	J-325	J-326	232.28	-10,361.15	8,437.95	110	0.24	0.65	2.31136	uPVC	145	0.03
P-37	61.5	19.646	19.233	21.37182	J-30	J-31	232.28	-10,146.79	9,353.96	180	0.84	3.63	21.37182	HDPE	145	0.22
P-370	23.5	16.257	16.257	0.04317	J-325	J-327	232.28	-10,361.15	8,437.95	110	0	0	0.04317	uPVC	145	0
P-371	251	16.565	16.683	-0.46052	J-328	J-320	232.33	-10,200.17	8,422.21	110	0.05	0.03	0.46052	uPVC	145	0.01
P-372	144.5	16.729	17.465	-19.13733	J-235	J-329	232.53	-10,409.18	8,787.74	180	0.75	2.96	19.13733	HDPE	145	0.43
P-373	154.5	17.465	17.785	-19.68591	J-329	J-330	232.22	-10,437.40	8,921.84	180	0.77	3.12	19.68591	HDPE	145	0.48
P-374	33.5	17.785	18.148	-20.73832	J-330	J-331	232.38	-10,465.81	9,073.50	160	1.03	6.09	20.73832	HDPE	145	0.2
P-375	9.5	18.148	18.043	-20.12211	J-331	J-332	232.22	-10,445.56	9,099.69	160	1	5.76	20.12211	HDPE	145	0.05
P-376	71	18.043	17.855	9.33387	J-332	J-333	232.38	-10,440.12	9,107.59	140	0.61	2.66	9.33387	HDPE	145	0.19
P-377	19.5	17.855	17.991	-5.75887	J-333	J-334	232.38	-10,511.01	9,105.12	125	0.47	1.89	5.75887	HDPE	145	0.04
P-378	49.5	17.991	17.65	6.88117	J-334	J-335	232.28	-10,530.53	9,106.11	110	0.72	4.9	6.88117	HDPE	145	0.24
P-379	82	17.65	18.211	-11.54708	J-335	J-336	232.38	-10,580.18	9,103.15	125	0.94	6.85	11.54708	HDPE	145	0.56
P-38	32.5	19.233	19.473	0.05968	J-31	J-32	232.47	-10,142.36	9,414.92	110	0.01	0	0.05968	uPVC	145	0
P-380	181.5	17.65	16.854	17.85399	J-335	J-249	232.38	-10,580.18	9,103.15	160	0.89	4.61	17.85399	HDPE	145	0.84
P-381	106	16.927	17.046	0.19451	J-248	J-337	232.34	-10,542.07	8,908.29	110	0.02	0.01	0.19451	uPVC	145	0
P-382	199.5	17.071	17.75	-21.31477	J-246	J-338	232.34	-10,498.10	8,874.45	180	0.84	3.61	21.31477	HDPE	145	0.72
P-383	32	17.75	17.855	-14.86795	J-338	J-333	232.38	-10,509.88	9,072.90	160	0.74	3.29	14.86795	uPVC	145	0.11
P-384	44	17.75	17.785	-6.95229	J-338	J-330	232.38	-10,509.88	9,072.90	160	0.35	0.8	6.95229	uPVC	145	0.04
P-385	91	17.785	18.099	-6.49248	J-330	J-339	232.38	-10,465.81	9,073.50	125	0.53	2.36	6.49248	HDPE	145	0.21
P-386	79.5	18.099	18.432	-7.95922	J-339	J-340	232.28	-10,374.94	9,072.90	125	0.65	3.44	7.95922	HDPE	145	0.27

Distribution Network Design Output: Zone 16

P-387	45	18.432	18.358	-5.77042	J-340	J-341	232.22	-10,298.06	9,092.97	125	0.47	1.9	5.77042	HDPE	145	0.09
P-388	42.5	18.358	18.556	-3.87514	J-341	J-342	232.38	-10,252.98	9,094.21	125	0.32	0.91	3.87514	HDPE	145	0.04
P-389	29.5	18.556	18.396	0.05417	J-342	J-343	232.22	-10,210.68	9,095.75	110	0.01	0	0.05417	uPVC	145	0
P-39	92.5	19.233	19.15	20.96995	J-31	J-33	232.47	-10,142.36	9,414.92	180	0.82	3.5	20.96995	HDPE	145	0.32
P-390	67	18.148	18.155	-0.81807	J-331	J-344	232.22	-10,445.56	9,099.69	110	0.09	0.09	0.81807	uPVC	145	0.01
P-391	32	18.155	17.995	0.05876	J-344	J-345	232.22	-10,378.34	9,098.84	110	0.01	0	0.05876	uPVC	145	0
P-392	26	18.155	18.099	-1.1062	J-344	J-339	232.22	-10,378.34	9,098.84	110	0.12	0.17	1.1062	HDPE	145	0
P-4	84.5	21.982	21.494	67.35593	J-4	J-5	232.28	-10,397.24	9,798.81	280	1.09	3.53	67.35593	HDPE	145	0.3
P-40	75.5	19.15	19.099	0.13856	J-33	J-34	232.23	-10,054.28	9,389.11	110	0.01	0	0.13856	uPVC	145	0
P-41	130.5	19.15	18.767	9.84905	J-33	J-35	232.23	-10,054.28	9,389.11	140	0.64	2.94	9.84905	HDPE	145	0.38
P-42	44.5	18.767	18.496	6.50962	J-35	J-36	232.23	-9,924.02	9,389.67	160	0.32	0.71	6.50962	uPVC	145	0.03
P-43	53	18.496	18.685	0.09728	J-36	J-37	232.47	-9,925.51	9,434.38	110	0.01	0	0.09728	uPVC	145	0
P-44	46	18.496	18.656	6.14902	J-36	J-38	232.47	-9,925.51	9,434.38	160	0.31	0.64	6.14902	uPVC	145	0.03
P-45	24.5	18.656	18.68	3.01867	J-38	J-39	232.28	-9,926.74	9,480.32	110	0.32	1.06	3.01867	uPVC	145	0.03
P-46	38	18.68	18.63	0.06977	J-39	J-40	232.23	-9,951.20	9,480.57	110	0.01	0	0.06977	uPVC	145	0
P-47	152	18.656	18.572	2.72212	J-38	J-41	232.28	-9,926.74	9,480.32	110	0.29	0.88	2.72212	uPVC	145	0.13
P-48	110	18.767	18.454	2.34893	J-35	J-42	232.23	-9,924.02	9,389.67	110	0.25	0.67	2.34893	uPVC	145	0.07
P-49	45	18.454	18.643	0.08261	J-42	J-43	232.47	-9,813.86	9,391.65	110	0.01	0	0.08261	uPVC	145	0
P-5	35.5	21.494	21.612	49.26703	J-5	J-6	232.47	-10,396.08	9,714.29	250	1	3.44	49.26703	HDPE	145	0.12
P-50	65	19.646	19.534	4.76967	J-30	J-44	232.28	-10,146.79	9,353.96	110	0.5	2.48	4.76967	HDPE	145	0.16
P-51	68.5	19.116	18.787	5.99643	J-45	J-46	232.28	-10,109.62	9,230.50	125	0.49	2.04	5.99643	HDPE	145	0.14
P-52	56.5	18.787	19.026	0.10371	J-46	J-47	232.47	-10,107.64	9,299.17	110	0.01	0	0.10371	uPVC	145	0
P-53	54.5	18.787	18.88	5.56338	J-46	J-48	232.47	-10,107.64	9,299.17	125	0.45	1.77	5.56338	HDPE	145	0.1
P-54	56	18.88	19.032	-5.65032	J-48	J-49	232.28	-10,053.30	9,296.95	125	0.46	1.82	5.65032	HDPE	145	0.1
P-55	36.5	19.032	19.15	-10.36771	J-49	J-33	232.23	-10,053.05	9,352.78	140	0.67	3.23	10.36771	HDPE	145	0.12
P-56	129	19.032	18.717	4.31099	J-49	J-50	232.23	-10,053.05	9,352.78	110	0.45	2.06	4.31099	uPVC	145	0.27
P-57	37	18.717	18.767	-0.39974	J-50	J-35	232.28	-9,923.86	9,352.53	160	0.02	0	0.39974	uPVC	145	0
P-58	112.5	18.717	18.676	2.59296	J-50	J-51	232.28	-9,923.86	9,352.53	110	0.27	0.8	2.59296	uPVC	145	0.09
P-59	37	18.676	18.454	-1.91403	J-51	J-42	232.23	-9,811.47	9,354.51	110	0.2	0.46	1.91403	uPVC	145	0.02
P-6	38	21.612	21.222	53.09068	J-6	J-7	232.23	-10,396.47	9,678.78	250	1.08	3.95	53.09068	HDPE	145	0.15
P-60	79	18.676	18.479	4.08775	J-51	J-52	232.23	-9,811.47	9,354.51	110	0.43	1.87	4.08775	uPVC	145	0.15
P-61	59	18.717	18.764	1.49856	J-50	J-53	232.28	-9,923.86	9,352.53	160	0.07	0.05	1.49856	uPVC	145	0
P-62	53	18.764	18.714	0.09728	J-53	J-54	232.23	-9,924.60	9,293.49	110	0.01	0	0.09728	uPVC	145	0
P-63	78	18.764	18.807	-2.11671	J-53	J-55	232.23	-9,924.60	9,293.49	110	0.22	0.55	2.11671	uPVC	145	0.04
P-64	51	18.807	18.88	-4.70065	J-55	J-48	232.23	-10,002.41	9,296.21	110	0.49	2.42	4.70065	uPVC	145	0.12
P-65	43	18.88	18.789	6.13783	J-48	J-56	232.28	-10,053.30	9,296.95	125	0.5	2.13	6.13783	HDPE	145	0.09

P-66	24.5	18.789	18.756	3.40684	J-56	J-57	232.28	-10,052.06	9,253.72	110	0.36	1.33	3.40684	uPVC	145	0.03
P-67	53.5	18.756	18.784	2.54746	J-57	J-58	232.28	-10,051.81	9,229.02	125	0.21	0.42	2.54746	HDPE	145	0.02
P-68	76.5	18.74	18.759	4.77602	J-59	J-60	232.28	-10,002.41	9,269.29	160	0.24	0.4	4.77602	uPVC	145	0.03
P-69	27.5	18.759	18.764	-3.11892	J-60	J-53	232.23	-9,926.08	9,265.83	160	0.16	0.18	3.11892	uPVC	145	0.01
P-7	43	21.222	21.255	28.28584	J-7	J-8	232.47	-10,396.08	9,640.57	200	0.9	3.65	28.28584	HDPE	145	0.16
P-70	59	18.759	18.653	7.59585	J-60	J-61	232.23	-9,926.08	9,265.83	160	0.38	0.95	7.59585	uPVC	145	0.06
P-71	65	18.653	18.584	4.05982	J-61	J-62	232.28	-9,923.86	9,206.79	110	0.43	1.84	4.05982	uPVC	145	0.12
P-72	38	21.801	21.593	22.98202	J-11	J-63	232.23	-10,318.50	9,817.73	180	0.9	4.15	22.98202	HDPE	145	0.16
P-73	45.5	21.593	21.407	22.82878	J-63	J-64	232.28	-10,280.64	9,812.64	180	0.9	4.1	22.82878	HDPE	145	0.19
P-74	40.5	21.407	21.262	15.6337	J-64	J-65	232.28	-10,235.48	9,805.30	160	0.78	3.61	15.6337	HDPE	145	0.15
P-75	34.5	21.262	20.941	8.38865	J-65	J-66	232.28	-10,195.34	9,799.51	125	0.68	3.79	8.38865	HDPE	145	0.13
P-76	11	20.941	21.172	2.57208	J-66	J-67	232.47	-10,160.99	9,794.50	110	0.27	0.79	2.57208	uPVC	145	0.01
P-77	22	21.172	20.894	3.95156	J-67	J-68	232.23	-10,150.19	9,793.34	110	0.42	1.75	3.95156	uPVC	145	0.04
P-78	14	20.894	21.14	-1.83191	J-68	J-69	232.47	-10,128.19	9,790.64	110	0.19	0.42	1.83191	uPVC	145	0.01
P-79	123	15.236	15.428	-0.36871	J-70	J-71	232.47	-11,163.05	9,458.24	110	0.04	0.02	0.36871	HDPE	145	0
P-8	75	21.255	21.382	-30.60834	J-8	J-9	232.28	-10,352.85	9,639.41	200	0.97	4.22	30.60834	HDPE	145	0.32
P-80	44.5	15.428	15.241	-0.56316	J-71	J-72	232.28	-11,172.70	9,335.50	110	0.06	0.05	0.56316	HDPE	145	0
P-81	58.5	15.241	15.48	-0.0239	J-72	J-73	232.47	-11,149.16	9,367.92	110	0	0	0.0239	HDPE	145	0
P-82	54	15.241	15.246	-0.82733	J-72	J-74	232.47	-11,149.16	9,367.92	110	0.09	0.1	0.82733	HDPE	145	0.01
P-83	73	15.478	15.239	-0.13398	J-75	J-76	232.23	-11,209.75	9,403.04	110	0.01	0	0.13398	uPVC	145	0
P-84	27	15.239	15.428	0.16243	J-76	J-71	232.47	-11,199.33	9,330.87	110	0.02	0	0.16243	HDPE	145	0
P-85	83	15.239	15.433	-0.63218	J-76	J-77	232.47	-11,199.33	9,330.87	110	0.07	0.06	0.63218	uPVC	145	0
P-86	18	15.433	15.495	-6.11949	J-77	J-78	232.28	-11,189.68	9,248.66	160	0.3	0.64	6.11949	uPVC	145	0.01
P-87	10	15.495	15.452	-6.61377	J-78	J-79	232.23	-11,171.93	9,247.12	160	0.33	0.73	6.61377	uPVC	145	0.01
P-88	159	15.452	15.266	-0.38019	J-79	J-80	232.28	-11,161.90	9,247.12	110	0.04	0.02	0.38019	HDPE	145	0
P-89	23	15.452	15.519	-6.58586	J-79	J-81	232.28	-11,161.90	9,247.12	160	0.33	0.73	6.58586	uPVC	145	0.02
P-9	43.5	21.382	21.494	-17.7889	J-9	J-5	232.47	-10,352.47	9,714.29	180	0.7	2.58	17.7889	HDPE	145	0.11
P-90	12.5	15.519	15.291	-7.76994	J-81	J-82	232.23	-11,138.74	9,247.89	160	0.39	0.99	7.76994	uPVC	145	0.01
P-91	141.5	15.291	15.49	-0.64446	J-82	J-83	232.47	-11,126.39	9,248.27	110	0.07	0.06	0.64446	HDPE	145	0.01
P-92	24.5	15.291	15.553	-7.453	J-82	J-84	232.47	-11,126.39	9,248.27	160	0.37	0.91	7.453	uPVC	145	0.02
P-93	11	15.553	15.554	-9.35011	J-84	J-85	232.23	-11,101.69	9,249.43	125	0.76	4.64	9.35011	HDPE	145	0.05
P-94	27	15.554	15.604	0.04959	J-85	J-86	232.28	-11,090.88	9,249.43	110	0.01	0	0.04959	HDPE	145	0
P-95	44.5	15.554	15.669	-9.5511	J-85	J-87	232.28	-11,090.88	9,249.43	160	0.48	1.45	9.5511	uPVC	145	0.06
P-96	40.5	15.669	15.429	0.07435	J-87	J-88	232.23	-11,046.49	9,252.91	110	0.01	0	0.07435	HDPE	145	0
P-97	94	15.669	15.815	-9.95389	J-87	J-89	232.23	-11,046.49	9,252.91	160	0.5	1.56	9.95389	uPVC	145	0.15
P-98	150	15.553	15.267	1.55675	J-84	J-90	232.23	-11,101.69	9,249.43	110	0.16	0.31	1.55675	uPVC	145	0.05

P-99	56.5	15.267	15.456	0.33999	J-90	J-91	232.47	-11,100.53	9,099.68	110	0.04	0.02	0.33999	uPVC	145	0
PP-393	37	15.467	15.825	-3.40734	J-191	J-220	232.65	-10,667.55	8,483.42	110	0.36	1.33	3.40734	HDPE	145	0.05
PP-394	32.5	15.96	16.016	-2.55038	J-219	J-226	232.28	-10,628.28	8,431.55	110	0.27	0.78	2.55038	HDPE	145	0.03
PP-395	33	15.925	15.933	-1.36996	J-218	J-224	232.33	-10,626.55	8,366.34	110	0.14	0.25	1.36996	HDPE	145	0.01
PP-396	33	15.797	15.79	-0.7375	J-217	J-222	232.46	-10,624.57	8,251.97	110	0.08	0.08	0.7375	HDPE	145	0
PP-397	23.5	15.79	15.98	-0.59939	J-222	PJ-346	232.47	-10,591.47	8,252.71	110	0.06	0.05	0.59939	HDPE	145	0
PP-398	22.5	15.98	15.781	-0.31372	PJ-346	PJ-347	232.28	-10,567.87	8,252.90	110	0.03	0.02	0.31372	HDPE	145	0
PP-399	19	15.781	15.781	0.03491	PJ-347	PJ-348	232.48	-10,545.14	8,253.39	110	0	0	0.03491	HDPE	145	0
PP-400	60.5	15.98	15.863	-0.48109	PJ-346	PJ-349	232.28	-10,567.87	8,252.90	110	0.05	0.04	0.48109	HDPE	145	0
PP-401	23	15.863	15.862	0.44515	PJ-349	J-223	232.4	-10,569.68	8,313.28	110	0.05	0.03	0.44515	HDPE	145	0
PP-402	24	15.863	15.864	-0.45773	PJ-349	PJ-350	232.4	-10,569.68	8,313.28	110	0.05	0.03	0.45773	HDPE	145	0
PP-403	59.5	15.864	15.781	0.53398	PJ-350	PJ-347	232.4	-10,545.49	8,313.12	110	0.06	0.04	0.53398	HDPE	145	0
PP-404	52.5	15.863	15.927	-0.7621	PJ-349	PJ-351	232.4	-10,569.68	8,313.28	110	0.08	0.08	0.7621	HDPE	145	0
PP-405	23	15.927	15.933	1.14492	PJ-351	J-224	232.34	-10,570.47	8,365.76	110	0.12	0.18	1.14492	HDPE	145	0
PP-406	53	15.864	15.934	-1.24217	PJ-350	PJ-352	232.4	-10,545.49	8,313.12	110	0.13	0.21	1.24217	HDPE	145	0.01
PP-407	23.5	15.934	15.927	1.55291	PJ-352	PJ-351	232.34	-10,546.75	8,366.08	110	0.16	0.31	1.55291	HDPE	145	0.01
PP-408	30.5	15.927	15.969	-0.59173	PJ-351	PJ-353	232.34	-10,570.47	8,365.76	110	0.06	0.05	0.59173	HDPE	145	0
PP-409	19.5	15.969	15.966	1.03682	PJ-353	J-225	232.3	-10,574.22	8,394.89	110	0.11	0.15	1.03682	HDPE	145	0
PP-410	70.5	15.969	15.819	-1.84967	PJ-353	PJ-354	232.3	-10,574.22	8,394.89	110	0.19	0.43	1.84967	HDPE	145	0.03
PP-411	22	15.819	15.892	1.58314	PJ-354	J-227	232.48	-10,573.78	8,465.41	110	0.17	0.32	1.58314	HDPE	145	0.01
PP-412	59.5	15.819	16.101	-2.09932	PJ-354	J-178	232.48	-10,573.78	8,465.41	110	0.22	0.54	2.09932	HDPE	145	0.03
PP-413	45	15.819	15.935	-1.69495	PJ-354	PJ-355	232.48	-10,573.78	8,465.41	110	0.18	0.37	1.69495	HDPE	145	0.02
PP-414	29	15.935	16.012	-3.31182	PJ-355	J-228	232.38	-10,528.89	8,467.10	110	0.35	1.26	3.31182	HDPE	145	0.04
PP-415	101	15.935	15.953	1.29578	PJ-355	PJ-356	232.38	-10,528.89	8,467.10	110	0.14	0.22	1.29578	HDPE	145	0.02
PP-416	18	15.953	15.934	2.9685	PJ-356	PJ-352	232.34	-10,528.60	8,366.19	110	0.31	1.03	2.9685	HDPE	145	0.02
PP-417	45.5	15.953	15.965	-1.97456	PJ-356	PJ-357	232.34	-10,528.60	8,366.19	110	0.21	0.48	1.97456	HDPE	145	0.02
PP-418	25	15.965	15.965	0.04592	PJ-357	PJ-358	232.35	-10,482.92	8,366.83	110	0	0	0.04592	HDPE	145	0
PP-419	67	15.965	16.087	-2.27278	PJ-357	PJ-359	232.35	-10,482.92	8,366.83	110	0.24	0.63	2.27278	HDPE	145	0.04
PP-420	19.5	16.087	16.092	-2.51046	PJ-359	J-297	232.27	-10,483.16	8,433.86	110	0.26	0.76	2.51046	HDPE	145	0.01
PP-421	21.5	16.097	16.087	-0.0395	PJ-360	PJ-359	232.26	-10,504.70	8,434.25	110	0	0	0.0395	HDPE	145	0
PP-422	155	16.092	16.119	-2.62702	J-297	J-324	232.28	-10,481.44	8,453.33	110	0.28	0.82	2.62702	HDPE	145	0.13
PP-423	101.5	16.119	16.08	-1.25419	J-324	PJ-361	232.38	-10,357.45	8,360.76	110	0.13	0.21	1.25419	HDPE	145	0.02
PP-424	166.5	16.08	16.304	-1.7459	PJ-361	PJ-362	232.44	-10,284.75	8,290.37	110	0.18	0.39	1.7459	HDPE	145	0.06
PP-425	22	16.304	16.316	-2.09176	PJ-362	PJ-363	232.28	-10,263.71	8,454.93	110	0.22	0.54	2.09176	HDPE	145	0.01
PP-426	34	16.316	16.281	2.47102	PJ-363	J-326	232.28	-10,285.89	8,456.55	110	0.26	0.73	2.47102	HDPE	145	0.02
PP-427	41	16.316	16.467	-4.74079	PJ-363	J-322	232.28	-10,285.89	8,456.55	110	0.5	2.46	4.74079	HDPE	145	0.1

PP-428	82	16.414	16.477	-2.55027	J-308	J-310	232.45	-10,380.48	8,620.83	110	0.27	0.78	2.55027	HDPE	145	0.06
PP-429	78.5	16.588	16.754	-5.98355	J-233	J-245	232.4	-10,515.14	8,787.25	110	0.63	3.78	5.98355	HDPE	145	0.3
PP-430	115.5	16.399	16.769	-5.47183	J-232	J-247	232.53	-10,534.41	8,786.51	110	0.58	3.2	5.47183	HDPE	145	0.37
PP-431	50.5	16.623	16.526	5.21163	J-250	PJ-364	232.53	-10,573.19	8,920.14	110	0.55	2.93	5.21163	HDPE	145	0.15
PP-432	82	16.526	16.402	4.77948	PJ-364	J-231	232.48	-10,573.52	8,869.44	110	0.5	2.49	4.77948	HDPE	145	0.2
PP-433	51.5	16.526	16.626	0.09453	PJ-364	PJ-365	232.48	-10,573.52	8,869.44	110	0.01	0	0.09453	HDPE	145	0
PP-434	157.5	16.623	16.476	4.81235	J-250	J-260	232.53	-10,573.19	8,920.14	110	0.51	2.53	4.81235	HDPE	145	0.4
PP-435	10	16.476	16.276	-0.02268	J-260	PJ-366	232.28	-10,690.33	9,025.12	110	0	0	0.02268	HDPE	145	0
PP-436	42.5	16.276	16.169	7.08108	PJ-366	J-124	232.48	-10,697.85	9,031.55	125	0.58	2.77	7.08108	HDPE	145	0.12
PP-437	42.5	16.169	16.248	1.39373	J-124	PJ-367	232.47	-10,730.22	9,058.75	110	0.15	0.25	1.39373	HDPE	145	0.01
PP-438	34.5	16.248	16.316	2.79164	PJ-367	J-137	232.38	-10,762.60	9,086.06	110	0.29	0.92	2.79164	HDPE	145	0.03
PP-439	9	16.316	16.128	-3.29638	J-137	PJ-368	232.28	-10,788.84	9,108.65	110	0.35	1.25	3.29638	HDPE	145	0.01
PP-440	89	16.128	16.327	0.17259	PJ-368	J-144	232.48	-10,795.61	9,114.26	110	0.02	0.01	0.17259	HDPE	145	0
PP-441	18.5	16.327	16.301	-6.1556	J-144	PJ-369	232.28	-10,862.66	9,172.83	110	0.65	3.98	6.1556	HDPE	145	0.07
PP-442	102.5	16.301	15.815	14.74811	PJ-369	J-89	232.38	-10,876.64	9,185.17	140	0.96	6.21	14.74811	HDPE	145	0.64
PP-443	142.5	15.815	15.49	4.17226	J-89	J-83	232.23	-10,953.09	9,253.29	110	0.44	1.94	4.17226	HDPE	145	0.28
PP-444	33.5	15.49	15.266	2.94528	J-83	J-80	232.28	-11,056.53	9,350.94	110	0.31	1.02	2.94528	HDPE	145	0.03
PP-445	35.5	15.266	15.246	2.14677	J-80	J-74	232.47	-11,080.84	9,372.94	110	0.23	0.57	2.14677	HDPE	145	0.02
PP-446	32	15.246	15.48	1.09648	J-74	J-73	232.47	-11,105.16	9,398.80	110	0.12	0.16	1.09648	HDPE	145	0.01
PP-447	36.5	15.48	15.427	0.83954	J-73	PJ-370	232.23	-11,127.16	9,422.34	110	0.09	0.1	0.83954	HDPE	145	0
PP-448	14	15.427	15.236	0.74685	PJ-370	J-70	232.28	-11,152.43	9,449.01	110	0.08	0.08	0.74685	HDPE	145	0
PP-449	166	15.236	15.218	0.55964	J-70	PJ-371	232.47	-11,163.05	9,458.24	110	0.06	0.05	0.55964	HDPE	145	0.01
PP-450	69.5	15.218	15.318	0.12755	PJ-371	PJ-372	232.48	-11,275.35	9,580.74	110	0.01	0	0.12755	HDPE	145	0
PP-451	20	15.207	15.457	-0.03675	PJ-373	J-115	232.48	-11,311.86	9,304.03	110	0	0	0.03675	HDPE	145	0
PP-452	33	15.457	15.309	-0.71825	J-115	PJ-374	232.23	-11,291.82	9,304.49	110	0.08	0.07	0.71825	HDPE	145	0
PP-453	33	15.309	15.411	-0.64112	PJ-374	PJ-375	232.38	-11,259.06	9,305.88	110	0.07	0.06	0.64112	HDPE	145	0
PP-454	8.5	15.411	15.212	0.01565	PJ-375	PJ-376	232.28	-11,226.33	9,307.12	110	0	0	0.01565	HDPE	145	0
PP-455	60.5	15.309	15.41	-0.30924	PJ-374	J-117	232.38	-11,259.06	9,305.88	110	0.03	0.01	0.30924	HDPE	145	0
PP-456	61	15.467	15.411	0.84487	J-119	PJ-375	232.23	-11,223.28	9,246.13	110	0.09	0.1	0.84487	HDPE	145	0.01
PP-457	18	15.426	15.271	1.4645	J-112	PJ-377	232.23	-11,386.52	9,242.48	110	0.15	0.28	1.4645	HDPE	145	0.01
PP-458	15.5	15.271	15.169	1.17545	PJ-377	PJ-378	232.38	-11,404.68	9,241.11	110	0.12	0.19	1.17545	HDPE	145	0
PP-459	29	15.169	15.365	0.86439	PJ-378	PJ-379	232.48	-11,420.42	9,241.11	110	0.09	0.1	0.86439	HDPE	145	0
PP-460	24	15.365	15.165	0.5414	PJ-379	PJ-380	232.28	-11,449.14	9,239.57	110	0.06	0.04	0.5414	HDPE	145	0
PP-461	31	15.165	15.264	0.22943	PJ-380	PJ-381	232.48	-11,473.22	9,237.40	110	0.02	0.01	0.22943	HDPE	145	0
PP-462	47	15.264	15.164	0.08628	PJ-381	PJ-382	232.38	-11,504.10	9,237.10	110	0.01	0	0.08628	HDPE	145	0
PP-463	57.5	15.264	15.165	-0.10554	PJ-383	PJ-380	232.38	-11,477.85	9,294.84	110	0.01	0	0.10554	HDPE	145	0

PP-464	61.5	15.166	15.365	-0.11288	PJ-384	PJ-379	232.48	-11,453.77	9,300.70	110	0.01	0	0.11288	HDPE	145	0
PP-465	62.5	15.368	15.169	-0.11471	PJ-385	PJ-378	232.28	-11,426.60	9,303.17	110	0.01	0	0.11471	HDPE	145	0
PP-466	62	15.172	15.271	-0.1138	PJ-386	PJ-377	232.48	-11,405.60	9,303.17	110	0.01	0	0.1138	HDPE	145	0
PP-467	65	15.276	15.426	-0.1193	PJ-387	J-112	232.38	-11,389.55	9,307.49	110	0.01	0	0.1193	HDPE	145	0
PP-468	27.5	15.212	15.289	1.99765	J-111	PJ-389	232.47	-11,329.02	9,243.64	110	0.21	0.5	1.99765	HDPE	145	0.01
PP-469	30	15.289	15.426	1.79116	PJ-389	J-112	232.38	-11,356.51	9,243.89	110	0.19	0.4	1.79116	HDPE	145	0.01
PP-470	27.5	15.189	15.289	-0.0505	PJ-388	PJ-389	232.48	-11,358.36	9,271.37	110	0.01	0	0.0505	HDPE	145	0
PP-471	38.5	15.444	15.493	-0.07068	PJ-390	J-94	232.28	-11,207.65	9,167.69	110	0.01	0	0.07068	HDPE	145	0
PP-472	37.5	15.244	15.254	-0.06885	PJ-391	J-95	232.48	-11,204.69	9,111.37	110	0.01	0	0.06885	HDPE	145	0
PP-473	30.5	15.494	15.264	-1.56957	J-96	J-93	232.23	-11,166.53	9,095.05	110	0.17	0.32	1.56957	HDPE	145	0.01
PP-474	35.5	15.264	15.267	-0.77276	J-93	J-90	232.47	-11,136.04	9,096.98	110	0.08	0.09	0.77276	HDPE	145	0
PP-475	13	15.324	15.224	-0.0239	PJ-392	PJ-393	232.38	-11,269.90	9,079.50	110	0	0	0.0239	HDPE	145	0
PP-476	25.5	15.224	15.473	0.17878	PJ-393	J-103	232.48	-11,256.81	9,080.00	110	0.02	0.01	0.17878	HDPE	145	0
PP-477	66.5	15.473	15.442	-1.46308	J-103	J-97	232.23	-11,231.37	9,080.38	110	0.15	0.28	1.46308	HDPE	145	0.02
PP-478	47	15.224	15.235	-0.35959	PJ-393	J-100	232.48	-11,256.81	9,080.00	110	0.04	0.02	0.35959	HDPE	145	0
PP-479	85	15.474	15.325	0.06057	J-101	PJ-394	232.23	-11,280.00	9,031.36	110	0.01	0	0.06057	HDPE	145	0
PP-480	53	15.325	15.424	0.25125	PJ-394	PJ-395	232.38	-11,262.00	8,948.09	110	0.03	0.01	0.25125	HDPE	145	0
PP-481	22	15.424	15.224	0.27617	PJ-395	PJ-396	232.28	-11,251.13	8,895.97	110	0.03	0.01	0.27617	HDPE	145	0
PP-482	20.5	15.224	15.324	0.14981	PJ-396	PJ-397	232.48	-11,272.64	8,891.24	110	0.02	0	0.14981	HDPE	145	0
PP-483	101.5	15.224	15.324	0.07405	PJ-398	PJ-397	232.48	-11,276.87	8,787.01	110	0.01	0	0.07405	HDPE	145	0
PP-484	21.5	15.224	15.324	-0.29976	PJ-398	PJ-399	232.48	-11,276.87	8,787.01	110	0.03	0.02	0.29976	HDPE	145	0
PP-485	103	15.324	15.224	0.14062	PJ-399	PJ-396	232.38	-11,255.56	8,789.47	110	0.01	0	0.14062	HDPE	145	0
PP-486	106	15.424	15.226	-0.35702	PJ-395	PJ-400	232.28	-11,251.13	8,895.97	110	0.04	0.02	0.35702	HDPE	145	0
PP-487	27.5	15.226	15.324	0.71928	PJ-400	PJ-399	232.48	-11,228.20	8,792.27	110	0.08	0.07	0.71928	HDPE	145	0
PP-488	12	15.226	15.429	-1.34328	PJ-400	PJ-401	232.48	-11,228.20	8,792.27	110	0.14	0.24	1.34328	HDPE	145	0
PP-489	29	15.429	15.234	-1.14175	PJ-401	PJ-402	232.28	-11,216.32	8,794.39	110	0.12	0.18	1.14175	HDPE	145	0.01
PP-490	30	15.234	15.338	-0.93682	PJ-402	PJ-403	232.48	-11,187.54	8,799.29	110	0.1	0.12	0.93682	HDPE	145	0
PP-491	134	15.338	15.226	0.79097	PJ-403	PJ-404	232.38	-11,195.61	8,828.22	110	0.08	0.09	0.79097	HDPE	145	0.01
PP-492	77	15.226	15.476	-0.16115	PJ-404	J-99	232.48	-11,230.36	8,957.59	110	0.02	0	0.16115	HDPE	145	0
PP-493	33	15.325	15.226	-0.50444	PJ-394	PJ-404	232.38	-11,262.00	8,948.09	110	0.05	0.04	0.50444	HDPE	145	0
PP-494	19	15.338	15.448	-2.06356	PJ-403	PJ-405	232.38	-11,195.61	8,828.22	110	0.22	0.53	2.06356	HDPE	145	0.01
PP-495	33.5	15.448	15.255	-1.30169	PJ-405	PJ-406	232.28	-11,176.69	8,830.97	110	0.14	0.22	1.30169	HDPE	145	0.01
PP-496	5.5	15.255	15.356	-1.0193	PJ-406	PJ-407	232.48	-11,148.55	8,843.77	110	0.11	0.14	1.0193	HDPE	145	0
PP-497	28.5	15.356	15.462	-1.2232	PJ-407	PJ-408	232.38	-11,143.17	8,845.35	110	0.13	0.2	1.2232	HDPE	145	0.01
PP-498	9	15.462	15.265	-1.56268	PJ-408	PJ-409	232.28	-11,115.83	8,852.78	110	0.16	0.31	1.56268	HDPE	145	0
PP-499	33	15.265	15.369	-0.99215	PJ-409	PJ-410	232.48	-11,107.29	8,854.84	110	0.1	0.14	0.99215	HDPE	145	0

PP-500	33.5	15.369	15.265	1.00824	PJ-410	PJ-411	232.38	-11,075.35	8,863.22	110	0.11	0.14	1.00824	HDPE	145	0
PP-501	15.5	15.265	15.363	0.91829	PJ-411	PJ-412	232.48	-11,042.95	8,871.91	110	0.1	0.12	0.91829	HDPE	145	0
PP-502	71.5	15.363	15.461	0.2938	PJ-412	PJ-413	232.38	-11,046.27	8,887.25	110	0.03	0.01	0.2938	HDPE	145	0
PP-503	24.5	15.461	15.462	-0.22569	PJ-413	PJ-408	232.28	-11,117.25	8,877.13	110	0.02	0.01	0.22569	HDPE	145	0
PP-504	56	15.255	15.357	-0.45672	PJ-406	PJ-414	232.48	-11,148.55	8,843.77	110	0.05	0.03	0.45672	HDPE	145	0
PP-505	35	15.357	15.461	-0.91559	PJ-414	PJ-415	232.38	-11,153.61	8,899.58	110	0.1	0.12	0.91559	HDPE	145	0
PP-506	26.5	15.461	15.461	-0.2947	PJ-415	PJ-413	232.28	-11,118.99	8,903.69	110	0.03	0.01	0.2947	HDPE	145	0
PP-507	70.5	15.461	15.262	-0.24188	PJ-415	PJ-416	232.28	-11,118.99	8,903.69	110	0.03	0.01	0.24188	HDPE	145	0
PP-508	25.5	15.262	15.363	-0.41805	PJ-416	PJ-412	232.48	-11,049.27	8,912.54	110	0.04	0.03	0.41805	HDPE	145	0
PP-509	50.5	15.461	15.365	-0.71387	PJ-415	PJ-417	232.28	-11,118.99	8,903.69	110	0.08	0.07	0.71387	HDPE	145	0
PP-510	36	15.365	15.257	1.30945	PJ-417	PJ-418	232.38	-11,120.98	8,954.11	110	0.14	0.23	1.30945	HDPE	145	0.01
PP-511	52.5	15.257	15.357	-0.19556	PJ-418	PJ-414	232.48	-11,156.80	8,951.95	110	0.02	0.01	0.19556	HDPE	145	0
PP-512	22.5	15.257	15.252	1.30132	PJ-418	PJ-419	232.48	-11,156.80	8,951.95	110	0.14	0.22	1.30132	HDPE	145	0.01
PP-513	46	15.252	15.352	0.08444	PJ-419	PJ-420	232.48	-11,159.27	8,974.18	110	0.01	0	0.08444	HDPE	145	0
PP-514	36.5	15.448	15.349	-0.06701	PJ-421	PJ-422	232.28	-11,196.63	8,990.86	110	0.01	0	0.06701	HDPE	145	0
PP-515	20	15.349	15.252	-1.05447	PJ-422	PJ-419	232.38	-11,160.20	8,994.25	110	0.11	0.15	1.05447	HDPE	145	0
PP-516	43	15.349	15.255	0.80486	PJ-422	J-98	232.38	-11,160.20	8,994.25	110	0.08	0.09	0.80486	HDPE	145	0
PP-517	20.5	15.266	15.366	-1.99638	J-92	PJ-423	232.47	-11,124.84	9,041.40	110	0.21	0.5	1.99638	HDPE	145	0.01
PP-518	30.5	15.366	15.473	-1.31181	PJ-423	PJ-424	232.38	-11,123.46	9,021.12	110	0.14	0.23	1.31181	HDPE	145	0.01
PP-519	38	15.473	15.373	0.06977	PJ-424	PJ-425	232.28	-11,093.20	9,021.73	110	0.01	0	0.06977	HDPE	145	0
PP-520	26	15.366	15.468	-0.82588	PJ-423	PJ-426	232.38	-11,123.46	9,021.12	110	0.09	0.1	0.82588	HDPE	145	0
PP-521	31	15.468	15.381	-1.77667	PJ-426	PJ-427	232.28	-11,122.22	8,995.18	110	0.19	0.4	1.77667	HDPE	145	0.01
PP-522	25.5	15.381	15.473	1.55408	PJ-427	PJ-424	232.38	-11,091.34	8,996.42	110	0.16	0.31	1.55408	HDPE	145	0.01
PP-523	32	15.381	15.425	-3.49316	PJ-427	PJ-428	232.38	-11,091.34	8,996.42	110	0.37	1.4	3.49316	HDPE	145	0.04
PP-524	23	15.425	15.609	-3.59411	PJ-428	J-148	232.38	-11,059.23	8,996.42	110	0.38	1.47	3.59411	HDPE	145	0.03
PP-525	41	15.468	15.365	0.77095	PJ-426	PJ-417	232.28	-11,122.22	8,995.18	110	0.08	0.09	0.77095	HDPE	145	0
PP-526	76.5	15.365	15.171	-1.62666	PJ-417	PJ-429	232.38	-11,120.98	8,954.11	110	0.17	0.34	1.62666	HDPE	145	0.03
PP-527	19	15.171	15.391	-0.40644	PJ-429	PJ-430	232.6	-11,044.41	8,956.58	110	0.04	0.03	0.40644	HDPE	145	0
PP-528	9.5	15.391	15.491	-0.45878	PJ-430	PJ-431	232.38	-11,046.88	8,975.42	110	0.05	0.03	0.45878	HDPE	145	0
PP-529	21	15.491	15.172	0.12853	PJ-431	PJ-432	232.28	-11,037.31	8,977.27	110	0.01	0	0.12853	HDPE	145	0
PP-530	24.5	15.172	15.391	0.045	PJ-432	PJ-433	232.6	-11,041.01	8,997.96	110	0	0	0.045	HDPE	145	0
PP-531	25.5	15.172	15.491	-0.04684	PJ-434	PJ-431	232.6	-11,012.30	8,981.59	110	0	0	0.04684	HDPE	145	0
PP-532	20	15.491	15.393	-0.77362	PJ-431	PJ-435	232.28	-11,037.31	8,977.27	110	0.08	0.09	0.77362	HDPE	145	0
PP-533	9.5	15.393	15.171	1.42321	PJ-435	PJ-429	232.38	-11,034.84	8,957.20	110	0.15	0.26	1.42321	HDPE	145	0
PP-534	100.5	15.171	15.172	-0.17405	PJ-429	PJ-436	232.6	-11,044.41	8,956.58	110	0.02	0.01	0.17405	HDPE	145	0
PP-535	18	15.172	15.501	-2.08447	PJ-436	PJ-437	232.6	-11,031.13	8,856.85	110	0.22	0.54	2.08447	HDPE	145	0.01

PP-536	32.5	15.501	15.22	-3.21028	PJ-437	PJ-438	232.28	-11,013.23	8,859.01	110	0.34	1.19	3.21028	HDPE	145	0.04
PP-537	68	15.22	15.393	2.37576	PJ-438	PJ-435	232.6	-11,022.18	8,890.51	110	0.25	0.68	2.37576	HDPE	145	0.05
PP-538	25	15.22	15.559	-5.81632	PJ-438	J-155	232.6	-11,022.18	8,890.51	110	0.61	3.59	5.81632	HDPE	145	0.09
PP-539	46.5	15.559	15.702	-2.02645	J-155	J-149	232.35	-10,998.60	8,882.45	110	0.21	0.51	2.02645	HDPE	145	0.02
PP-540	21	15.448	15.35	-0.89677	PJ-405	PJ-439	232.28	-11,176.69	8,830.97	110	0.09	0.11	0.89677	HDPE	145	0
PP-541	47	15.35	15.131	0.04841	PJ-439	PJ-440	232.38	-11,172.55	8,810.23	110	0.01	0	0.04841	HDPE	145	0
PP-542	31	15.131	15.346	0.95522	PJ-440	PJ-441	232.6	-11,167.30	8,763.60	110	0.1	0.13	0.95522	HDPE	145	0
PP-543	24.5	15.346	15.117	1.72501	PJ-441	PJ-442	232.38	-11,164.21	8,732.73	110	0.18	0.38	1.72501	HDPE	145	0.01
PP-544	84	15.117	15.234	0.46733	PJ-442	PJ-402	232.6	-11,181.50	8,715.44	110	0.05	0.03	0.46733	HDPE	145	0
PP-545	36	15.429	15.33	-0.34284	PJ-401	PJ-443	232.28	-11,216.32	8,794.39	110	0.04	0.02	0.34284	HDPE	145	0
PP-546	27.5	15.33	15.43	-0.42711	PJ-443	PJ-444	232.38	-11,212.69	8,758.66	110	0.04	0.03	0.42711	HDPE	145	0
PP-547	50	15.43	15.117	-0.96686	PJ-444	PJ-442	232.28	-11,209.60	8,731.18	110	0.1	0.13	0.96686	HDPE	145	0.01
PP-548	32.5	15.43	15.11	0.33789	PJ-444	PJ-445	232.28	-11,209.60	8,731.18	110	0.04	0.02	0.33789	HDPE	145	0
PP-549	22	15.11	15.33	0.18827	PJ-445	PJ-446	232.6	-11,241.71	8,734.89	110	0.02	0.01	0.18827	HDPE	145	0
PP-550	31.5	15.33	15.33	0.09006	PJ-446	PJ-443	232.38	-11,244.18	8,756.81	110	0.01	0	0.09006	HDPE	145	0
PP-551	13.5	15.11	15.11	0.02482	PJ-445	PJ-447	232.6	-11,241.71	8,734.89	110	0	0	0.02482	HDPE	145	0
PP-552	34	15.35	15.456	-1.13236	PJ-439	PJ-448	232.38	-11,172.55	8,810.23	110	0.12	0.17	1.13236	HDPE	145	0.01
PP-553	31.5	15.456	15.356	-0.08369	PJ-448	PJ-407	232.28	-11,138.89	8,813.93	110	0.01	0	0.08369	HDPE	145	0
PP-554	38.5	15.265	15.148	-0.71826	PJ-409	PJ-449	232.48	-11,107.29	8,854.84	110	0.08	0.07	0.71826	HDPE	145	0
PP-555	36	15.148	15.456	1.57134	PJ-449	PJ-448	232.6	-11,103.08	8,816.71	110	0.17	0.32	1.57134	HDPE	145	0.01
PP-556	32.5	15.131	15.455	-1.10958	PJ-440	PJ-450	232.6	-11,167.30	8,763.60	110	0.12	0.17	1.10958	HDPE	145	0.01
PP-557	46	15.455	15.456	-0.25202	PJ-450	PJ-448	232.28	-11,135.19	8,767.93	110	0.03	0.01	0.25202	HDPE	145	0
PP-558	39	15.346	15.131	-0.94321	PJ-441	PJ-451	232.38	-11,164.21	8,732.73	110	0.1	0.12	0.94321	HDPE	145	0
PP-559	32.5	15.131	15.36	-1.49648	PJ-451	PJ-452	232.6	-11,157.42	8,694.13	110	0.16	0.29	1.49648	HDPE	145	0.01
PP-560	26	15.36	15.141	-0.37955	PJ-452	PJ-453	232.38	-11,127.16	8,706.48	110	0.04	0.02	0.37955	HDPE	145	0
PP-561	35.5	15.141	15.455	1.06675	PJ-453	PJ-450	232.6	-11,131.17	8,732.42	110	0.11	0.16	1.06675	HDPE	145	0.01
PP-562	64.5	15.131	15.45	0.30372	PJ-451	PJ-454	232.6	-11,157.42	8,694.13	110	0.03	0.01	0.30372	HDPE	145	0
PP-563	50.5	15.45	15.13	0.0927	PJ-454	PJ-455	232.28	-11,149.39	8,629.91	110	0.01	0	0.0927	HDPE	145	0
PP-564	155	15.358	15.36	-0.28441	PJ-456	PJ-452	232.38	-11,111.10	8,552.41	110	0.03	0.01	0.28441	HDPE	145	0
PP-565	36	15.36	15.156	-1.85911	PJ-452	PJ-457	232.38	-11,127.16	8,706.48	110	0.2	0.43	1.85911	HDPE	145	0.02
PP-566	26	15.156	15.473	0.82118	PJ-457	PJ-458	232.6	-11,091.42	8,707.38	110	0.09	0.1	0.82118	HDPE	145	0
PP-567	37	15.473	15.141	1.62706	PJ-458	PJ-453	232.28	-11,093.99	8,733.47	110	0.17	0.34	1.62706	HDPE	145	0.01
PP-568	34	15.473	15.154	0.04292	PJ-458	PJ-459	232.28	-11,093.99	8,733.47	110	0	0	0.04292	HDPE	145	0
PP-569	49.5	15.154	15.148	0.9424	PJ-459	PJ-449	232.6	-11,098.14	8,767.46	110	0.1	0.12	0.9424	HDPE	145	0.01
PP-570	34.5	15.148	15.379	-1.63802	PJ-449	PJ-460	232.6	-11,103.08	8,816.71	110	0.17	0.34	1.63802	HDPE	145	0.01
PP-571	29	15.379	15.158	0.69003	PJ-460	PJ-461	232.38	-11,068.89	8,820.22	110	0.07	0.07	0.69003	HDPE	145	0

PP-572	14.5	15.158	15.369	2.14904	PJ-461	PJ-410	232.6	-11,072.45	8,849.07	110	0.23	0.57	2.14904	HDPE	145	0.01
PP-573	42	15.158	15.172	-1.61592	PJ-461	PJ-436	232.6	-11,072.45	8,849.07	110	0.17	0.33	1.61592	HDPE	145	0.01
PP-574	31	15.501	15.397	0.97624	PJ-437	PJ-462	232.28	-11,013.23	8,859.01	110	0.1	0.13	0.97624	HDPE	145	0
PP-575	62	15.397	15.379	1.47949	PJ-462	PJ-460	232.38	-11,007.43	8,828.52	110	0.16	0.28	1.47949	HDPE	145	0.02
PP-576	30.5	15.379	15.165	-1.13481	PJ-460	PJ-463	232.38	-11,068.89	8,820.22	110	0.12	0.17	1.13481	HDPE	145	0.01
PP-577	64.5	15.165	15.499	-1.30914	PJ-463	PJ-464	232.6	-11,064.94	8,789.99	110	0.14	0.23	1.30914	HDPE	145	0.01
PP-578	30	15.499	15.397	0.72895	PJ-464	PJ-462	232.28	-11,000.91	8,799.08	110	0.08	0.08	0.72895	HDPE	145	0
PP-579	111.5	15.154	15.567	-1.25727	PJ-459	PJ-465	232.6	-11,098.14	8,767.46	110	0.13	0.21	1.25727	HDPE	145	0.02
PP-580	21	15.567	15.505	-1.8019	PJ-465	PJ-466	232.21	-10,987.28	8,778.72	110	0.19	0.41	1.8019	HDPE	145	0.01
PP-581	10.5	15.505	15.499	2.23078	PJ-466	PJ-464	232.28	-10,990.24	8,799.27	110	0.23	0.61	2.23078	HDPE	145	0.01
PP-582	113.5	15.473	15.566	-1.23502	PJ-458	PJ-467	232.28	-11,093.99	8,733.47	110	0.13	0.2	1.23502	HDPE	145	0.02
PP-583	36.5	15.566	15.567	-0.23454	PJ-467	PJ-465	232.21	-10,980.76	8,742.76	110	0.02	0.01	0.23454	HDPE	145	0
PP-584	47.5	15.156	15.393	-1.69325	PJ-457	PJ-468	232.6	-11,091.42	8,707.38	110	0.18	0.36	1.69325	HDPE	145	0.02
PP-585	37	15.393	15.579	-1.88216	PJ-468	PJ-469	232.38	-11,084.11	8,660.55	110	0.2	0.44	1.88216	HDPE	145	0.02
PP-586	112	15.579	15.517	-0.69124	PJ-469	PJ-470	232.21	-11,078.97	8,623.99	110	0.07	0.07	0.69124	HDPE	145	0.01
PP-587	10.5	15.517	15.587	0.01932	PJ-470	PJ-471	232.28	-11,065.73	8,512.54	110	0	0	0.01932	HDPE	145	0
PP-588	29	15.517	15.351	-0.98854	PJ-470	J-279	232.28	-11,065.73	8,512.54	110	0.1	0.13	0.98854	HDPE	145	0
PP-589	41.5	15.579	15.422	-1.54046	PJ-469	PJ-472	232.21	-11,078.97	8,623.99	110	0.16	0.31	1.54046	HDPE	145	0.01
PP-590	23.5	15.422	15.274	-0.71881	PJ-472	J-283	232.38	-11,037.63	8,623.77	110	0.08	0.08	0.71881	HDPE	145	0
PP-591	23	15.274	15.354	0.02507	J-283	J-282	232.53	-11,032.81	8,601.02	110	0	0	0.02507	HDPE	145	0
PP-592	96	15.422	15.608	-1.11706	PJ-472	PJ-473	232.38	-11,037.63	8,623.77	110	0.12	0.17	1.11706	HDPE	145	0.02
PP-593	28	15.608	15.537	0.48998	PJ-473	J-284	232.21	-10,942.62	8,637.67	110	0.05	0.04	0.48998	HDPE	145	0
PP-594	23.5	15.537	15.29	-0.78786	J-284	J-286	232.28	-10,936.72	8,610.16	110	0.08	0.09	0.78786	HDPE	145	0
PP-595	77	15.29	15.29	0.08841	J-286	J-289	232.53	-10,932.28	8,587.19	110	0.01	0	0.08841	HDPE	145	0
PP-596	65.5	15.29	15.439	0.12022	J-289	PJ-474	232.53	-10,918.44	8,511.60	110	0.01	0	0.12022	HDPE	145	0
PP-597	13	15.548	15.618	-0.0239	PJ-475	PJ-476	232.28	-10,884.06	8,451.74	110	0	0	0.0239	HDPE	145	0
PP-598	51.5	15.618	15.548	-0.1325	PJ-476	J-290	232.21	-10,885.56	8,464.85	110	0.01	0	0.1325	HDPE	145	0
PP-599	61	15.548	15.618	0.12169	J-290	PJ-476	232.28	-10,893.25	8,515.55	110	0.01	0	0.12169	HDPE	145	0
PP-600	75	15.548	15.392	-1.16178	J-290	J-287	232.28	-10,893.25	8,515.55	110	0.12	0.18	1.16178	HDPE	145	0.01
PP-601	13	15.392	15.465	-1.40372	J-287	PJ-477	232.45	-10,904.12	8,589.90	110	0.15	0.26	1.40372	HDPE	145	0
PP-602	76.5	15.465	15.548	1.29428	PJ-477	J-290	232.38	-10,891.25	8,591.98	110	0.14	0.22	1.29428	HDPE	145	0.02
PP-603	59.5	15.465	15.557	-2.9714	PJ-477	J-166	232.38	-10,891.25	8,591.98	110	0.31	1.03	2.9714	HDPE	145	0.06
PP-604	62.5	15.392	15.664	-2.65986	J-287	J-165	232.45	-10,904.12	8,589.90	110	0.28	0.84	2.65986	HDPE	145	0.05
PP-605	13.5	15.664	15.668	3.21189	J-165	PJ-478	232.23	-10,914.03	8,651.64	110	0.34	1.19	3.21189	HDPE	145	0.02
PP-606	32.5	15.668	15.45	3.64524	PJ-478	PJ-479	232.21	-10,915.76	8,665.06	110	0.38	1.51	3.64524	HDPE	145	0.05
PP-607	25	15.45	15.608	1.88044	PJ-479	PJ-473	232.38	-10,947.97	8,661.90	110	0.2	0.44	1.88044	HDPE	145	0.01

PP-608	12.5	15.45	15.615	1.63632	PJ-479	PJ-480	232.38	-10,947.97	8,661.90	110	0.17	0.34	1.63632	HDPE	145	0
PP-609	18.5	15.615	15.515	3.8235	PJ-480	PJ-481	232.21	-10,950.54	8,674.35	110	0.4	1.65	3.8235	HDPE	145	0.03
PP-610	29	15.515	15.567	2.20009	PJ-481	PJ-482	232.28	-10,969.12	8,672.96	110	0.23	0.59	2.20009	HDPE	145	0.02
PP-611	29.5	15.567	15.393	1.04264	PJ-482	PJ-483	232.21	-10,998.16	8,671.78	110	0.11	0.15	1.04264	HDPE	145	0
PP-612	57.5	15.393	15.393	0.07165	PJ-483	PJ-468	232.38	-11,027.21	8,668.02	110	0.01	0	0.07165	HDPE	145	0
PP-613	63	15.156	15.56	-1.30355	PJ-457	PJ-484	232.6	-11,091.42	8,707.38	110	0.14	0.22	1.30355	HDPE	145	0.01
PP-614	26.5	15.56	15.393	-0.80872	PJ-484	PJ-485	232.21	-11,028.60	8,709.52	110	0.09	0.09	0.80872	HDPE	145	0
PP-615	13.5	15.393	15.492	0.02482	PJ-485	PJ-486	232.38	-11,001.92	8,710.51	110	0	0	0.02482	HDPE	145	0
PP-616	41.5	15.56	15.393	-0.7352	PJ-484	PJ-483	232.21	-11,028.60	8,709.52	110	0.08	0.08	0.7352	HDPE	145	0
PP-617	39	15.393	15.567	-0.97853	PJ-485	PJ-482	232.38	-11,001.92	8,710.51	110	0.1	0.13	0.97853	HDPE	145	0.01
PP-618	71	15.515	15.566	1.40597	PJ-481	PJ-467	232.28	-10,969.12	8,672.96	110	0.15	0.26	1.40597	HDPE	145	0.02
PP-619	19.5	15.505	15.612	-4.12629	PJ-466	PJ-487	232.28	-10,990.24	8,799.27	110	0.43	1.9	4.12629	HDPE	145	0.04
PP-620	71	15.612	15.612	0.13031	PJ-487	PJ-488	232.21	-10,970.80	8,799.59	110	0.01	0	0.13031	HDPE	145	0
PP-621	12	15.612	15.568	-4.44469	PJ-487	PJ-489	232.21	-10,970.80	8,799.59	110	0.47	2.18	4.44469	HDPE	145	0.03
PP-622	27.5	15.568	15.619	-4.04721	PJ-489	PJ-490	232.28	-10,958.84	8,799.59	110	0.43	1.83	4.04721	HDPE	145	0.05
PP-623	27.5	15.619	15.578	-3.02931	PJ-490	J-160	232.28	-10,931.43	8,799.98	110	0.32	1.07	3.02931	HDPE	145	0.03
PP-624	37	15.619	15.556	-1.18673	PJ-490	J-162	232.28	-10,931.43	8,799.98	110	0.12	0.19	1.18673	HDPE	145	0.01
PP-625	52	15.556	15.681	1.48704	J-162	PJ-491	232.35	-10,925.49	8,763.68	110	0.16	0.29	1.48704	HDPE	145	0.01
PP-626	9.5	15.681	15.549	-2.64492	PJ-491	J-164	232.21	-10,917.62	8,712.08	110	0.28	0.83	2.64492	HDPE	145	0.01
PP-627	5.5	15.681	15.501	4.00899	PJ-491	PJ-492	232.21	-10,917.62	8,712.08	110	0.42	1.8	4.00899	HDPE	145	0.01
PP-628	21.5	15.501	15.574	3.27283	PJ-492	PJ-493	232.38	-10,922.88	8,710.70	110	0.34	1.24	3.27283	HDPE	145	0.03
PP-629	97	15.574	15.568	0.64795	PJ-493	PJ-489	232.28	-10,944.01	8,707.95	110	0.07	0.06	0.64795	HDPE	145	0.01
PP-630	12.5	15.574	15.466	2.3845	PJ-493	PJ-494	232.28	-10,944.01	8,707.95	110	0.25	0.69	2.3845	HDPE	145	0.01
PP-631	32	15.466	15.615	2.30281	PJ-494	PJ-480	232.38	-10,956.25	8,705.71	110	0.24	0.64	2.30281	HDPE	145	0.02
PP-632	46	15.668	15.501	-0.60218	PJ-478	PJ-492	232.21	-10,915.76	8,665.06	110	0.06	0.05	0.60218	HDPE	145	0
PP-633	33	15.768	15.814	-3.52039	J-169	PJ-495	232.28	-10,779.25	8,649.07	110	0.37	1.41	3.52039	HDPE	145	0.05
PP-634	50.5	15.814	15.748	-0.68381	PJ-495	J-172	232.28	-10,746.04	8,648.59	110	0.07	0.07	0.68381	HDPE	145	0
PP-635	29.5	15.814	15.746	-3.04394	PJ-495	PJ-496	232.28	-10,746.04	8,648.59	110	0.32	1.08	3.04394	HDPE	145	0.03
PP-636	48	15.746	15.832	-3.18617	PJ-496	J-183	232.38	-10,716.64	8,649.85	110	0.34	1.18	3.18617	HDPE	145	0.06
PP-637	19	15.832	15.956	-5.13961	J-183	J-261	232.35	-10,708.09	8,691.85	110	0.54	2.85	5.13961	HDPE	145	0.05
PP-638	12	15.956	15.962	-1.88402	J-261	J-182	232.28	-10,689.26	8,692.21	110	0.2	0.44	1.88402	HDPE	145	0.01
PP-639	26	15.962	15.953	-4.19876	J-182	J-259	232.28	-10,677.37	8,691.45	110	0.44	1.96	4.19876	HDPE	145	0.05
PP-640	21	16.301	16.433	-21.16427	PJ-369	PJ-497	232.38	-10,876.64	9,185.17	160	1.05	6.32	21.16427	HDPE	145	0.13
PP-641	32.5	16.433	16.766	-18.73273	PJ-497	PJ-498	232.38	-10,874.49	9,206.30	160	0.93	5.04	18.73273	HDPE	145	0.16
PP-642	33	16.766	16.931	-15.89917	PJ-498	PJ-499	232.21	-10,874.17	9,238.55	140	1.03	7.13	15.89917	HDPE	145	0.24
PP-643	32	16.931	17.193	-14.48493	PJ-499	PJ-500	232.28	-10,873.94	9,271.51	140	0.94	6	14.48493	HDPE	145	0.19

PP-644	34	17.193	17.171	-12.19448	PJ-500	PJ-501	232.21	-10,873.15	9,303.52	140	0.79	4.36	12.19448	HDPE	145	0.15
PP-645	58.5	17.171	17.669	-10.3665	PJ-501	PJ-502	232.38	-10,873.15	9,337.51	125	0.84	5.61	10.3665	HDPE	145	0.33
PP-646	24.5	17.669	17.739	-7.49616	PJ-502	PJ-503	232.21	-10,873.94	9,395.80	110	0.79	5.74	7.49616	HDPE	145	0.14
PP-647	32	17.739	17.895	-4.99247	PJ-503	PJ-504	232.28	-10,877.11	9,419.32	110	0.53	2.7	4.99247	HDPE	145	0.09
PP-648	26	17.895	17.926	-3.21547	PJ-504	PJ-505	232.21	-10,878.09	9,451.13	110	0.34	1.2	3.21547	HDPE	145	0.03
PP-649	27	17.926	17.865	-1.59067	PJ-505	PJ-506	232.21	-10,877.70	9,477.22	110	0.17	0.33	1.59067	HDPE	145	0.01
PP-650	75.5	17.865	17.965	-1.77877	PJ-506	PJ-507	232.28	-10,877.90	9,504.29	110	0.19	0.4	1.77877	HDPE	145	0.03
PP-651	26.5	17.965	17.79	1.29755	PJ-507	PJ-508	232.21	-10,802.41	9,507.06	110	0.14	0.22	1.29755	HDPE	145	0.01
PP-652	30.5	17.79	17.934	2.6235	PJ-508	PJ-509	232.38	-10,802.01	9,480.58	110	0.28	0.82	2.6235	HDPE	145	0.03
PP-653	29.5	17.934	17.806	4.21088	PJ-509	PJ-510	232.21	-10,801.03	9,449.95	110	0.44	1.97	4.21088	HDPE	145	0.06
PP-654	35	17.806	17.755	5.70475	PJ-510	PJ-511	232.28	-10,801.62	9,420.70	110	0.6	3.46	5.70475	HDPE	145	0.12
PP-655	42	17.755	17.327	7.79951	PJ-511	PJ-512	232.21	-10,801.03	9,385.92	110	0.82	6.18	7.79951	HDPE	145	0.26
PP-656	18	17.327	17.39	14.39937	PJ-512	PJ-513	232.38	-10,789.56	9,352.53	140	0.94	5.94	14.39937	HDPE	145	0.11
PP-657	32	17.39	17.087	11.89331	PJ-513	PJ-514	232.21	-10,791.94	9,334.74	140	0.77	4.17	11.89331	HDPE	145	0.13
PP-658	33	17.087	17.031	15.55475	PJ-514	PJ-515	232.38	-10,791.54	9,302.53	140	1.01	6.85	15.55475	HDPE	145	0.23
PP-659	32.5	17.031	16.788	13.59646	PJ-515	PJ-516	232.21	-10,790.95	9,269.53	140	0.88	5.34	13.59646	HDPE	145	0.17
PP-660	34	16.788	16.673	10.21977	PJ-516	PJ-517	232.28	-10,792.13	9,236.92	125	0.83	5.47	10.21977	HDPE	145	0.19
PP-661	35	16.673	16.464	7.26253	PJ-517	J-121	232.21	-10,792.73	9,203.13	110	0.76	5.41	7.26253	HDPE	145	0.19
PP-662	54.5	16.128	16.464	-3.74879	PJ-368	J-121	232.48	-10,795.61	9,114.26	110	0.39	1.59	3.74879	HDPE	145	0.09
PP-663	83	16.188	16.248	1.69149	J-122	PJ-367	232.47	-10,761.29	9,168.89	110	0.18	0.36	1.69149	HDPE	145	0.03
PP-664	82	16.433	16.673	-2.68018	PJ-497	PJ-517	232.38	-10,874.49	9,206.30	110	0.28	0.85	2.68018	HDPE	145	0.07
PP-665	82	16.766	16.788	-3.1042	PJ-498	PJ-516	232.21	-10,874.17	9,238.55	110	0.33	1.12	3.1042	HDPE	145	0.09
PP-666	83	16.931	17.031	-1.68581	PJ-499	PJ-515	232.28	-10,873.94	9,271.51	110	0.18	0.36	1.68581	HDPE	145	0.03
PP-667	81.5	17.193	17.087	-2.5611	PJ-500	PJ-514	232.21	-10,873.15	9,303.52	110	0.27	0.78	2.5611	HDPE	145	0.06
PP-668	31	17.171	17.188	-2.0546	PJ-501	PJ-518	232.38	-10,873.15	9,337.51	110	0.22	0.52	2.0546	HDPE	145	0.02
PP-669	50	17.188	17.39	-2.32255	PJ-518	PJ-513	232.38	-10,841.93	9,336.52	110	0.24	0.66	2.32255	HDPE	145	0.03
PP-670	32.5	17.188	17.357	0.05968	PJ-518	PJ-519	232.38	-10,841.93	9,336.52	110	0.01	0	0.05968	HDPE	145	0
PP-671	75	17.669	17.755	-3.16025	PJ-502	PJ-511	232.21	-10,873.94	9,395.80	110	0.33	1.16	3.16025	HDPE	145	0.09
PP-672	112	17.755	17.977	-5.73939	PJ-511	PJ-520	232.21	-10,801.03	9,385.92	110	0.6	3.5	5.73939	HDPE	145	0.39
PP-673	32	17.977	17.98	13.41916	PJ-520	PJ-521	232.38	-10,688.78	9,386.52	140	0.87	5.21	13.41916	HDPE	145	0.17
PP-674	68	17.98	17.578	6.87627	PJ-521	PJ-522	232.21	-10,689.18	9,354.70	110	0.72	4.89	6.87627	HDPE	145	0.33
PP-675	32	17.578	17.327	6.76869	PJ-522	PJ-512	232.28	-10,757.35	9,353.12	110	0.71	4.75	6.76869	HDPE	145	0.15
PP-676	56	17.578	17.649	-0.17866	PJ-522	PJ-523	232.28	-10,757.35	9,353.12	110	0.02	0.01	0.17866	HDPE	145	0
PP-677	22	17.649	17.37	6.91707	PJ-523	PJ-524	232.21	-10,730.68	9,323.87	110	0.73	4.94	6.91707	HDPE	145	0.11
PP-678	62.5	17.37	17.087	6.60601	PJ-524	PJ-514	232.38	-10,729.10	9,301.74	110	0.7	4.54	6.60601	HDPE	145	0.28
PP-679	42.5	17.37	17.54	0.07802	PJ-524	PJ-525	232.38	-10,729.10	9,301.74	110	0.01	0	0.07802	HDPE	145	0

PP-680	37.5	17.649	17.853	-7.30767	PJ-523	PJ-526	232.21	-10,730.68	9,323.87	110	0.77	5.47	7.30767	HDPE	145	0.21
PP-681	30.5	17.853	17.98	-6.30342	PJ-526	PJ-521	232.21	-10,692.93	9,324.27	110	0.66	4.16	6.30342	HDPE	145	0.13
PP-682	54.5	17.853	17.695	-1.22903	PJ-526	PJ-527	232.21	-10,692.93	9,324.27	110	0.13	0.2	1.22903	HDPE	145	0.01
PP-683	34	17.695	17.743	8.12667	PJ-527	PJ-528	232.38	-10,694.12	9,269.92	125	0.66	3.58	8.12667	HDPE	145	0.12
PP-684	205	17.743	16.276	7.5762	PJ-528	PJ-366	232.21	-10,695.11	9,236.13	110	0.8	5.85	7.5762	HDPE	145	1.2
PP-685	30.5	17.673	17.743	-0.05601	PJ-529	PJ-528	232.28	-10,725.69	9,235.73	110	0.01	0	0.05601	HDPE	145	0
PP-686	75.5	17.739	17.806	-2.7459	PJ-503	PJ-510	232.28	-10,877.11	9,419.32	110	0.29	0.89	2.7459	HDPE	145	0.07
PP-687	112	17.806	18.147	-4.70213	PJ-510	PJ-530	232.28	-10,801.62	9,420.70	110	0.49	2.42	4.70213	HDPE	145	0.27
PP-688	34	18.147	17.977	0.14197	PJ-530	PJ-520	232.21	-10,689.64	9,420.45	110	0.01	0	0.14197	HDPE	145	0
PP-689	30.5	18.147	17.971	1.26697	PJ-530	PJ-531	232.21	-10,689.64	9,420.45	110	0.13	0.21	1.26697	HDPE	145	0.01
PP-690	111.5	17.971	17.934	4.06803	PJ-531	PJ-509	232.38	-10,689.44	9,451.08	110	0.43	1.85	4.06803	HDPE	145	0.21
PP-691	77	17.934	17.895	2.02471	PJ-509	PJ-504	232.21	-10,801.03	9,449.95	110	0.21	0.51	2.02471	HDPE	145	0.04
PP-692	76	17.926	17.79	-1.86151	PJ-505	PJ-508	232.21	-10,877.70	9,477.22	110	0.2	0.43	1.86151	HDPE	145	0.03
PP-693	111	17.79	18.126	-3.63514	PJ-508	PJ-532	232.38	-10,802.01	9,480.58	110	0.38	1.5	3.63514	HDPE	145	0.17
PP-694	30.5	18.126	17.971	-1.95381	PJ-532	PJ-531	232.21	-10,690.82	9,481.51	110	0.21	0.48	1.95381	HDPE	145	0.01
PP-695	83	17.971	18.314	-5.22364	PJ-531	PJ-533	232.38	-10,689.44	9,451.08	110	0.55	2.94	5.22364	HDPE	145	0.24
PP-696	29.5	18.314	18.516	-12.39413	PJ-533	PJ-534	232.28	-10,606.24	9,451.28	140	0.81	4.5	12.39413	HDPE	145	0.13
PP-697	82	18.516	18.147	6.58535	PJ-534	PJ-530	232.21	-10,607.43	9,421.83	110	0.69	4.51	6.58535	HDPE	145	0.37
PP-698	31	18.314	18.061	6.90718	PJ-533	PJ-535	232.28	-10,606.24	9,451.28	110	0.73	4.93	6.90718	HDPE	145	0.15
PP-699	84.5	18.061	18.126	3.29174	PJ-535	PJ-532	232.38	-10,606.24	9,482.50	110	0.35	1.25	3.29174	HDPE	145	0.11
PP-700	28.5	18.126	18.121	1.14346	PJ-532	PJ-536	232.21	-10,690.82	9,481.51	110	0.12	0.18	1.14346	HDPE	145	0.01
PP-701	113	18.121	17.965	3.47079	PJ-536	PJ-507	232.21	-10,689.64	9,510.16	110	0.37	1.38	3.47079	HDPE	145	0.16
PP-702	83	18.121	18.025	-2.73924	PJ-536	PJ-537	232.21	-10,689.64	9,510.16	110	0.29	0.89	2.73924	HDPE	145	0.07
PP-703	28.5	18.025	18.061	-3.35122	PJ-537	PJ-535	232.38	-10,606.64	9,510.95	110	0.35	1.29	3.35122	HDPE	145	0.04
PP-704	32	17.977	18.249	-19.40188	PJ-520	PJ-538	232.38	-10,688.78	9,386.52	160	0.96	5.38	19.40188	HDPE	145	0.17
PP-705	118.5	18.249	18.044	4.60125	PJ-538	PJ-539	232.28	-10,656.91	9,386.62	110	0.48	2.32	4.60125	HDPE	145	0.28
PP-706	37	18.044	17.695	9.58599	PJ-539	PJ-527	232.21	-10,657.10	9,268.05	125	0.78	4.85	9.58599	HDPE	145	0.18
PP-707	27	18.044	17.956	-5.3196	PJ-539	PJ-540	232.21	-10,657.10	9,268.05	110	0.56	3.04	5.3196	HDPE	145	0.08
PP-708	116	17.956	18.51	-5.58199	PJ-540	PJ-541	232.38	-10,632.60	9,270.42	110	0.59	3.32	5.58199	HDPE	145	0.39
PP-709	23.5	18.51	18.249	24.32239	PJ-541	PJ-538	232.21	-10,633.31	9,386.51	160	1.21	8.18	24.32239	HDPE	145	0.19
PP-710	30.5	18.51	18.55	-30.21631	PJ-541	PJ-542	232.21	-10,633.31	9,386.51	180	1.19	6.89	30.21631	HDPE	145	0.21
PP-711	38.5	18.55	18.516	19.25472	PJ-542	PJ-534	232.38	-10,603.91	9,383.30	160	0.96	5.31	19.25472	HDPE	145	0.2
PP-712	197.5	18.55	18.339	3.73425	PJ-542	PJ-543	232.38	-10,603.91	9,383.30	110	0.39	1.58	3.73425	HDPE	145	0.31
PP-713	22.5	18.339	18.211	3.3306	PJ-543	J-336	232.28	-10,604.88	9,185.73	110	0.35	1.28	3.3306	HDPE	145	0.03
PP-714	20.5	18.211	18.425	-8.44586	J-336	PJ-544	232.38	-10,582.15	9,184.91	140	0.55	2.21	8.44586	HDPE	145	0.05
PP-715	193.5	18.425	18.722	-6.57353	PJ-544	PJ-545	232.21	-10,561.62	9,185.98	125	0.54	2.41	6.57353	HDPE	145	0.47

PP-716	42.5	18.722	18.55	53.77221	PJ-545	PJ-542	232.38	-10,561.66	9,379.48	250	1.1	4.04	53.77221	HDPE	145	0.17
PP-717	176.5	18.722	20.055	-21.67245	PJ-545	PJ-546	232.38	-10,561.66	9,379.48	160	1.08	6.61	21.67245	HDPE	145	1.17
PP-718	64.5	20.055	20.497	-22.11463	PJ-546	PJ-547	232.21	-10,562.89	9,555.79	160	1.1	6.86	22.11463	HDPE	145	0.44
PP-719	175.5	20.497	19.162	15.30902	PJ-547	PJ-548	232.21	-10,498.36	9,555.17	140	0.99	6.65	15.30902	HDPE	145	1.17
PP-720	65	19.162	18.722	39.54933	PJ-548	PJ-545	232.38	-10,496.51	9,379.79	200	1.26	6.79	39.54933	HDPE	145	0.44
PP-721	60.5	18.025	18.124	0.29639	PJ-537	PJ-549	232.38	-10,606.64	9,510.95	110	0.03	0.01	0.29639	HDPE	145	0
PP-722	50.5	18.124	18.193	0.0927	PJ-549	PJ-550	232.28	-10,607.35	9,571.23	110	0.01	0	0.0927	HDPE	145	0
PP-723	31.5	18.425	18.436	-2.32275	PJ-544	PJ-551	232.21	-10,561.62	9,185.98	125	0.19	0.35	2.32275	HDPE	145	0.01
PP-724	77.5	18.436	17.991	12.90885	PJ-551	J-334	232.21	-10,530.16	9,183.71	140	0.84	4.85	12.90885	HDPE	145	0.38
PP-725	35	18.436	18.391	-15.49583	PJ-551	PJ-552	232.21	-10,530.16	9,183.71	160	0.77	3.55	15.49583	HDPE	145	0.12
PP-726	8	18.391	18.569	-4.32189	PJ-552	PJ-553	232.38	-10,495.27	9,185.57	125	0.35	1.11	4.32189	HDPE	145	0.01
PP-727	74.5	18.569	18.428	2.85411	PJ-553	PJ-554	232.21	-10,487.86	9,183.10	110	0.3	0.96	2.85411	HDPE	145	0.07
PP-728	34	18.428	18.191	11.72298	PJ-554	PJ-555	232.28	-10,458.21	9,138.33	140	0.76	4.06	11.72298	HDPE	145	0.14
PP-729	37	18.191	18.043	29.67159	PJ-555	J-332	232.38	-10,424.25	9,138.63	200	0.94	3.99	29.67159	HDPE	145	0.15
PP-730	44.5	18.191	18.43	-3.71899	PJ-555	PJ-556	232.38	-10,424.25	9,138.63	110	0.39	1.57	3.71899	HDPE	145	0.07
PP-731	33	18.43	18.315	-3.86122	PJ-556	PJ-557	232.21	-10,381.64	9,141.10	110	0.41	1.68	3.86122	HDPE	145	0.06
PP-732	44.5	18.315	18.455	-2.76172	PJ-557	PJ-558	232.38	-10,384.73	9,174.14	110	0.29	0.9	2.76172	HDPE	145	0.04
PP-733	27.5	18.455	18.191	14.49201	PJ-558	PJ-555	232.28	-10,428.57	9,165.81	140	0.94	6.01	14.49201	HDPE	145	0.17
PP-734	31	18.569	18.662	-7.38428	PJ-553	PJ-559	232.21	-10,487.86	9,183.10	125	0.6	2.99	7.38428	HDPE	145	0.09
PP-735	37	18.662	18.428	9.13585	PJ-559	PJ-554	232.21	-10,457.91	9,175.38	125	0.74	4.44	9.13585	HDPE	145	0.16
PP-736	31	18.455	18.662	-17.44274	PJ-558	PJ-559	232.28	-10,428.57	9,165.81	160	0.87	4.42	17.44274	HDPE	145	0.14
PP-737	31	18.662	18.653	-34.20142	PJ-559	PJ-560	232.21	-10,457.91	9,175.38	200	1.09	5.19	34.20142	HDPE	145	0.16
PP-738	38	18.653	19.032	-26.86077	PJ-560	PJ-561	232.38	-10,459.14	9,205.95	180	1.06	5.54	26.86077	HDPE	145	0.21
PP-739	102.5	19.032	19.377	-8.69195	PJ-561	PJ-562	232.21	-10,456.05	9,243.92	125	0.71	4.05	8.69195	HDPE	145	0.42
PP-740	32	19.377	19.583	-8.93875	PJ-562	PJ-563	232.28	-10,460.38	9,346.43	125	0.73	4.26	8.93875	HDPE	145	0.14
PP-741	33	19.583	19.323	5.0304	PJ-563	PJ-564	232.21	-10,428.26	9,346.13	110	0.53	2.74	5.0304	HDPE	145	0.09
PP-742	32.5	19.323	19.349	9.10811	PJ-564	PJ-565	232.38	-10,427.65	9,313.09	125	0.74	4.42	9.10811	HDPE	145	0.14
PP-743	37.5	19.349	18.998	12.92631	PJ-565	PJ-566	232.21	-10,428.57	9,280.36	140	0.84	4.86	12.92631	HDPE	145	0.18
PP-744	27.5	18.998	19.032	18.47707	PJ-566	PJ-561	232.38	-10,428.57	9,243.00	160	0.92	4.92	18.47707	HDPE	145	0.14
PP-745	75.5	18.998	19.437	-5.80857	PJ-566	PJ-567	232.38	-10,428.57	9,243.00	110	0.61	3.58	5.80857	HDPE	145	0.27
PP-746	35	19.437	19.421	-5.16033	PJ-567	PJ-568	232.21	-10,352.93	9,242.69	125	0.42	1.54	5.16033	HDPE	145	0.05
PP-747	76	19.421	19.349	4.08609	PJ-568	PJ-565	232.28	-10,352.62	9,277.89	110	0.43	1.87	4.08609	HDPE	145	0.14
PP-748	75	19.323	19.648	-4.33552	PJ-564	PJ-569	232.38	-10,427.65	9,313.09	110	0.46	2.08	4.33552	HDPE	145	0.16
PP-749	33	19.648	19.421	9.51065	PJ-569	PJ-568	232.21	-10,352.93	9,310.93	125	0.77	4.78	9.51065	HDPE	145	0.16
PP-750	77.5	19.583	19.676	-7.89938	PJ-563	PJ-570	232.21	-10,428.26	9,346.13	125	0.64	3.39	7.89938	HDPE	145	0.26
PP-751	34.5	19.676	19.648	14.10764	PJ-570	PJ-569	232.38	-10,350.76	9,345.20	140	0.92	5.72	14.10764	HDPE	145	0.2

PP-752	35.5	19.583	19.734	-6.39637	PJ-563	PJ-571	232.21	-10,428.26	9,346.13	110	0.67	4.28	6.39637	HDPE	145	0.15
PP-753	75	19.734	19.918	-7.88783	PJ-571	PJ-572	232.21	-10,428.57	9,381.63	125	0.64	3.38	7.88783	HDPE	145	0.25
PP-754	33.5	19.918	19.676	17.09697	PJ-572	PJ-570	232.28	-10,353.54	9,378.55	160	0.85	4.26	17.09697	HDPE	145	0.14
PP-755	41.5	19.676	19.714	-5.25316	PJ-570	PJ-573	232.38	-10,350.76	9,345.20	140	0.34	0.92	5.25316	HDPE	145	0.04
PP-756	56.5	19.714	19.642	17.13827	PJ-573	PJ-574	232.38	-10,309.08	9,343.66	160	0.85	4.28	17.13827	HDPE	145	0.24
PP-757	48	19.642	19.272	16.94651	PJ-574	PJ-575	232.21	-10,311.55	9,287.15	160	0.84	4.19	16.94651	HDPE	145	0.2
PP-758	37	19.272	19.437	0.91889	PJ-575	PJ-567	232.38	-10,315.87	9,239.29	110	0.1	0.12	0.91889	HDPE	145	0
PP-759	142.5	18.653	19.216	-7.72871	PJ-560	PJ-576	232.38	-10,459.14	9,205.95	125	0.63	3.26	7.72871	HDPE	145	0.46
PP-760	36	19.216	19.272	-12.14625	PJ-576	PJ-575	232.28	-10,316.49	9,203.17	140	0.79	4.33	12.14625	HDPE	145	0.16
PP-761	206.5	19.272	19.116	3.28052	PJ-575	J-45	232.38	-10,315.87	9,239.29	110	0.35	1.24	3.28052	HDPE	145	0.26
PP-762	32	19.116	18.895	13.58296	J-45	PJ-577	232.28	-10,109.62	9,230.50	140	0.88	5.33	13.58296	HDPE	145	0.17
PP-763	23	18.895	18.789	6.66275	PJ-577	PJ-578	232.33	-10,087.38	9,207.49	125	0.54	2.48	6.66275	HDPE	145	0.06
PP-764	211	18.789	19.216	-3.70294	PJ-578	PJ-576	232.38	-10,105.91	9,193.59	110	0.39	1.55	3.70294	HDPE	145	0.33
PP-765	88.5	18.315	18.388	-1.40409	PJ-557	PJ-579	232.38	-10,384.73	9,174.14	110	0.15	0.26	1.40409	HDPE	145	0.02
PP-766	49	18.388	18.394	-4.38001	PJ-579	PJ-580	232.33	-10,297.66	9,176.61	125	0.36	1.14	4.38001	HDPE	145	0.06
PP-767	37.5	18.394	18.549	-6.82576	PJ-580	PJ-581	232.38	-10,252.88	9,157.16	140	0.44	1.49	6.82576	HDPE	145	0.06
PP-768	118.5	18.549	18.789	-9.71896	PJ-581	PJ-578	232.28	-10,215.52	9,156.23	140	0.63	2.87	9.71896	HDPE	145	0.34
PP-769	45	18.895	18.784	6.7367	PJ-577	J-58	232.33	-10,087.38	9,207.49	110	0.71	4.71	6.7367	HDPE	145	0.21
PP-770	63	18.784	18.528	8.98783	J-58	PJ-582	232.23	-10,055.27	9,176.16	140	0.58	2.48	8.98783	HDPE	145	0.16
PP-771	194.5	18.528	18.425	2.03334	PJ-582	PJ-583	232.33	-10,018.84	9,124.74	125	0.17	0.27	2.03334	HDPE	145	0.05
PP-772	32	18.425	18.549	-2.54826	PJ-583	PJ-581	232.38	-10,213.36	9,124.12	110	0.27	0.78	2.54826	HDPE	145	0.02
PP-773	28.5	18.556	18.425	-4.11374	J-342	PJ-583	232.22	-10,210.68	9,095.75	125	0.34	1.01	4.11374	HDPE	145	0.03
PP-774	63	18.394	18.358	2.17143	PJ-580	J-341	232.38	-10,252.88	9,157.16	110	0.23	0.58	2.17143	HDPE	145	0.04
PP-775	83.5	18.388	18.432	2.57044	PJ-579	J-340	232.33	-10,297.66	9,176.61	110	0.27	0.79	2.57044	HDPE	145	0.07
PP-776	286	17.199	18.414	-9.12493	J-316	PJ-584	232.28	-10,256.36	9,022.53	125	0.74	4.43	9.12493	HDPE	145	1.27
PP-777	26.5	18.414	18.528	-6.43343	PJ-584	PJ-582	232.33	-10,003.78	9,102.70	110	0.68	4.32	6.43343	HDPE	145	0.11
PP-778	39	18.414	18.391	-3.3364	PJ-584	PJ-585	232.33	-10,003.78	9,102.70	125	0.27	0.69	3.3364	HDPE	145	0.03
PP-779	52	18.391	18.584	-3.70158	PJ-585	J-62	232.38	-9,967.74	9,118.04	125	0.3	0.83	3.70158	HDPE	145	0.04
PP-780	87	18.584	18.484	-0.01606	J-62	PJ-586	232.23	-9,921.64	9,141.83	110	0	0	0.01606	HDPE	145	0
PP-781	30	18.484	18.563	-2.87177	PJ-586	PJ-587	232.33	-9,843.53	9,180.51	110	0.3	0.97	2.87177	HDPE	145	0.03
PP-782	26	18.563	18.513	0.04775	PJ-587	PJ-588	232.28	-9,846.03	9,210.60	110	0.01	0	0.04775	HDPE	145	0
PP-783	78	18.653	18.563	3.16541	J-61	PJ-587	232.28	-9,923.86	9,206.79	110	0.33	1.16	3.16541	HDPE	145	0.09
PP-784	198.5	18.484	18.309	2.27687	PJ-586	PJ-589	232.33	-9,843.53	9,180.51	110	0.24	0.63	2.27687	HDPE	145	0.13
PP-785	125	18.309	18.11	4.23672	PJ-589	PJ-590	232.38	-9,708.63	9,297.37	110	0.45	1.99	4.23672	HDPE	145	0.25
PP-786	56.5	18.11	18.009	2.75849	PJ-590	PJ-591	232.33	-9,595.31	9,328.24	110	0.29	0.9	2.75849	HDPE	145	0.05
PP-787	26.5	18.009	18.109	0.04867	PJ-591	PJ-592	232.38	-9,538.80	9,329.48	110	0.01	0	0.04867	HDPE	145	0

PP-788	268	18.11	18.093	0.65355	PJ-590	PJ-593	232.33	-9,595.31	9,328.24	110	0.07	0.06	0.65355	HDPE	145	0.02
PP-789	59	18.093	17.974	3.18724	PJ-593	PJ-594	232.33	-9,597.50	9,596.31	110	0.34	1.18	3.18724	HDPE	145	0.07
PP-790	271.5	17.974	17.904	1.87433	PJ-594	PJ-595	232.38	-9,538.46	9,596.06	110	0.2	0.44	1.87433	HDPE	145	0.12
PP-791	174.5	17.904	17.828	1.05608	PJ-595	PJ-596	232.33	-9,267.26	9,590.89	110	0.11	0.15	1.05608	HDPE	145	0.03
PP-792	267	17.828	17.891	-0.58349	PJ-596	PJ-597	232.38	-9,110.41	9,514.63	110	0.06	0.05	0.58349	HDPE	145	0.01
PP-793	404.5	17.891	18.009	-1.81543	PJ-597	PJ-591	232.33	-9,153.86	9,253.37	110	0.19	0.42	1.81543	HDPE	145	0.17
PP-794	54	18.391	18.49	0.09912	PJ-585	PJ-598	232.38	-9,967.74	9,118.04	110	0.01	0	0.09912	HDPE	145	0
PP-795	87.5	19.116	19.534	-17.02266	J-45	J-44	232.28	-10,109.62	9,230.50	160	0.85	4.22	17.02266	HDPE	145	0.37
PP-796	124	19.534	20.122	-12.76029	J-44	J-23	232.23	-10,170.63	9,293.49	140	0.83	4.75	12.76029	HDPE	145	0.59
PP-797	17.5	20.122	19.971	9.79465	J-23	PJ-599	232.23	-10,256.14	9,383.25	140	0.64	2.91	9.79465	HDPE	145	0.05
PP-798	67.5	19.971	19.714	14.36233	PJ-599	PJ-573	232.33	-10,268.77	9,395.40	160	0.71	3.08	14.36233	HDPE	145	0.21
PP-799	84	19.714	20.038	-8.48688	PJ-573	PJ-600	232.38	-10,309.08	9,343.66	125	0.69	3.87	8.48688	HDPE	145	0.33
PP-800	46.5	20.038	19.971	4.80898	PJ-600	PJ-599	232.38	-10,302.62	9,427.27	110	0.51	2.52	4.80898	HDPE	145	0.12
PP-801	66	20.038	20.493	-13.6564	PJ-600	PJ-601	232.38	-10,302.62	9,427.27	140	0.89	5.38	13.6564	HDPE	145	0.36
PP-802	11.5	20.493	20.524	-43.33202	PJ-601	J-21	232.28	-10,347.57	9,475.19	250	0.88	2.71	43.33202	HDPE	145	0.03
PP-803	40	20.524	20.596	-21.59165	J-21	J-15	232.28	-10,352.70	9,485.22	160	1.07	6.56	21.59165	HDPE	145	0.26
PP-804	16.5	20.596	20.717	8.39282	J-15	PJ-602	232.47	-10,374.47	9,518.99	160	0.42	1.14	8.39282	HDPE	145	0.02
PP-805	33	20.717	20.943	-12.87792	PJ-602	PJ-603	232.33	-10,384.13	9,532.50	125	1.05	8.39	12.87792	HDPE	145	0.28
PP-806	32.5	20.943	20.939	10.33573	PJ-603	PJ-604	232.38	-10,403.15	9,559.17	160	0.51	1.68	10.33573	HDPE	145	0.05
PP-807	60.5	20.939	21.306	-39.90122	PJ-604	PJ-605	232.33	-10,420.69	9,586.35	200	1.27	6.9	39.90122	HDPE	145	0.42
PP-808	44	21.306	21.7	-39.29351	PJ-605	PJ-606	232.38	-10,452.80	9,637.23	200	1.25	6.71	39.29351	HDPE	145	0.3
PP-809	55	21.7	22.098	-43.70524	PJ-606	PJ-607	232.28	-10,470.34	9,677.49	200	1.39	8.17	43.70524	HDPE	145	0.45
PP-810	20	22.098	22.166	-48.93743	PJ-607	PJ-608	232.33	-10,494.05	9,727.39	250	1	3.4	48.93743	HDPE	145	0.07
PP-811	114.5	22.166	22.577	-53.67791	PJ-608	PJ-609	232.33	-10,502.20	9,745.67	250	1.09	4.03	53.67791	HDPE	145	0.46
PP-812	45	22.577	22.515	30.10095	PJ-609	PJ-610	232.38	-10,539.75	9,853.12	250	0.61	1.38	30.10095	HDPE	145	0.06
PP-813	39.5	22.515	22.615	0.07252	PJ-610	PJ-611	232.38	-10,547.65	9,897.34	110	0.01	0	0.07252	HDPE	145	0
PP-814	127.5	22.166	21.947	4.25978	PJ-608	J-2	232.33	-10,502.20	9,745.67	140	0.28	0.62	4.25978	HDPE	145	0.08
PP-815	24	21.947	22.158	-14.05692	J-2	PJ-612	232.47	-10,409.59	9,832.39	160	0.7	2.96	14.05692	HDPE	145	0.07
PP-816	34	22.158	22.108	0.06243	PJ-612	PJ-613	232.33	-10,406.23	9,856.30	110	0.01	0	0.06243	HDPE	145	0
PP-817	116.5	22.158	22.52	-14.43953	PJ-612	PJ-614	232.33	-10,406.23	9,856.30	160	0.72	3.11	14.43953	HDPE	145	0.36
PP-818	33	22.52	22.515	-29.81282	PJ-614	PJ-610	232.33	-10,514.90	9,897.49	250	0.61	1.36	29.81282	HDPE	145	0.04
PP-819	30.5	22.577	22.514	114.70077	PJ-609	J-1	232.38	-10,539.75	9,853.12	315	1.47	5.34	114.7008	HDPE	145	0.16
PP-820	49.5	22.514	22.52	-15.00817	J-1	PJ-614	232.28	-10,509.81	9,848.42	200	0.48	1.13	15.00817	HDPE	145	0.06
PP-821	120.5	22.098	21.982	4.87349	PJ-607	J-4	232.33	-10,494.05	9,727.39	125	0.4	1.39	4.87349	HDPE	145	0.17
PP-822	74	21.7	21.612	4.0943	PJ-606	J-6	232.28	-10,470.34	9,677.49	110	0.43	1.87	4.0943	HDPE	145	0.14
PP-823	57	21.306	21.222	-0.90404	PJ-605	J-7	232.38	-10,452.80	9,637.23	110	0.1	0.11	0.90404	HDPE	145	0.01

PP-824	85.5	21.222	20.943	23.49072	J-7	PJ-603	232.47	-10,396.08	9,640.57	180	0.92	4.32	23.49072	HDPE	145	0.37
PP-825	12	20.939	20.847	50.04427	PJ-604	PJ-615	232.33	-10,420.69	9,586.35	250	1.02	3.54	50.04427	HDPE	145	0.04
PP-826	82.5	20.847	20.497	38.01534	PJ-615	PJ-547	232.38	-10,423.48	9,574.91	200	1.21	6.31	38.01534	HDPE	145	0.52
PP-827	160.5	20.847	19.796	11.56107	PJ-615	PJ-616	232.38	-10,423.48	9,574.91	125	0.94	6.87	11.56107	HDPE	145	1.1
PP-828	32.5	19.796	19.734	35.66667	PJ-616	PJ-571	232.33	-10,426.69	9,414.22	200	1.14	5.61	35.66667	HDPE	145	0.18
PP-829	38.5	19.796	19.927	-24.53036	PJ-616	PJ-617	232.33	-10,426.69	9,414.22	180	0.96	4.68	24.53036	HDPE	145	0.18
PP-830	119.5	19.927	20.717	-20.96066	PJ-617	PJ-602	232.38	-10,388.16	9,413.35	160	1.04	6.21	20.96066	HDPE	145	0.74
PP-831	61.5	20.493	20.04	29.42057	PJ-601	PJ-618	232.28	-10,347.57	9,475.19	180	1.16	6.56	29.42057	HDPE	145	0.4
PP-832	35	20.04	19.918	25.24811	PJ-618	PJ-572	232.33	-10,351.02	9,413.69	180	0.99	4.94	25.24811	HDPE	145	0.17
PP-833	37	19.927	20.04	-3.92749	PJ-617	PJ-618	232.38	-10,388.16	9,413.35	110	0.41	1.73	3.92749	HDPE	145	0.06
PP-834	68	19.734	19.162	36.77099	PJ-571	PJ-548	232.21	-10,428.57	9,381.63	200	1.17	5.93	36.77099	HDPE	145	0.4
PP-835	194	19.162	18.391	11.60877	PJ-548	PJ-552	232.38	-10,496.51	9,379.79	140	0.75	3.98	11.60877	HDPE	145	0.77
PP-836	27	18.807	18.74	2.2977	J-55	J-59	232.23	-10,002.41	9,296.21	110	0.24	0.64	2.2977	HDPE	145	0.02
PP-837	15.5	18.74	18.653	-2.69669	J-59	PJ-619	232.28	-10,002.41	9,269.29	110	0.28	0.86	2.69669	HDPE	145	0.01
PP-838	25	18.653	18.704	-0.33638	PJ-619	PJ-620	232.38	-10,004.90	9,254.00	110	0.04	0.02	0.33638	HDPE	145	0
PP-839	44	18.704	18.753	0.08077	PJ-620	PJ-621	232.33	-10,004.65	9,229.05	110	0.01	0	0.08077	HDPE	145	0
PP-840	47	18.789	18.653	2.52089	J-56	PJ-619	232.28	-10,052.06	9,253.72	110	0.27	0.76	2.52089	HDPE	145	0.04
PP-841	47	18.756	18.704	0.63001	J-57	PJ-620	232.28	-10,051.81	9,229.02	110	0.07	0.06	0.63001	HDPE	145	0
PP-842	43.5	21.262	20.991	7.0276	J-65	PJ-622	232.28	-10,195.34	9,799.51	110	0.74	5.09	7.0276	HDPE	145	0.22
PP-843	32	20.991	20.792	6.69636	PJ-622	PJ-623	232.33	-10,194.69	9,842.96	110	0.7	4.66	6.69636	HDPE	145	0.15
PP-844	32.5	20.792	20.703	6.39814	PJ-623	PJ-624	232.38	-10,195.65	9,874.80	110	0.67	4.28	6.39814	HDPE	145	0.14
PP-845	36	20.703	20.645	7.39535	PJ-624	PJ-625	232.33	-10,195.65	9,907.12	125	0.6	3	7.39535	HDPE	145	0.11
PP-846	34	20.645	20.542	3.7284	PJ-625	PJ-626	232.28	-10,195.17	9,943.31	110	0.39	1.57	3.7284	HDPE	145	0.05
PP-847	33.5	20.542	20.478	1.79619	PJ-626	PJ-627	232.33	-10,194.69	9,977.08	110	0.19	0.41	1.79619	HDPE	145	0.01
PP-848	34.5	20.478	20.526	0.66535	PJ-627	PJ-628	232.38	-10,194.21	10,010.37	110	0.07	0.06	0.66535	HDPE	145	0
PP-849	66.5	20.526	20.474	0.48001	PJ-628	PJ-629	232.33	-10,194.21	10,045.10	110	0.05	0.04	0.48001	HDPE	145	0
PP-850	42	20.474	20.524	0.0771	PJ-629	PJ-630	232.38	-10,127.63	10,043.66	110	0.01	0	0.0771	HDPE	145	0
PP-851	49.5	20.478	20.478	-0.09086	PJ-631	PJ-627	232.38	-10,243.90	10,009.89	110	0.01	0	0.09086	HDPE	145	0
PP-852	65.5	20.478	20.573	0.7042	PJ-627	PJ-632	232.38	-10,194.21	10,010.37	110	0.07	0.07	0.7042	HDPE	145	0
PP-853	34	20.573	20.474	-0.14143	PJ-632	PJ-629	232.28	-10,128.59	10,009.89	110	0.01	0	0.14143	HDPE	145	0
PP-854	43	20.523	20.573	-0.07894	PJ-633	PJ-632	232.33	-10,085.66	10,008.44	110	0.01	0	0.07894	HDPE	145	0
PP-855	35.5	20.573	20.473	0.44009	PJ-632	PJ-634	232.28	-10,128.59	10,009.89	110	0.05	0.03	0.44009	HDPE	145	0
PP-856	66.5	20.473	20.542	-1.50099	PJ-634	PJ-626	232.38	-10,128.11	9,974.18	110	0.16	0.29	1.50099	HDPE	145	0.02
PP-857	50.5	20.542	20.542	0.0927	PJ-626	PJ-635	232.33	-10,194.69	9,977.08	110	0.01	0	0.0927	HDPE	145	0
PP-858	48	20.545	20.645	-0.08811	PJ-636	PJ-625	232.38	-10,242.93	9,943.31	110	0.01	0	0.08811	HDPE	145	0
PP-859	68.5	20.645	20.512	3.23664	PJ-625	PJ-637	232.28	-10,195.17	9,943.31	110	0.34	1.21	3.23664	HDPE	145	0.08

PP-860	33	20.512	20.473	-1.53553	PJ-637	PJ-634	232.33	-10,126.66	9,941.38	110	0.16	0.3	1.53553	HDPE	145	0.01
PP-861	43	20.473	20.572	0.07894	PJ-634	PJ-638	232.38	-10,128.11	9,974.18	110	0.01	0	0.07894	HDPE	145	0
PP-862	50	20.653	20.703	-0.09178	PJ-639	PJ-624	232.38	-10,245.69	9,908.71	110	0.01	0	0.09178	HDPE	145	0
PP-863	35	20.703	20.662	-1.37065	PJ-624	PJ-640	232.33	-10,195.65	9,907.12	110	0.14	0.25	1.37065	HDPE	145	0.01
PP-864	33	20.662	20.707	3.82115	PJ-640	PJ-641	232.38	-10,160.78	9,907.79	110	0.4	1.65	3.82115	HDPE	145	0.05
PP-865	34	20.707	20.512	8.94953	PJ-641	PJ-637	232.28	-10,127.74	9,907.17	125	0.73	4.27	8.94953	HDPE	145	0.15
PP-866	280.5	20.512	19.145	12.95849	PJ-637	PJ-642	232.33	-10,126.66	9,941.38	140	0.84	4.88	12.95849	HDPE	145	1.37
PP-867	102.5	19.145	19.094	0.18809	PJ-642	PJ-643	232.33	-9,846.45	9,946.07	110	0.02	0.01	0.18809	HDPE	145	0
PP-868	10.5	20.707	20.707	-0.01932	PJ-644	PJ-641	232.28	-10,117.42	9,907.11	110	0	0	0.01932	HDPE	145	0
PP-869	116.5	20.707	20.894	-5.50365	PJ-641	J-68	232.28	-10,127.74	9,907.17	110	0.58	3.24	5.50365	HDPE	145	0.38
PP-870	113.5	20.941	20.662	5.52482	J-66	PJ-640	232.47	-10,160.99	9,794.50	110	0.58	3.26	5.52482	HDPE	145	0.37
PP-871	49	20.073	20.792	-0.08995	PJ-645	PJ-623	233.1	-10,244.87	9,874.23	110	0.01	0	0.08995	HDPE	145	0
PP-872	52.5	20.941	20.991	-0.09637	PJ-646	PJ-622	232.38	-10,247.05	9,844.00	110	0.01	0	0.09637	HDPE	145	0
PP-873	40.5	21.407	21.205	6.96296	J-64	PJ-647	232.28	-10,235.48	9,805.30	110	0.73	5.01	6.96296	HDPE	145	0.2
PP-874	31	21.205	20.333	3.9381	PJ-647	PJ-648	232.28	-10,234.59	9,764.87	110	0.41	1.74	3.9381	HDPE	145	0.05
PP-875	30	20.333	21.034	2.16779	PJ-648	PJ-649	233.1	-10,234.19	9,733.85	110	0.23	0.58	2.16779	HDPE	145	0.02
PP-876	30.5	21.034	20.311	1.05599	PJ-649	PJ-650	232.38	-10,234.78	9,704.01	110	0.11	0.15	1.05599	HDPE	145	0
PP-877	84.5	20.311	21.021	0.84497	PJ-650	PJ-651	233.1	-10,233.40	9,673.77	110	0.09	0.1	0.84497	HDPE	145	0.01
PP-878	29	21.021	20.307	-1.07075	PJ-651	PJ-652	232.38	-10,149.02	9,674.56	110	0.11	0.16	1.07075	HDPE	145	0
PP-879	86	20.307	21.034	-0.84298	PJ-652	PJ-649	233.1	-10,149.02	9,703.61	110	0.09	0.1	0.84298	HDPE	145	0.01
PP-880	84.5	20.333	21.027	1.50333	PJ-648	PJ-653	233.1	-10,234.19	9,733.85	110	0.16	0.29	1.50333	HDPE	145	0.02
PP-881	31.5	21.027	20.307	0.49658	PJ-653	PJ-652	232.38	-10,149.61	9,735.03	110	0.05	0.04	0.49658	HDPE	145	0
PP-882	84	21.205	21.131	2.73954	PJ-647	PJ-654	232.28	-10,234.59	9,764.87	110	0.29	0.89	2.73954	HDPE	145	0.07
PP-883	30	21.131	21.027	0.98571	PJ-654	PJ-653	232.28	-10,150.60	9,765.07	110	0.1	0.13	0.98571	HDPE	145	0
PP-884	34.5	21.027	20.296	1.66127	PJ-653	PJ-655	232.38	-10,149.61	9,735.03	110	0.17	0.35	1.66127	HDPE	145	0.01
PP-885	52	20.296	21.14	1.95305	PJ-655	J-69	233.1	-10,115.03	9,735.62	110	0.21	0.48	1.95305	HDPE	145	0.02
PP-886	28.5	21.131	21.172	1.49235	PJ-654	J-67	232.28	-10,150.60	9,765.07	110	0.16	0.29	1.49235	HDPE	145	0.01
PP-887	91	21.017	20.299	-0.167	PJ-656	PJ-657	232.38	-10,148.37	9,543.82	110	0.02	0	0.167	HDPE	145	0
PP-888	39.5	20.299	21.021	-0.73683	PJ-657	PJ-651	233.1	-10,147.41	9,635.00	110	0.08	0.08	0.73683	HDPE	145	0
PP-889	35.5	21.021	21.018	0.83302	PJ-651	PJ-658	232.38	-10,149.02	9,674.56	110	0.09	0.1	0.83302	HDPE	145	0
PP-890	40.5	21.018	20.299	0.01554	PJ-658	PJ-659	232.38	-10,113.64	9,673.60	110	0	0	0.01554	HDPE	145	0
PP-891	32.5	20.299	20.299	-0.27075	PJ-659	PJ-657	233.1	-10,115.08	9,633.07	110	0.03	0.01	0.27075	HDPE	145	0
PP-892	41.5	20.299	21.117	0.07619	PJ-659	PJ-660	233.1	-10,115.08	9,633.07	110	0.01	0	0.07619	HDPE	145	0
PP-893	62	21.018	20.296	0.56426	PJ-658	PJ-655	232.38	-10,113.64	9,673.60	110	0.06	0.05	0.56426	HDPE	145	0
PP-894	241	17.792	18.518	-0.44218	PJ-661	PJ-662	233.1	-10,074.99	9,779.06	110	0.05	0.03	0.44218	HDPE	145	0.01
PP-895	80	18.518	17.726	2.79447	PJ-662	PJ-663	232.38	-9,837.05	9,739.38	110	0.29	0.92	2.79447	HDPE	145	0.07

PP-896	74	17.726	18.388	2.5119	PJ-663	PJ-664	233.1	-9,830.05	9,660.00	110	0.26	0.76	2.5119	HDPE	145	0.06
PP-897	71	18.388	18.521	-1.91818	PJ-664	PJ-665	232.38	-9,807.80	9,589.65	110	0.2	0.46	1.91818	HDPE	145	0.03
PP-898	41	18.521	18.572	-0.54083	PJ-665	J-41	232.28	-9,786.80	9,521.72	110	0.06	0.04	0.54083	HDPE	145	0
PP-899	134.5	18.572	18.479	1.58042	J-41	J-52	232.23	-9,774.58	9,482.55	110	0.17	0.32	1.58042	HDPE	145	0.04
PP-900	8.5	18.479	17.636	5.26085	J-52	PJ-666	232.28	-9,732.43	9,354.75	110	0.55	2.98	5.26085	HDPE	145	0.03
PP-901	54.5	17.636	18.309	2.65336	PJ-666	PJ-589	233.1	-9,727.64	9,347.94	110	0.28	0.84	2.65336	HDPE	145	0.05
PP-902	38.5	17.636	17.609	2.42123	PJ-666	PJ-667	233.1	-9,727.64	9,347.94	110	0.25	0.71	2.42123	HDPE	145	0.03
PP-903	246	17.609	18.216	1.89925	PJ-667	PJ-668	233.1	-9,688.99	9,349.64	110	0.2	0.45	1.89925	HDPE	145	0.11
PP-904	21.5	18.216	17.453	4.36876	PJ-668	PJ-669	232.38	-9,689.82	9,595.55	110	0.46	2.11	4.36876	HDPE	145	0.05
PP-905	71	17.453	18.093	4.01367	PJ-669	PJ-593	233.1	-9,668.48	9,596.66	110	0.42	1.8	4.01367	HDPE	145	0.13
PP-906	165	18.093	18.138	0.44708	PJ-593	PJ-670	232.33	-9,597.50	9,596.31	110	0.05	0.03	0.44708	HDPE	145	0.01
PP-907	58.5	18.138	17.319	0.10737	PJ-670	PJ-671	232.28	-9,595.89	9,761.19	110	0.01	0	0.10737	HDPE	145	0
PP-908	113.5	18.138	18.04	-0.27859	PJ-670	PJ-672	232.28	-9,595.89	9,761.19	110	0.03	0.01	0.27859	HDPE	145	0
PP-909	49	18.04	17.253	3.48188	PJ-672	PJ-673	232.38	-9,585.98	9,863.84	110	0.37	1.39	3.48188	HDPE	145	0.07
PP-910	63	17.253	17.906	2.99959	PJ-673	PJ-674	233.1	-9,537.13	9,863.84	110	0.32	1.05	2.99959	HDPE	145	0.07
PP-911	24.5	17.906	17.991	2.19687	PJ-674	PJ-675	232.38	-9,474.06	9,864.63	110	0.23	0.59	2.19687	HDPE	145	0.01
PP-912	36.5	17.991	17.156	1.88489	PJ-675	PJ-676	232.28	-9,449.71	9,864.63	110	0.2	0.44	1.88489	HDPE	145	0.02
PP-913	119	17.156	17.844	1.40689	PJ-676	PJ-677	233.1	-9,413.42	9,865.43	110	0.15	0.26	1.40689	HDPE	145	0.03
PP-914	130	17.844	17.109	0.95003	PJ-677	PJ-678	232.38	-9,294.55	9,869.75	110	0.1	0.13	0.95003	HDPE	145	0.02
PP-915	140	17.109	17.823	0.45466	PJ-678	PJ-679	233.1	-9,172.59	9,832.70	110	0.05	0.03	0.45466	HDPE	145	0
PP-916	280	17.823	17.828	-0.3159	PJ-679	PJ-596	232.38	-9,043.42	9,783.86	110	0.03	0.02	0.3159	HDPE	145	0
PP-917	268	17.974	17.253	0.21489	PJ-594	PJ-673	232.38	-9,538.46	9,596.06	110	0.02	0.01	0.21489	HDPE	145	0
PP-918	175	17.906	18.002	0.3211	PJ-674	PJ-680	232.38	-9,474.06	9,864.63	110	0.03	0.02	0.3211	HDPE	145	0
PP-919	54.5	17.172	17.991	-0.10004	PJ-681	PJ-675	233.1	-9,449.11	9,810.27	110	0.01	0	0.10004	HDPE	145	0
PP-920	52.5	17.156	17.875	0.09637	PJ-676	PJ-682	233.1	-9,413.42	9,865.43	110	0.01	0	0.09637	HDPE	145	0
PP-921	75.5	18.04	17.469	-4.19714	PJ-672	PJ-683	232.38	-9,585.98	9,863.84	110	0.44	1.96	4.19714	HDPE	145	0.15
PP-922	84.5	17.469	18.287	0.15507	PJ-683	PJ-684	233.1	-9,661.55	9,864.55	110	0.02	0	0.15507	HDPE	145	0
PP-923	184.5	17.469	17.465	0.33853	PJ-683	PJ-685	233.1	-9,661.55	9,864.55	110	0.04	0.02	0.33853	HDPE	145	0
PP-924	91.5	17.469	18.482	-5.49065	PJ-683	PJ-686	233.1	-9,661.55	9,864.55	110	0.58	3.22	5.49065	HDPE	145	0.29
PP-925	116.5	18.482	17.762	0.21378	PJ-686	PJ-687	232.38	-9,753.25	9,864.24	110	0.02	0.01	0.21378	HDPE	145	0
PP-926	11	18.482	18.625	-6.10624	PJ-686	PJ-688	232.38	-9,753.25	9,864.24	110	0.64	3.93	6.10624	HDPE	145	0.04
PP-927	72.5	18.625	17.806	0.13306	PJ-688	PJ-689	232.28	-9,764.06	9,864.86	110	0.01	0	0.13306	HDPE	145	0
PP-928	19.5	18.625	18.609	-6.42831	PJ-688	PJ-690	232.28	-9,764.06	9,864.86	110	0.68	4.32	6.42831	HDPE	145	0.08
PP-929	60	18.609	17.89	0.11013	PJ-690	PJ-691	232.38	-9,783.51	9,865.47	110	0.01	0	0.11013	HDPE	145	0
PP-930	33.5	18.609	18.693	-6.74579	PJ-690	PJ-692	232.38	-9,783.51	9,865.47	125	0.55	2.53	6.74579	HDPE	145	0.08
PP-931	109.5	18.693	18.792	0.20094	PJ-692	PJ-693	232.38	-9,817.17	9,864.24	110	0.02	0.01	0.20094	HDPE	145	0

Distribution Network Design Output: Zone 16

PP-932	82.5	18.518	17.945	-3.97694	PJ-662	PJ-694	232.38	-9,837.05	9,739.38	110	0.42	1.77	3.97694	HDPE	145	0.15
PP-933	52.5	17.945	18.664	0.09637	PJ-694	PJ-695	233.1	-9,838.17	9,821.94	110	0.01	0	0.09637	HDPE	145	0
PP-934	43.5	17.945	18.038	-4.40082	PJ-694	PJ-696	233.1	-9,838.17	9,821.94	110	0.46	2.14	4.40082	HDPE	145	0.09
PP-935	22	18.038	18.693	7.24948	PJ-696	PJ-692	233.1	-9,839.09	9,865.47	125	0.59	2.89	7.24948	HDPE	145	0.06
PP-936	81	18.038	19.145	-11.91912	PJ-696	PJ-642	233.1	-9,839.09	9,865.47	140	0.77	4.18	11.91912	HDPE	145	0.34
PP-937	40.5	18.68	18.494	2.75989	J-39	PJ-697	232.23	-9,951.20	9,480.57	110	0.29	0.9	2.75989	HDPE	145	0.04
PP-938	27.5	18.494	17.76	2.13237	PJ-697	PJ-698	232.38	-9,950.18	9,521.18	110	0.22	0.56	2.13237	HDPE	145	0.02
PP-939	136	17.76	18.521	1.83237	PJ-698	PJ-665	233.1	-9,922.83	9,521.18	110	0.19	0.42	1.83237	HDPE	145	0.06
PP-940	137	18.494	18.592	0.25139	PJ-697	PJ-699	232.38	-9,950.18	9,521.18	110	0.03	0.01	0.25139	HDPE	145	0
PP-941	92	17.669	18.388	-0.16883	PJ-700	PJ-664	233.1	-9,900.03	9,588.56	110	0.02	0.01	0.16883	HDPE	145	0
PP-942	93	18.388	18.247	3.65581	PJ-664	PJ-701	232.38	-9,807.80	9,589.65	110	0.38	1.52	3.65581	HDPE	145	0.14
PP-943	3	18.247	17.525	3.25944	PJ-701	PJ-702	232.38	-9,715.94	9,592.84	110	0.34	1.23	3.25944	HDPE	145	0
PP-944	54	17.525	18.244	0.09912	PJ-702	PJ-703	233.1	-9,715.77	9,595.60	110	0.01	0	0.09912	HDPE	145	0
PP-945	26	17.525	18.216	3.008	PJ-702	PJ-668	233.1	-9,715.77	9,595.60	110	0.32	1.06	3.008	HDPE	145	0.03
PP-946	50.5	17.453	17.452	0.0927	PJ-669	PJ-704	233.1	-9,668.48	9,596.66	110	0.01	0	0.0927	HDPE	145	0
PP-947	60	18.247	17.529	0.11013	PJ-701	PJ-705	232.38	-9,715.94	9,592.84	110	0.01	0	0.11013	HDPE	145	0
PP-948	29.5	15.708	15.453	1.11507	J-272	J-275	232.28	-10,842.71	8,759.83	110	0.12	0.17	1.11507	HDPE	145	0
PP-949	138.5	22.577	22.677	0.25414	PJ-609	PJ-706	232.38	-10,539.75	9,853.12	160	0.01	0	0.25414	HDPE	145	0
PP-950	21	1.796	22.577	199.375	T-1	PJ-609	233.5	-10,552.42	9,870.03	400	1.59	4.64	199.375	HDPE	145	0.1
PP-951	25.5	15.213	15.403	0.11407	J-116	J-276	232.47	-11,388.16	9,182.52	160	0.01	0	0.11407	HDPE	145	0
PP-952	37.5	15.403	15.213	-0.27495	J-276	J-105	232.28	-11,387.92	9,157.19	160	0.01	0	0.27495	HDPE	145	0
PP-953	21.5	15.576	15.566	0.30556	J-208	J-210	232.44	-10,740.92	8,254.69	160	0.02	0	0.30556	HDPE	145	0
	54339.5															

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	J-1	J-2	101.5	110	PVC	355	HDPE	Replacement
P-2	J-2	J-3	12.5	110	PVC	355	HDPE	Replacement
P-3	J-3	J-4	31	110	PVC	280	HDPE	Replacement
P-4	J-4	J-5	84.5	110	PVC	280	HDPE	Replacement
P-5	J-5	J-6	35.5	110	PVC	250	HDPE	Replacement
P-6	J-6	J-7	38	110	PVC	250	HDPE	Replacement
P-7	J-7	J-8	43	110	PVC	200	HDPE	Replacement
P-8	J-8	J-9	75	160	PVC	200	HDPE	Replacement
P-9	J-9	J-5	43.5	110	PVC	180	HDPE	Replacement
P-10	J-9	J-10	107.5	110	PVC	250	HDPE	Replacement
P-11	J-10	J-3	44.5	110	PVC	280	HDPE	Replacement
P-12	J-10	J-11	35	110	PVC	250	HDPE	Replacement
P-13	J-11	J-12	104	110	PVC	180	HDPE	Replacement
P-14	J-12	J-9	33	110	PVC	200	HDPE	Replacement
P-15	J-8	J-13	34.5	160	PVC	180	HDPE	Replacement
P-16	J-13	J-12	74.5	110	PVC	250	HDPE	Replacement
P-17	J-8	J-14	119.5	110	PVC	250	HDPE	Replacement
P-18	J-14	J-15	21.5	110	PVC	200	HDPE	Replacement
P-19	J-14	J-16	33.5	110	PVC	160	HDPE	Replacement
P-20	J-16	J-13	118.5	110	PVC	200	HDPE	Replacement
P-21	J-13	J-17	64.5	160	PVC	200	HDPE	Replacement
P-22	J-17	J-18	117.5	110	PVC	200	HDPE	Replacement
P-23	J-18	J-16	68	110	PVC	125	HDPE	Replacement
P-24	J-16	J-19	34	110	PVC	250	HDPE	Replacement
P-25	J-19	J-20	66	110	PVC	180	HDPE	Replacement
P-26	J-20	J-18	33.5	110	PVC	200	HDPE	Replacement
P-27	J-19	J-21	33.5	110	PVC	180	HDPE	Replacement
P-28	J-20	J-22	87	110	PVC	250	HDPE	Replacement
P-29	J-22	J-23	18.5	110	PVC	180	HDPE	Replacement
P-30	J-22	J-24	36.5	110	PVC	200	HDPE	Replacement
P-31	J-24	J-25	109.5	110	PVC	110	uPVC	Retained
P-32	J-24	J-26	37.5	110	PVC	200	HDPE	Replacement
P-33	J-26	J-27	18.5	110	PVC	110	uPVC	Retained
P-34	J-26	J-28	27	110	PVC	200	HDPE	Replacement
P-35	J-28	J-29	21.5	110	PVC	110	uPVC	Retained
P-36	J-28	J-30	51	110	PVC	200	HDPE	Replacement
P-37	J-30	J-31	61.5	110	PVC	180	HDPE	Replacement
P-38	J-31	J-32	32.5	110	PVC	110	uPVC	Retained
P-39	J-31	J-33	92.5	110	PVC	180	HDPE	Replacement
P-40	J-33	J-34	75.5	110	PVC	110	uPVC	Retained
P-41	J-33	J-35	130.5	110	PVC	140	HDPE	Replacement
P-42	J-35	J-36	44.5	160	PVC	160	uPVC	Retained
P-43	J-36	J-37	53	110	PVC	110	uPVC	Retained
P-44	J-36	J-38	46	160	PVC	160	uPVC	Retained
P-45	J-38	J-39	24.5	110	PVC	110	uPVC	Retained
P-46	J-39	J-40	38	110	PVC	110	uPVC	Retained
P-47	J-38	J-41	152	110	PVC	110	uPVC	Retained
P-48	J-35	J-42	110	110	PVC	110	uPVC	Retained
P-49	J-42	J-43	45	110	PVC	110	uPVC	Retained
P-50	J-30	J-44	65	110	PVC	110	uPVC	Retained
P-51	J-45	J-46	68.5	110	PVC	125	HDPE	Replacement
P-52	J-46	J-47	56.5	110	PVC	110	uPVC	Retained
P-53	J-46	J-48	54.5	110	PVC	125	HDPE	Replacement
P-54	J-48	J-49	56	110	PVC	125	HDPE	Replacement
P-55	J-49	J-33	36.5	110	PVC	140	HDPE	Replacement
P-56	J-49	J-50	129	110	PVC	110	uPVC	Retained
P-57	J-50	J-35	37	160	PVC	160	uPVC	Retained
P-58	J-50	J-51	112.5	110	PVC	110	uPVC	Retained
P-59	J-51	J-42	37	110	PVC	110	uPVC	Retained

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-60	J-51	J-52	79	110	PVC	110	uPVC	Retained
P-61	J-50	J-53	59	160	PVC	160	uPVC	Retained
P-62	J-53	J-54	53	110	PVC	110	uPVC	Retained
P-63	J-53	J-55	78	110	PVC	110	uPVC	Retained
P-64	J-55	J-48	51	110	PVC	110	uPVC	Retained
P-65	J-48	J-56	43	110	PVC	125	HDPE	Replacement
P-66	J-56	J-57	24.5	110	PVC	110	uPVC	Retained
P-67	J-57	J-58	53.5	110	PVC	125	HDPE	Replacement
P-68	J-59	J-60	76.5	160	PVC	160	uPVC	Retained
P-69	J-60	J-53	27.5	160	PVC	160	uPVC	Retained
P-70	J-60	J-61	59	160	PVC	160	uPVC	Retained
P-71	J-61	J-62	65	110	PVC	110	uPVC	Retained
P-72	J-11	J-63	38	110	PVC	180	HDPE	Replacement
P-73	J-63	J-64	45.5	110	PVC	180	HDPE	Replacement
P-74	J-64	J-65	40.5	110	PVC	160	HDPE	Replacement
P-75	J-65	J-66	34.5	110	PVC	125	HDPE	Replacement
P-76	J-66	J-67	11	110	PVC	110	uPVC	Retained
P-77	J-67	J-68	22	110	PVC	110	uPVC	Retained
P-78	J-68	J-69	14	110	PVC	110	uPVC	Retained
P-79	J-70	J-71	123	75	PVC	110	HDPE	Replacement
P-80	J-71	J-72	44.5	75	PVC	110	HDPE	Replacement
P-81	J-72	J-73	58.5	75	PVC	110	HDPE	Replacement
P-82	J-72	J-74	54	75	PVC	110	HDPE	Replacement
P-83	J-75	J-76	73	110	PVC	110	uPVC	Retained
P-84	J-76	J-71	27	75	PVC	110	HDPE	Replacement
P-85	J-76	J-77	83	110	PVC	110	uPVC	Retained
P-86	J-77	J-78	18	160	PVC	160	uPVC	Retained
P-87	J-78	J-79	10	160	PVC	160	uPVC	Retained
P-88	J-79	J-80	159	75	PVC	110	HDPE	Replacement
P-89	J-79	J-81	23	160	PVC	160	uPVC	Retained
P-90	J-81	J-82	12.5	160	PVC	160	uPVC	Retained
P-91	J-82	J-83	141.5	75	PVC	110	HDPE	Replacement
P-92	J-82	J-84	24.5	160	PVC	160	uPVC	Retained
P-93	J-84	J-85	11	110	PVC	125	HDPE	Replacement
P-94	J-85	J-86	27	75	PVC	110	HDPE	Replacement
P-95	J-85	J-87	44.5	160	PVC	160	uPVC	Retained
P-96	J-87	J-88	40.5	75	PVC	110	HDPE	Replacement
P-97	J-87	J-89	94	160	PVC	160	uPVC	Retained
P-98	J-84	J-90	150	110	PVC	110	uPVC	Retained
P-99	J-90	J-91	56.5	110	PVC	110	uPVC	Retained
P-100	J-91	J-92	24	75	PVC	110	HDPE	Replacement
P-101	J-92	J-93	56.5	110	PVC	110	uPVC	Retained
P-102	J-93	J-81	151	110	PVC	110	uPVC	Retained
P-103	J-78	J-94	78	110	PVC	110	uPVC	Retained
P-104	J-94	J-95	57	110	PVC	110	uPVC	Retained
P-105	J-95	J-96	17.5	110	PVC	110	uPVC	Retained
P-106	J-96	J-97	12	110	PVC	110	uPVC	Retained
P-107	J-97	J-98	46	110	PVC	110	uPVC	Retained
P-108	J-98	J-92	39	75	PVC	110	HDPE	Replacement
P-109	J-98	J-99	84	75	PVC	110	HDPE	Replacement
P-110	J-99	J-100	12.5	75	PVC	110	HDPE	Replacement
P-111	J-100	J-101	20.5	75	PVC	110	HDPE	Replacement
P-112	J-101	J-102	15	75	PVC	110	HDPE	Replacement
P-113	J-103	J-104	47.5	110	PVC	110	uPVC	Retained
P-114	J-104	J-105	155	75	PVC	110	HDPE	Replacement
P-115	J-104	J-106	57	110	PVC	110	uPVC	Retained
P-116	J-106	J-107	23.5	75	PVC	110	HDPE	Replacement
P-117	J-107	J-108	29.5	75	PVC	110	HDPE	Replacement
P-118	J-108	J-109	31.5	75	PVC	110	HDPE	Replacement
P-119	J-109	J-110	60	75	PVC	110	HDPE	Replacement

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-120	J-110	J-111	13	160	PVC	160	uPVC	Retained
P-122	J-111	J-113	71	75	PVC	110	HDPE	Replacement
P-123	J-110	J-114	29	160	PVC	160	uPVC	Retained
P-124	J-114	J-115	60	160	PVC	160	uPVC	Retained
P-125	J-116	J-109	73.5	75	PVC	110	HDPE	Replacement
P-126	J-108	J-114	64	75	PVC	110	HDPE	Replacement
P-127	J-114	J-117	32	160	PVC	160	uPVC	Retained
P-128	J-117	J-107	62	75	PVC	110	HDPE	Replacement
P-129	J-117	J-118	25.5	160	PVC	160	uPVC	Retained
P-130	J-118	J-106	60.5	75	PVC	110	HDPE	Replacement
P-131	J-118	J-119	6.5	160	PVC	160	uPVC	Retained
P-132	J-119	J-77	33.5	160	PVC	160	uPVC	Retained
P-133	J-120	J-121	36	75	PVC	110	HDPE	Replacement
P-134	J-121	J-122	31	75	PVC	110	HDPE	Replacement
P-135	J-122	J-123	28.5	75	PVC	110	HDPE	Replacement
P-136	J-123	J-124	110	75	PVC	110	HDPE	Replacement
P-137	J-124	J-125	74.5	75	PVC	110	HDPE	Replacement
P-138	J-125	J-126	38.5	75	PVC	110	HDPE	Replacement
P-139	J-126	J-127	60.5	75	PVC	110	HDPE	Replacement
P-140	J-127	J-128	23	75	PVC	110	HDPE	Replacement
P-141	J-128	J-126	15.5	75	PVC	110	HDPE	Replacement
P-142	J-128	J-129	19	75	PVC	110	HDPE	Replacement
P-143	J-129	J-130	35.5	75	PVC	110	HDPE	Replacement
P-144	J-130	J-131	39	75	PVC	110	HDPE	Replacement
P-145	J-131	J-125	69.5	110	PVC	110	uPVC	Retained
P-146	J-130	J-132	129.5	75	PVC	110	HDPE	Replacement
P-147	J-132	J-129	132.5	75	PVC	110	HDPE	Replacement
P-148	J-127	J-133	106.5	75	PVC	110	HDPE	Replacement
P-149	J-133	J-134	16	75	PVC	110	HDPE	Replacement
P-150	J-134	J-135	56	75	PVC	110	HDPE	Replacement
P-151	J-135	J-136	33.5	75	PVC	110	HDPE	Replacement
P-152	J-136	J-137	80	75	PVC	110	HDPE	Replacement
P-153	J-138	J-135	51	75	PVC	110	HDPE	Replacement
P-154	J-135	J-139	33	75	PVC	110	HDPE	Replacement
P-155	J-139	J-140	34	75	PVC	110	HDPE	Replacement
P-156	J-140	J-141	29.5	75	PVC	110	HDPE	Replacement
P-157	J-141	J-142	34.5	75	PVC	110	HDPE	Replacement
P-158	J-142	J-136	96	75	PVC	110	HDPE	Replacement
P-159	J-136	J-143	50.5	75	PVC	110	HDPE	Replacement
P-160	J-142	J-144	77.5	75	PVC	110	HDPE	Replacement
P-161	J-140	J-145	63.5	75	PVC	110	HDPE	Replacement
P-162	J-145	J-146	9.5	75	PVC	110	HDPE	Replacement
P-163	J-146	J-147	29	75	PVC	110	HDPE	Replacement
P-164	J-147	J-148	60.5	75	PVC	110	HDPE	Replacement
P-165	J-147	J-149	91	75	PVC	110	HDPE	Replacement
P-166	J-149	J-146	121	75	PVC	110	HDPE	Replacement
P-167	J-145	J-150	24.5	75	PVC	110	HDPE	Replacement
P-168	J-150	J-151	23.5	75	PVC	110	HDPE	Replacement
P-169	J-151	J-139	67	75	PVC	110	HDPE	Replacement
P-170	J-151	J-134	33.5	75	PVC	110	HDPE	Replacement
P-171	J-152	J-153	14.5	75	PVC	110	HDPE	Replacement
P-172	J-153	J-133	38.5	75	PVC	110	HDPE	Replacement
P-173	J-133	J-132	54.5	75	PVC	110	HDPE	Replacement
P-174	J-132	J-154	42.5	75	PVC	110	HDPE	Replacement
P-175	J-154	J-153	67	75	PVC	110	HDPE	Replacement
P-176	J-155	J-154	59	75	PVC	110	HDPE	Replacement
P-177	J-154	J-156	49.5	75	PVC	110	HDPE	Replacement
P-178	J-156	J-157	21.5	75	PVC	110	HDPE	Replacement
P-179	J-156	J-158	39	75	PVC	110	HDPE	Replacement
P-180	J-158	J-159	30.5	75	PVC	110	HDPE	Replacement

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-181	J-159	J-132	34.5	75	PVC	110	HDPE	Replacement
P-182	J-158	J-160	47	75	PVC	110	HDPE	Replacement
P-183	J-160	J-161	37.5	75	PVC	110	HDPE	Replacement
P-184	J-161	J-162	22	110	PVC	110	uPVC	Retained
P-185	J-161	J-163	31.5	75	PVC	110	HDPE	Replacement
P-186	J-163	J-164	18	75	PVC	110	HDPE	Replacement
P-187	J-164	J-165	63	75	PVC	110	HDPE	Replacement
P-188	J-165	J-166	23.5	160	PVC	160	uPVC	Retained
P-189	J-166	J-167	27	160	PVC	160	uPVC	Retained
P-190	J-167	J-168	38	160	PVC	160	uPVC	Retained
P-191	J-168	J-169	46	160	PVC	160	uPVC	Retained
P-192	J-169	J-170	40	160	PVC	160	uPVC	Retained
P-193	J-170	J-171	22	160	PVC	160	uPVC	Retained
P-194	J-171	J-172	10.5	160	PVC	160	uPVC	Retained
P-195	J-172	J-173	37.5	160	PVC	160	uPVC	Retained
P-196	J-173	J-174	36	160	PVC	160	uPVC	Retained
P-197	J-174	J-175	34	160	PVC	160	uPVC	Retained
P-198	J-175	J-176	46.5	160	PVC	160	uPVC	Retained
P-199	J-176	J-177	18	160	PVC	160	uPVC	Retained
P-200	J-177	J-178	28	160	PVC	160	uPVC	Retained
P-201	J-178	J-179	127	110	PVC	110	uPVC	Retained
P-202	J-179	J-180	38	110	PVC	110	uPVC	Retained
P-203	J-180	J-176	102	110	PVC	110	uPVC	Retained
P-204	J-175	J-181	64.5	110	PVC	110	uPVC	Retained
P-205	J-174	J-182	105.5	75	PVC	110	HDPE	Replacement
P-206	J-173	J-183	98.5	75	PVC	110	HDPE	Replacement
P-207	J-173	J-184	77	75	PVC	110	HDPE	Replacement
P-208	J-171	J-185	149.5	75	PVC	110	HDPE	Replacement
P-209	J-185	J-186	10.5	110	PVC	110	uPVC	Retained
P-210	J-186	J-187	20.5	110	PVC	110	uPVC	Retained
P-211	J-187	J-188	64	75	PVC	110	HDPE	Replacement
P-212	J-187	J-189	26.5	110	PVC	110	uPVC	Retained
P-213	J-189	J-190	77	75	PVC	110	HDPE	Replacement
P-214	J-190	J-174	86	110	PVC	110	uPVC	Retained
P-215	J-190	J-191	17	110	PVC	110	uPVC	Retained
P-216	J-191	J-192	80.5	110	PVC	110	uPVC	Retained
P-217	J-192	J-193	75.5	110	PVC	110	uPVC	Retained
P-218	J-193	J-186	48	110	PVC	110	uPVC	Retained
P-219	J-185	J-194	19	110	PVC	110	uPVC	Retained
P-220	J-194	J-195	17	110	PVC	110	uPVC	Retained
P-221	J-195	J-196	101.5	75	PVC	110	HDPE	Replacement
P-222	J-197	J-198	86	75	PVC	110	HDPE	Replacement
P-223	J-198	J-199	10.5	110	PVC	110	uPVC	Retained
P-224	J-199	J-195	13.5	110	PVC	110	uPVC	Retained
P-225	J-199	J-200	59.5	110	PVC	110	uPVC	Retained
P-226	J-200	J-201	44.5	110	PVC	110	uPVC	Retained
P-227	J-200	J-202	15	110	PVC	110	uPVC	Retained
P-228	J-202	J-203	55	110	PVC	110	uPVC	Retained
P-229	J-204	J-205	77	110	PVC	110	uPVC	Retained
P-230	J-205	J-206	41.5	110	PVC	110	uPVC	Retained
P-231	J-206	J-194	64.5	110	PVC	110	uPVC	Retained
P-232	J-207	J-206	22.5	110	PVC	110	uPVC	Retained
P-233	J-193	J-208	148	110	PVC	110	uPVC	Retained
P-234	J-209	J-210	72.5	110	PVC	110	uPVC	Retained
P-235	J-211	J-212	111.5	110	PVC	110	uPVC	Retained
P-236	J-212	J-213	41	110	PVC	110	uPVC	Retained
P-237	J-212	J-214	27	110	PVC	110	uPVC	Retained
P-238	J-214	J-192	56	160	PVC	160	uPVC	Retained
P-239	J-214	J-215	145.5	160	PVC	160	uPVC	Retained
P-240	J-216	J-217	41.5	75	PVC	110	HDPE	Replacement

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-241	J-217	J-218	114.5	75	PVC	110	HDPE	Replacement
P-242	J-218	J-219	65	75	PVC	110	HDPE	Replacement
P-243	J-219	J-220	52	75	PVC	110	HDPE	Replacement
P-244	J-221	J-222	52	75	PVC	110	HDPE	Replacement
P-245	J-222	J-223	60.5	75	PVC	110	HDPE	Replacement
P-246	J-223	J-224	52	110	PVC	110	uPVC	Retained
P-247	J-224	J-225	29	75	PVC	110	HDPE	Replacement
P-248	J-225	J-226	38.5	75	PVC	110	HDPE	Replacement
P-249	J-226	J-227	30.5	75	PVC	110	HDPE	Replacement
P-250	J-227	J-177	75.5	75	PVC	110	HDPE	Replacement
P-251	J-178	J-228	46	160	PVC	160	uPVC	Retained
P-252	J-228	J-229	154	110	PVC	110	uPVC	Retained
P-253	J-229	J-179	35.5	110	PVC	110	uPVC	Retained
P-254	J-179	J-230	93	160	PVC	160	uPVC	Retained
P-255	J-230	J-231	44.5	160	PVC	160	uPVC	Retained
P-256	J-231	J-232	38	110	PVC	160	HDPE	Replacement
P-257	J-232	J-233	19.5	110	PVC	140	HDPE	Replacement
P-258	J-233	J-234	85	110	PVC	110	uPVC	Retained
P-259	J-234	J-235	21	110	PVC	140	HDPE	Replacement
P-260	J-235	J-236	62	110	PVC	125	HDPE	Replacement
P-261	J-236	J-237	46	110	PVC	110	uPVC	Retained
P-262	J-237	J-238	23	110	PVC	140	HDPE	Replacement
P-263	J-238	J-239	41	110	PVC	140	HDPE	Replacement
P-264	J-239	J-240	37.5	110	PVC	125	HDPE	Replacement
P-265	J-240	J-241	22.5	110	PVC	110	uPVC	Retained
P-266	J-241	J-229	53	110	PVC	110	uPVC	Retained
P-267	J-241	J-242	16	110	PVC	110	uPVC	Retained
P-268	J-232	J-243	22	110	PVC	110	uPVC	Retained
P-269	J-233	J-244	54	110	PVC	110	uPVC	Retained
P-270	J-235	J-245	87	110	PVC	110	uPVC	Retained
P-271	J-245	J-246	38	110	PVC	125	HDPE	Replacement
P-272	J-246	J-247	44.5	110	PVC	160	HDPE	Replacement
P-273	J-247	J-248	11	110	PVC	125	HDPE	Replacement
P-274	J-248	J-249	29.5	110	PVC	125	HDPE	Replacement
P-275	J-249	J-250	9	110	PVC	180	HDPE	Replacement
P-276	J-250	J-251	81	75	PVC	140	HDPE	Replacement
P-277	J-251	J-252	42.5	75	PVC	125	HDPE	Replacement
P-278	J-252	J-131	37.5	75	PVC	125	HDPE	Replacement
P-279	J-131	J-253	132.5	75	PVC	110	HDPE	Replacement
P-280	J-253	J-254	39	110	PVC	110	uPVC	Retained
P-281	J-254	J-255	41.5	110	PVC	110	uPVC	Retained
P-282	J-255	J-256	37	110	PVC	125	HDPE	Replacement
P-283	J-256	J-231	42.5	110	PVC	125	HDPE	Replacement
P-284	J-257	J-256	62.5	75	PVC	110	HDPE	Replacement
P-285	J-256	J-180	138.5	75	PVC	110	HDPE	Replacement
P-286	J-258	J-259	41.5	75	PVC	110	HDPE	Replacement
P-287	J-259	J-255	92	75	PVC	110	HDPE	Replacement
P-288	J-255	J-251	133	75	PVC	110	HDPE	Replacement
P-289	J-260	J-252	109.5	110	PVC	110	uPVC	Retained
P-290	J-252	J-254	134	75	PVC	110	HDPE	Replacement
P-291	J-254	J-261	91	75	PVC	110	HDPE	Replacement
P-292	J-262	J-253	85	75	PVC	110	HDPE	Replacement
P-293	J-253	J-263	23	110	PVC	110	uPVC	Retained
P-294	J-263	J-264	82	75	PVC	110	HDPE	Replacement
P-295	J-263	J-265	16.5	110	PVC	110	uPVC	Retained
P-296	J-265	J-266	63.5	75	PVC	110	HDPE	Replacement
P-297	J-266	J-267	33.5	75	PVC	110	HDPE	Replacement
P-298	J-267	J-130	35	75	PVC	110	HDPE	Replacement
P-299	J-267	J-159	129.5	75	PVC	110	HDPE	Replacement
P-300	J-158	J-268	30.5	75	PVC	110	HDPE	Replacement

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-301	J-268	J-269	32.5	75	PVC	110	HDPE	Replacement
P-302	J-269	J-270	36	75	PVC	110	HDPE	Replacement
P-303	J-270	J-266	30.5	75	PVC	110	HDPE	Replacement
P-304	J-161	J-271	29	110	PVC	110	uPVC	Retained
P-305	J-271	J-268	84	75	PVC	110	HDPE	Replacement
P-306	J-271	J-272	31.5	110	PVC	110	uPVC	Retained
P-307	J-272	J-269	85.5	75	PVC	110	HDPE	Replacement
P-308	J-272	J-273	40	110	PVC	110	uPVC	Retained
P-309	J-273	J-270	81	75	PVC	110	HDPE	Replacement
P-310	J-273	J-274	16.5	110	PVC	110	uPVC	Retained
P-311	J-274	J-265	33	110	PVC	110	uPVC	Retained
P-312	J-274	J-275	88	75	PVC	110	HDPE	Replacement
P-313	J-275	J-163	63.5	75	PVC	110	HDPE	Replacement
P-314	J-276	J-277	74.5	75	PVC	110	HDPE	Replacement
P-315	J-278	J-279	20	110	PVC	110	uPVC	Retained
P-316	J-279	J-280	53	110	PVC	110	uPVC	Retained
P-317	J-280	J-281	82	110	PVC	110	uPVC	Retained
P-318	J-281	J-282	31.5	110	PVC	110	uPVC	Retained
P-319	J-282	J-279	69	110	PVC	110	uPVC	Retained
P-320	J-283	J-284	96.5	110	PVC	110	uPVC	Retained
P-321	J-281	J-285	35.5	110	PVC	110	uPVC	Retained
P-322	J-285	J-286	31	110	PVC	110	uPVC	Retained
P-323	J-286	J-287	28.5	110	PVC	110	uPVC	Retained
P-324	J-280	J-288	31.5	110	PVC	110	uPVC	Retained
P-325	J-288	J-285	80.5	110	PVC	110	uPVC	Retained
P-326	J-288	J-289	38	110	PVC	110	uPVC	Retained
P-327	J-289	J-290	25.5	110	PVC	110	uPVC	Retained
P-328	J-291	J-292	29	110	PVC	110	uPVC	Retained
P-329	J-292	J-293	43	110	PVC	110	uPVC	Retained
P-330	J-294	J-293	10	110	PVC	110	uPVC	Retained
P-331	J-293	J-198	57.5	110	PVC	110	uPVC	Retained
P-332	J-292	J-167	163.5	110	PVC	110	uPVC	Retained
P-333	J-168	J-295	151.5	75	PVC	110	HDPE	Replacement
P-334	J-228	J-296	32	160	PVC	160	uPVC	Retained
P-335	J-296	J-297	33	160	PVC	160	uPVC	Retained
P-336	J-297	J-298	153	110	PVC	110	uPVC	Retained
P-337	J-298	J-239	110	110	PVC	110	uPVC	Retained
P-338	J-240	J-299	96.5	110	PVC	110	uPVC	Retained
P-339	J-299	J-296	131.5	110	PVC	110	uPVC	Retained
P-340	J-237	J-234	59	110	PVC	110	uPVC	Retained
P-341	J-238	J-300	86	110	PVC	110	uPVC	Retained
P-342	J-300	J-301	71.5	110	PVC	110	uPVC	Retained
P-343	J-301	J-302	14	110	PVC	110	uPVC	Retained
P-344	J-301	J-303	80.5	110	PVC	110	uPVC	Retained
P-345	J-304	J-305	89.5	110	PVC	110	uPVC	Retained
P-346	J-305	J-306	55	110	PVC	110	uPVC	Retained
P-347	J-306	J-307	74.5	110	PVC	110	uPVC	Retained
P-348	J-307	J-308	62.5	110	PVC	110	uPVC	Retained
P-349	J-308	J-300	49.5	110	PVC	110	uPVC	Retained
P-350	J-307	J-309	58.5	110	PVC	110	uPVC	Retained
P-351	J-309	J-310	61.5	110	PVC	110	uPVC	Retained
P-352	J-310	J-236	34	110	PVC	110	uPVC	Retained
P-353	J-309	J-311	32.5	110	PVC	110	uPVC	Retained
P-354	J-311	J-312	117	110	PVC	110	uPVC	Retained
P-355	J-312	J-313	129.5	110	PVC	110	uPVC	Retained
P-356	J-313	J-314	73.5	110	PVC	110	uPVC	Retained
P-357	J-314	J-315	37.5	110	PVC	110	uPVC	Retained
P-358	J-315	J-316	46.5	110	PVC	110	uPVC	Retained
P-359	J-316	J-317	34.5	110	PVC	110	uPVC	Retained
P-360	J-317	J-318	77	110	PVC	110	uPVC	Retained

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-361	J-318	J-319	130.5	110	PVC	110	uPVC	Retained
P-362	J-319	J-320	128	110	PVC	110	uPVC	Retained
P-363	J-320	J-311	44	110	PVC	110	uPVC	Retained
P-364	J-320	J-321	158	110	PVC	110	uPVC	Retained
P-365	J-321	J-322	44	110	PVC	110	uPVC	Retained
P-366	J-322	J-305	30	110	PVC	110	uPVC	Retained
P-367	J-306	J-323	61	110	PVC	110	uPVC	Retained
P-368	J-324	J-325	77.5	110	PVC	110	uPVC	Retained
P-369	J-325	J-326	53	110	PVC	110	uPVC	Retained
P-370	J-325	J-327	23.5	110	PVC	110	uPVC	Retained
P-371	J-328	J-320	251	110	PVC	110	uPVC	Retained
P-372	J-235	J-329	144.5	160	PVC	180	HDPE	Replacement
P-373	J-329	J-330	154.5	160	PVC	180	HDPE	Replacement
P-374	J-330	J-331	33.5	110	PVC	160	HDPE	Replacement
P-375	J-331	J-332	9.5	110	PVC	160	HDPE	Replacement
P-376	J-332	J-333	71	110	PVC	140	HDPE	Replacement
P-377	J-333	J-334	19.5	110	PVC	125	HDPE	Replacement
P-378	J-334	J-335	49.5	110	PVC	110	uPVC	Retained
P-379	J-335	J-336	82	110	PVC	125	HDPE	Replacement
P-380	J-335	J-249	181.5	110	PVC	160	HDPE	Replacement
P-381	J-248	J-337	106	110	PVC	110	uPVC	Retained
P-382	J-246	J-338	199.5	160	PVC	180	HDPE	Replacement
P-383	J-338	J-333	32	160	PVC	160	uPVC	Retained
P-384	J-338	J-330	44	160	PVC	160	uPVC	Retained
P-385	J-330	J-339	91	110	PVC	125	HDPE	Replacement
P-386	J-339	J-340	79.5	110	PVC	125	HDPE	Replacement
P-387	J-340	J-341	45			125	HDPE	Replacement
P-388	J-341	J-342	42.5	110	PVC	125	HDPE	Replacement
P-389	J-342	J-343	29.5	110	PVC	110	uPVC	Retained
P-390	J-331	J-344	67	110	PVC	110	uPVC	Retained
P-391	J-344	J-345	32	110	PVC	110	uPVC	Retained
P-392	J-344	J-339	26	75	PVC	110	HDPE	Replacement
PP-393	J-191	J-220	37	#N/A	#N/A	110	HDPE	New
PP-394	J-219	J-226	32.5	#N/A	#N/A	110	HDPE	New
PP-395	J-218	J-224	33	#N/A	#N/A	110	HDPE	New
PP-396	J-217	J-222	33	#N/A	#N/A	110	HDPE	New
PP-397	J-222	PJ-346	23.5	#N/A	#N/A	110	HDPE	New
PP-398	PJ-346	PJ-347	22.5	#N/A	#N/A	110	HDPE	New
PP-399	PJ-347	PJ-348	19	#N/A	#N/A	110	HDPE	New
PP-400	PJ-346	PJ-349	60.5	#N/A	#N/A	110	HDPE	New
PP-401	PJ-349	J-223	23	#N/A	#N/A	110	HDPE	New
PP-402	PJ-349	PJ-350	24	#N/A	#N/A	110	HDPE	New
PP-403	PJ-350	PJ-347	59.5	#N/A	#N/A	110	HDPE	New
PP-404	PJ-349	PJ-351	52.5	#N/A	#N/A	110	HDPE	New
PP-405	PJ-351	J-224	23	#N/A	#N/A	110	HDPE	New
PP-406	PJ-350	PJ-352	53	#N/A	#N/A	110	HDPE	New
PP-407	PJ-352	PJ-351	23.5	#N/A	#N/A	110	HDPE	New
PP-408	PJ-351	PJ-353	30.5	#N/A	#N/A	110	HDPE	New
PP-409	PJ-353	J-225	19.5	#N/A	#N/A	110	HDPE	New
PP-410	PJ-353	PJ-354	70.5	#N/A	#N/A	110	HDPE	New
PP-411	PJ-354	J-227	22	#N/A	#N/A	110	HDPE	New
PP-412	PJ-354	J-178	59.5	#N/A	#N/A	110	HDPE	New
PP-413	PJ-354	PJ-355	45	#N/A	#N/A	110	HDPE	New
PP-414	PJ-355	J-228	29	#N/A	#N/A	110	HDPE	New
PP-415	PJ-355	PJ-356	101	#N/A	#N/A	110	HDPE	New
PP-416	PJ-356	PJ-352	18	#N/A	#N/A	110	HDPE	New
PP-417	PJ-356	PJ-357	45.5	#N/A	#N/A	110	HDPE	New
PP-418	PJ-357	PJ-358	25	#N/A	#N/A	110	HDPE	New
PP-419	PJ-357	PJ-359	67	#N/A	#N/A	110	HDPE	New
PP-420	PJ-359	J-297	19.5	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-421	PJ-360	PJ-359	21.5	#N/A	#N/A	110	HDPE	New
PP-422	J-297	J-324	155	#N/A	#N/A	110	HDPE	New
PP-423	J-324	PJ-361	101.5	#N/A	#N/A	110	HDPE	New
PP-424	PJ-361	PJ-362	166.5	#N/A	#N/A	110	HDPE	New
PP-425	PJ-362	PJ-363	22	#N/A	#N/A	110	HDPE	New
PP-426	PJ-363	J-326	34	#N/A	#N/A	110	HDPE	New
PP-427	PJ-363	J-322	41	#N/A	#N/A	110	HDPE	New
PP-428	J-308	J-310	82	#N/A	#N/A	110	HDPE	New
PP-429	J-233	J-245	78.5	#N/A	#N/A	110	HDPE	New
PP-430	J-232	J-247	115.5	#N/A	#N/A	110	HDPE	New
PP-431	J-250	PJ-364	50.5	#N/A	#N/A	110	HDPE	New
PP-432	PJ-364	J-231	82	#N/A	#N/A	110	HDPE	New
PP-433	PJ-364	PJ-365	51.5	#N/A	#N/A	110	HDPE	New
PP-434	J-250	J-260	157.5	#N/A	#N/A	110	HDPE	New
PP-435	J-260	PJ-366	10	#N/A	#N/A	110	HDPE	New
PP-436	PJ-366	J-124	42.5	#N/A	#N/A	125	HDPE	New
PP-437	J-124	PJ-367	42.5	#N/A	#N/A	110	HDPE	New
PP-438	PJ-367	J-137	34.5	#N/A	#N/A	110	HDPE	New
PP-439	J-137	PJ-368	9	#N/A	#N/A	110	HDPE	New
PP-440	PJ-368	J-144	89	#N/A	#N/A	110	HDPE	New
PP-441	J-144	PJ-369	18.5	#N/A	#N/A	110	HDPE	New
PP-442	PJ-369	J-89	102.5	#N/A	#N/A	140	HDPE	New
PP-443	J-89	J-83	142.5	#N/A	#N/A	110	HDPE	New
PP-444	J-83	J-80	33.5	#N/A	#N/A	110	HDPE	New
PP-445	J-80	J-74	35.5	#N/A	#N/A	110	HDPE	New
PP-446	J-74	J-73	32	#N/A	#N/A	110	HDPE	New
PP-447	J-73	PJ-370	36.5	#N/A	#N/A	110	HDPE	New
PP-448	PJ-370	J-70	14	#N/A	#N/A	110	HDPE	New
PP-449	J-70	PJ-371	166	#N/A	#N/A	110	HDPE	New
PP-450	PJ-371	PJ-372	69.5	#N/A	#N/A	110	HDPE	New
PP-451	PJ-373	J-115	20	#N/A	#N/A	110	HDPE	New
PP-452	J-115	PJ-374	33	#N/A	#N/A	110	HDPE	New
PP-453	PJ-374	PJ-375	33	#N/A	#N/A	110	HDPE	New
PP-454	PJ-375	PJ-376	8.5	#N/A	#N/A	110	HDPE	New
PP-455	PJ-374	J-117	60.5	#N/A	#N/A	110	HDPE	New
PP-456	J-119	PJ-375	61	#N/A	#N/A	110	HDPE	New
PP-457	J-112	PJ-377	18	#N/A	#N/A	110	HDPE	New
PP-458	PJ-377	PJ-378	15.5	#N/A	#N/A	110	HDPE	New
PP-459	PJ-378	PJ-379	29	#N/A	#N/A	110	HDPE	New
PP-460	PJ-379	PJ-380	24	#N/A	#N/A	110	HDPE	New
PP-461	PJ-380	PJ-381	31	#N/A	#N/A	110	HDPE	New
PP-462	PJ-381	PJ-382	47	#N/A	#N/A	110	HDPE	New
PP-463	PJ-383	PJ-380	57.5	#N/A	#N/A	110	HDPE	New
PP-464	PJ-384	PJ-379	61.5	#N/A	#N/A	110	HDPE	New
PP-465	PJ-385	PJ-378	62.5	#N/A	#N/A	110	HDPE	New
PP-466	PJ-386	PJ-377	62	#N/A	#N/A	110	HDPE	New
PP-467	PJ-387	J-112	65	#N/A	#N/A	110	HDPE	New
PP-468	J-111	PJ-389	27.5	#N/A	#N/A	110	HDPE	New
PP-469	PJ-389	J-112	30	#N/A	#N/A	110	HDPE	New
PP-470	PJ-388	PJ-389	27.5	#N/A	#N/A	110	HDPE	New
PP-471	PJ-390	J-94	38.5	#N/A	#N/A	110	HDPE	New
PP-472	PJ-391	J-95	37.5	#N/A	#N/A	110	HDPE	New
PP-473	J-96	J-93	30.5	#N/A	#N/A	110	HDPE	New
PP-474	J-93	J-90	35.5	#N/A	#N/A	110	HDPE	New
PP-475	PJ-392	PJ-393	13	#N/A	#N/A	110	HDPE	New
PP-476	PJ-393	J-103	25.5	#N/A	#N/A	110	HDPE	New
PP-477	J-103	J-97	66.5	#N/A	#N/A	110	HDPE	New
PP-478	PJ-393	J-100	47	#N/A	#N/A	110	HDPE	New
PP-479	J-101	PJ-394	85	#N/A	#N/A	110	HDPE	New
PP-480	PJ-394	PJ-395	53	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-481	PJ-395	PJ-396	22	#N/A	#N/A	110	HDPE	New
PP-482	PJ-396	PJ-397	20.5	#N/A	#N/A	110	HDPE	New
PP-483	PJ-398	PJ-397	101.5	#N/A	#N/A	110	HDPE	New
PP-484	PJ-398	PJ-399	21.5	#N/A	#N/A	110	HDPE	New
PP-485	PJ-399	PJ-396	103	#N/A	#N/A	110	HDPE	New
PP-486	PJ-395	PJ-400	106	#N/A	#N/A	110	HDPE	New
PP-487	PJ-400	PJ-399	27.5	#N/A	#N/A	110	HDPE	New
PP-488	PJ-400	PJ-401	12	#N/A	#N/A	110	HDPE	New
PP-489	PJ-401	PJ-402	29	#N/A	#N/A	110	HDPE	New
PP-490	PJ-402	PJ-403	30	#N/A	#N/A	110	HDPE	New
PP-491	PJ-403	PJ-404	134	#N/A	#N/A	110	HDPE	New
PP-492	PJ-404	J-99	77	#N/A	#N/A	110	HDPE	New
PP-493	PJ-394	PJ-404	33	#N/A	#N/A	110	HDPE	New
PP-494	PJ-403	PJ-405	19	#N/A	#N/A	110	HDPE	New
PP-495	PJ-405	PJ-406	33.5	#N/A	#N/A	110	HDPE	New
PP-496	PJ-406	PJ-407	5.5	#N/A	#N/A	110	HDPE	New
PP-497	PJ-407	PJ-408	28.5	#N/A	#N/A	110	HDPE	New
PP-498	PJ-408	PJ-409	9	#N/A	#N/A	110	HDPE	New
PP-499	PJ-409	PJ-410	33	#N/A	#N/A	110	HDPE	New
PP-500	PJ-410	PJ-411	33.5	#N/A	#N/A	110	HDPE	New
PP-501	PJ-411	PJ-412	15.5	#N/A	#N/A	110	HDPE	New
PP-502	PJ-412	PJ-413	71.5	#N/A	#N/A	110	HDPE	New
PP-503	PJ-413	PJ-408	24.5	#N/A	#N/A	110	HDPE	New
PP-504	PJ-406	PJ-414	56	#N/A	#N/A	110	HDPE	New
PP-505	PJ-414	PJ-415	35	#N/A	#N/A	110	HDPE	New
PP-506	PJ-415	PJ-413	26.5	#N/A	#N/A	110	HDPE	New
PP-507	PJ-415	PJ-416	70.5	#N/A	#N/A	110	HDPE	New
PP-508	PJ-416	PJ-412	25.5	#N/A	#N/A	110	HDPE	New
PP-509	PJ-415	PJ-417	50.5	#N/A	#N/A	110	HDPE	New
PP-510	PJ-417	PJ-418	36	#N/A	#N/A	110	HDPE	New
PP-511	PJ-418	PJ-414	52.5	#N/A	#N/A	110	HDPE	New
PP-512	PJ-418	PJ-419	22.5	#N/A	#N/A	110	HDPE	New
PP-513	PJ-419	PJ-420	46	#N/A	#N/A	110	HDPE	New
PP-514	PJ-421	PJ-422	36.5	#N/A	#N/A	110	HDPE	New
PP-515	PJ-422	PJ-419	20	#N/A	#N/A	110	HDPE	New
PP-516	PJ-422	J-98	43	#N/A	#N/A	110	HDPE	New
PP-517	J-92	PJ-423	20.5	#N/A	#N/A	110	HDPE	New
PP-518	PJ-423	PJ-424	30.5	#N/A	#N/A	110	HDPE	New
PP-519	PJ-424	PJ-425	38	#N/A	#N/A	110	HDPE	New
PP-520	PJ-423	PJ-426	26	#N/A	#N/A	110	HDPE	New
PP-521	PJ-426	PJ-427	31	#N/A	#N/A	110	HDPE	New
PP-522	PJ-427	PJ-424	25.5	#N/A	#N/A	110	HDPE	New
PP-523	PJ-427	PJ-428	32	#N/A	#N/A	110	HDPE	New
PP-524	PJ-428	J-148	23	#N/A	#N/A	110	HDPE	New
PP-525	PJ-426	PJ-417	41	#N/A	#N/A	110	HDPE	New
PP-526	PJ-417	PJ-429	76.5	#N/A	#N/A	110	HDPE	New
PP-527	PJ-429	PJ-430	19	#N/A	#N/A	110	HDPE	New
PP-528	PJ-430	PJ-431	9.5	#N/A	#N/A	110	HDPE	New
PP-529	PJ-431	PJ-432	21	#N/A	#N/A	110	HDPE	New
PP-530	PJ-432	PJ-433	24.5	#N/A	#N/A	110	HDPE	New
PP-531	PJ-434	PJ-431	25.5	#N/A	#N/A	110	HDPE	New
PP-532	PJ-431	PJ-435	20	#N/A	#N/A	110	HDPE	New
PP-533	PJ-435	PJ-429	9.5	#N/A	#N/A	110	HDPE	New
PP-534	PJ-429	PJ-436	100.5	#N/A	#N/A	110	HDPE	New
PP-535	PJ-436	PJ-437	18	#N/A	#N/A	110	HDPE	New
PP-536	PJ-437	PJ-438	32.5	#N/A	#N/A	110	HDPE	New
PP-537	PJ-438	PJ-435	68	#N/A	#N/A	110	HDPE	New
PP-538	PJ-438	J-155	25	#N/A	#N/A	110	HDPE	New
PP-539	J-155	J-149	46.5	#N/A	#N/A	110	HDPE	New
PP-540	PJ-405	PJ-439	21	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-541	PJ-439	PJ-440	47	#N/A	#N/A	110	HDPE	New
PP-542	PJ-440	PJ-441	31	#N/A	#N/A	110	HDPE	New
PP-543	PJ-441	PJ-442	24.5	#N/A	#N/A	110	HDPE	New
PP-544	PJ-442	PJ-402	84	#N/A	#N/A	110	HDPE	New
PP-545	PJ-401	PJ-443	36	#N/A	#N/A	110	HDPE	New
PP-546	PJ-443	PJ-444	27.5	#N/A	#N/A	110	HDPE	New
PP-547	PJ-444	PJ-442	50	#N/A	#N/A	110	HDPE	New
PP-548	PJ-444	PJ-445	32.5	#N/A	#N/A	110	HDPE	New
PP-549	PJ-445	PJ-446	22	#N/A	#N/A	110	HDPE	New
PP-550	PJ-446	PJ-443	31.5	#N/A	#N/A	110	HDPE	New
PP-551	PJ-445	PJ-447	13.5	#N/A	#N/A	110	HDPE	New
PP-552	PJ-439	PJ-448	34	#N/A	#N/A	110	HDPE	New
PP-553	PJ-448	PJ-407	31.5	#N/A	#N/A	110	HDPE	New
PP-554	PJ-409	PJ-449	38.5	#N/A	#N/A	110	HDPE	New
PP-555	PJ-449	PJ-448	36	#N/A	#N/A	110	HDPE	New
PP-556	PJ-440	PJ-450	32.5	#N/A	#N/A	110	HDPE	New
PP-557	PJ-450	PJ-448	46	#N/A	#N/A	110	HDPE	New
PP-558	PJ-441	PJ-451	39	#N/A	#N/A	110	HDPE	New
PP-559	PJ-451	PJ-452	32.5	#N/A	#N/A	110	HDPE	New
PP-560	PJ-452	PJ-453	26	#N/A	#N/A	110	HDPE	New
PP-561	PJ-453	PJ-450	35.5	#N/A	#N/A	110	HDPE	New
PP-562	PJ-451	PJ-454	64.5	#N/A	#N/A	110	HDPE	New
PP-563	PJ-454	PJ-455	50.5	#N/A	#N/A	110	HDPE	New
PP-564	PJ-456	PJ-452	155	#N/A	#N/A	110	HDPE	New
PP-565	PJ-452	PJ-457	36	#N/A	#N/A	110	HDPE	New
PP-566	PJ-457	PJ-458	26	#N/A	#N/A	110	HDPE	New
PP-567	PJ-458	PJ-453	37	#N/A	#N/A	110	HDPE	New
PP-568	PJ-458	PJ-459	34	#N/A	#N/A	110	HDPE	New
PP-569	PJ-459	PJ-449	49.5	#N/A	#N/A	110	HDPE	New
PP-570	PJ-449	PJ-460	34.5	#N/A	#N/A	110	HDPE	New
PP-571	PJ-460	PJ-461	29	#N/A	#N/A	110	HDPE	New
PP-572	PJ-461	PJ-410	14.5	#N/A	#N/A	110	HDPE	New
PP-573	PJ-461	PJ-436	42	#N/A	#N/A	110	HDPE	New
PP-574	PJ-437	PJ-462	31	#N/A	#N/A	110	HDPE	New
PP-575	PJ-462	PJ-460	62	#N/A	#N/A	110	HDPE	New
PP-576	PJ-460	PJ-463	30.5	#N/A	#N/A	110	HDPE	New
PP-577	PJ-463	PJ-464	64.5	#N/A	#N/A	110	HDPE	New
PP-578	PJ-464	PJ-462	30	#N/A	#N/A	110	HDPE	New
PP-579	PJ-459	PJ-465	111.5	#N/A	#N/A	110	HDPE	New
PP-580	PJ-465	PJ-466	21	#N/A	#N/A	110	HDPE	New
PP-581	PJ-466	PJ-464	10.5	#N/A	#N/A	110	HDPE	New
PP-582	PJ-458	PJ-467	113.5	#N/A	#N/A	110	HDPE	New
PP-583	PJ-467	PJ-465	36.5	#N/A	#N/A	110	HDPE	New
PP-584	PJ-457	PJ-468	47.5	#N/A	#N/A	110	HDPE	New
PP-585	PJ-468	PJ-469	37	#N/A	#N/A	110	HDPE	New
PP-586	PJ-469	PJ-470	112	#N/A	#N/A	110	HDPE	New
PP-587	PJ-470	PJ-471	10.5	#N/A	#N/A	110	HDPE	New
PP-588	PJ-470	J-279	29	#N/A	#N/A	110	HDPE	New
PP-589	PJ-469	PJ-472	41.5	#N/A	#N/A	110	HDPE	New
PP-590	PJ-472	J-283	23.5	#N/A	#N/A	110	HDPE	New
PP-591	J-283	J-282	23	#N/A	#N/A	110	HDPE	New
PP-592	PJ-472	PJ-473	96	#N/A	#N/A	110	HDPE	New
PP-593	PJ-473	J-284	28	#N/A	#N/A	110	HDPE	New
PP-594	J-284	J-286	23.5	#N/A	#N/A	110	HDPE	New
PP-595	J-286	J-289	77	#N/A	#N/A	110	HDPE	New
PP-596	J-289	PJ-474	65.5	#N/A	#N/A	110	HDPE	New
PP-597	PJ-475	PJ-476	13	#N/A	#N/A	110	HDPE	New
PP-598	PJ-476	J-290	51.5	#N/A	#N/A	110	HDPE	New
PP-599	J-290	PJ-476	61	#N/A	#N/A	110	HDPE	New
PP-600	J-290	J-287	75	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-601	J-287	PJ-477	13	#N/A	#N/A	110	HDPE	New
PP-602	PJ-477	J-290	76.5	#N/A	#N/A	110	HDPE	New
PP-603	PJ-477	J-166	59.5	#N/A	#N/A	110	HDPE	New
PP-604	J-287	J-165	62.5	#N/A	#N/A	110	HDPE	New
PP-605	J-165	PJ-478	13.5	#N/A	#N/A	110	HDPE	New
PP-606	PJ-478	PJ-479	32.5	#N/A	#N/A	110	HDPE	New
PP-607	PJ-479	PJ-473	25	#N/A	#N/A	110	HDPE	New
PP-608	PJ-479	PJ-480	12.5	#N/A	#N/A	110	HDPE	New
PP-609	PJ-480	PJ-481	18.5	#N/A	#N/A	110	HDPE	New
PP-610	PJ-481	PJ-482	29	#N/A	#N/A	110	HDPE	New
PP-611	PJ-482	PJ-483	29.5	#N/A	#N/A	110	HDPE	New
PP-612	PJ-483	PJ-468	57.5	#N/A	#N/A	110	HDPE	New
PP-613	PJ-457	PJ-484	63	#N/A	#N/A	110	HDPE	New
PP-614	PJ-484	PJ-485	26.5	#N/A	#N/A	110	HDPE	New
PP-615	PJ-485	PJ-486	13.5	#N/A	#N/A	110	HDPE	New
PP-616	PJ-484	PJ-483	41.5	#N/A	#N/A	110	HDPE	New
PP-617	PJ-485	PJ-482	39	#N/A	#N/A	110	HDPE	New
PP-618	PJ-481	PJ-467	71	#N/A	#N/A	110	HDPE	New
PP-619	PJ-466	PJ-487	19.5	#N/A	#N/A	110	HDPE	New
PP-620	PJ-487	PJ-488	71	#N/A	#N/A	110	HDPE	New
PP-621	PJ-487	PJ-489	12	#N/A	#N/A	110	HDPE	New
PP-622	PJ-489	PJ-490	27.5	#N/A	#N/A	110	HDPE	New
PP-623	PJ-490	J-160	27.5	#N/A	#N/A	110	HDPE	New
PP-624	PJ-490	J-162	37	#N/A	#N/A	110	HDPE	New
PP-625	J-162	PJ-491	52	#N/A	#N/A	110	HDPE	New
PP-626	PJ-491	J-164	9.5	#N/A	#N/A	110	HDPE	New
PP-627	PJ-491	PJ-492	5.5	#N/A	#N/A	110	HDPE	New
PP-628	PJ-492	PJ-493	21.5	#N/A	#N/A	110	HDPE	New
PP-629	PJ-493	PJ-489	97	#N/A	#N/A	110	HDPE	New
PP-630	PJ-493	PJ-494	12.5	#N/A	#N/A	110	HDPE	New
PP-631	PJ-494	PJ-480	32	#N/A	#N/A	110	HDPE	New
PP-632	PJ-478	PJ-492	46	#N/A	#N/A	110	HDPE	New
PP-633	J-169	PJ-495	33	#N/A	#N/A	110	HDPE	New
PP-634	PJ-495	J-172	50.5	#N/A	#N/A	110	HDPE	New
PP-635	PJ-495	PJ-496	29.5	#N/A	#N/A	110	HDPE	New
PP-636	PJ-496	J-183	48	#N/A	#N/A	110	HDPE	New
PP-637	J-183	J-261	19	#N/A	#N/A	110	HDPE	New
PP-638	J-261	J-182	12	#N/A	#N/A	110	HDPE	New
PP-639	J-182	J-259	26	#N/A	#N/A	110	HDPE	New
PP-640	PJ-369	PJ-497	21	#N/A	#N/A	160	HDPE	New
PP-641	PJ-497	PJ-498	32.5	#N/A	#N/A	160	HDPE	New
PP-642	PJ-498	PJ-499	33	#N/A	#N/A	140	HDPE	New
PP-643	PJ-499	PJ-500	32	#N/A	#N/A	140	HDPE	New
PP-644	PJ-500	PJ-501	34	#N/A	#N/A	140	HDPE	New
PP-645	PJ-501	PJ-502	58.5	#N/A	#N/A	125	HDPE	New
PP-646	PJ-502	PJ-503	24.5	#N/A	#N/A	110	HDPE	New
PP-647	PJ-503	PJ-504	32	#N/A	#N/A	110	HDPE	New
PP-648	PJ-504	PJ-505	26	#N/A	#N/A	110	HDPE	New
PP-649	PJ-505	PJ-506	27	#N/A	#N/A	110	HDPE	New
PP-650	PJ-506	PJ-507	75.5	#N/A	#N/A	110	HDPE	New
PP-651	PJ-507	PJ-508	26.5	#N/A	#N/A	110	HDPE	New
PP-652	PJ-508	PJ-509	30.5	#N/A	#N/A	110	HDPE	New
PP-653	PJ-509	PJ-510	29.5	#N/A	#N/A	110	HDPE	New
PP-654	PJ-510	PJ-511	35	#N/A	#N/A	110	HDPE	New
PP-655	PJ-511	PJ-512	42	#N/A	#N/A	110	HDPE	New
PP-656	PJ-512	PJ-513	18	#N/A	#N/A	140	HDPE	New
PP-657	PJ-513	PJ-514	32	#N/A	#N/A	140	HDPE	New
PP-658	PJ-514	PJ-515	33	#N/A	#N/A	140	HDPE	New
PP-659	PJ-515	PJ-516	32.5	#N/A	#N/A	140	HDPE	New
PP-660	PJ-516	PJ-517	34	#N/A	#N/A	125	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-661	PJ-517	J-121	35	#N/A	#N/A	110	HDPE	New
PP-662	PJ-368	J-121	54.5	#N/A	#N/A	110	HDPE	New
PP-663	J-122	PJ-367	83	#N/A	#N/A	110	HDPE	New
PP-664	PJ-497	PJ-517	82	#N/A	#N/A	110	HDPE	New
PP-665	PJ-498	PJ-516	82	#N/A	#N/A	110	HDPE	New
PP-666	PJ-499	PJ-515	83	#N/A	#N/A	110	HDPE	New
PP-667	PJ-500	PJ-514	81.5	#N/A	#N/A	110	HDPE	New
PP-668	PJ-501	PJ-518	31	#N/A	#N/A	110	HDPE	New
PP-669	PJ-518	PJ-513	50	#N/A	#N/A	110	HDPE	New
PP-670	PJ-518	PJ-519	32.5	#N/A	#N/A	110	HDPE	New
PP-671	PJ-502	PJ-511	75	#N/A	#N/A	110	HDPE	New
PP-672	PJ-511	PJ-520	112	#N/A	#N/A	110	HDPE	New
PP-673	PJ-520	PJ-521	32	#N/A	#N/A	140	HDPE	New
PP-674	PJ-521	PJ-522	68	#N/A	#N/A	110	HDPE	New
PP-675	PJ-522	PJ-512	32	#N/A	#N/A	110	HDPE	New
PP-676	PJ-522	PJ-523	56	#N/A	#N/A	110	HDPE	New
PP-677	PJ-523	PJ-524	22	#N/A	#N/A	110	HDPE	New
PP-678	PJ-524	PJ-514	62.5	#N/A	#N/A	110	HDPE	New
PP-679	PJ-524	PJ-525	42.5	#N/A	#N/A	110	HDPE	New
PP-680	PJ-523	PJ-526	37.5	#N/A	#N/A	110	HDPE	New
PP-681	PJ-526	PJ-521	30.5	#N/A	#N/A	110	HDPE	New
PP-682	PJ-526	PJ-527	54.5	#N/A	#N/A	110	HDPE	New
PP-683	PJ-527	PJ-528	34	#N/A	#N/A	125	HDPE	New
PP-684	PJ-528	PJ-366	205	#N/A	#N/A	110	HDPE	New
PP-685	PJ-529	PJ-528	30.5	#N/A	#N/A	110	HDPE	New
PP-686	PJ-503	PJ-510	75.5	#N/A	#N/A	110	HDPE	New
PP-687	PJ-510	PJ-530	112	#N/A	#N/A	110	HDPE	New
PP-688	PJ-530	PJ-520	34	#N/A	#N/A	110	HDPE	New
PP-689	PJ-530	PJ-531	30.5	#N/A	#N/A	110	HDPE	New
PP-690	PJ-531	PJ-509	111.5	#N/A	#N/A	110	HDPE	New
PP-691	PJ-509	PJ-504	77	#N/A	#N/A	110	HDPE	New
PP-692	PJ-505	PJ-508	76	#N/A	#N/A	110	HDPE	New
PP-693	PJ-508	PJ-532	111	#N/A	#N/A	110	HDPE	New
PP-694	PJ-532	PJ-531	30.5	#N/A	#N/A	110	HDPE	New
PP-695	PJ-531	PJ-533	83	#N/A	#N/A	110	HDPE	New
PP-696	PJ-533	PJ-534	29.5	#N/A	#N/A	140	HDPE	New
PP-697	PJ-534	PJ-530	82	#N/A	#N/A	110	HDPE	New
PP-698	PJ-533	PJ-535	31	#N/A	#N/A	110	HDPE	New
PP-699	PJ-535	PJ-532	84.5	#N/A	#N/A	110	HDPE	New
PP-700	PJ-532	PJ-536	28.5	#N/A	#N/A	110	HDPE	New
PP-701	PJ-536	PJ-507	113	#N/A	#N/A	110	HDPE	New
PP-702	PJ-536	PJ-537	83	#N/A	#N/A	110	HDPE	New
PP-703	PJ-537	PJ-535	28.5	#N/A	#N/A	110	HDPE	New
PP-704	PJ-520	PJ-538	32	#N/A	#N/A	160	HDPE	New
PP-705	PJ-538	PJ-539	118.5	#N/A	#N/A	110	HDPE	New
PP-706	PJ-539	PJ-527	37	#N/A	#N/A	125	HDPE	New
PP-707	PJ-539	PJ-540	27	#N/A	#N/A	110	HDPE	New
PP-708	PJ-540	PJ-541	116	#N/A	#N/A	110	HDPE	New
PP-709	PJ-541	PJ-538	23.5	#N/A	#N/A	160	HDPE	New
PP-710	PJ-541	PJ-542	30.5	#N/A	#N/A	180	HDPE	New
PP-711	PJ-542	PJ-534	38.5	#N/A	#N/A	160	HDPE	New
PP-712	PJ-542	PJ-543	197.5	#N/A	#N/A	110	HDPE	New
PP-713	PJ-543	J-336	22.5	#N/A	#N/A	110	HDPE	New
PP-714	J-336	PJ-544	20.5	#N/A	#N/A	140	HDPE	New
PP-715	PJ-544	PJ-545	193.5	#N/A	#N/A	125	HDPE	New
PP-716	PJ-545	PJ-542	42.5	#N/A	#N/A	250	HDPE	New
PP-717	PJ-545	PJ-546	176.5	#N/A	#N/A	160	HDPE	New
PP-718	PJ-546	PJ-547	64.5	#N/A	#N/A	160	HDPE	New
PP-719	PJ-547	PJ-548	175.5	#N/A	#N/A	140	HDPE	New
PP-720	PJ-548	PJ-545	65	#N/A	#N/A	200	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-721	PJ-537	PJ-549	60.5	#N/A	#N/A	110	HDPE	New
PP-722	PJ-549	PJ-550	50.5	#N/A	#N/A	110	HDPE	New
PP-723	PJ-544	PJ-551	31.5	#N/A	#N/A	125	HDPE	New
PP-724	PJ-551	J-334	77.5	#N/A	#N/A	140	HDPE	New
PP-725	PJ-551	PJ-552	35	#N/A	#N/A	160	HDPE	New
PP-726	PJ-552	PJ-553	8	#N/A	#N/A	125	HDPE	New
PP-727	PJ-553	PJ-554	74.5	#N/A	#N/A	110	HDPE	New
PP-728	PJ-554	PJ-555	34	#N/A	#N/A	140	HDPE	New
PP-729	PJ-555	J-332	37	#N/A	#N/A	200	HDPE	New
PP-730	PJ-555	PJ-556	44.5	#N/A	#N/A	110	HDPE	New
PP-731	PJ-556	PJ-557	33	#N/A	#N/A	110	HDPE	New
PP-732	PJ-557	PJ-558	44.5	#N/A	#N/A	110	HDPE	New
PP-733	PJ-558	PJ-555	27.5	#N/A	#N/A	140	HDPE	New
PP-734	PJ-553	PJ-559	31	#N/A	#N/A	125	HDPE	New
PP-735	PJ-559	PJ-554	37	#N/A	#N/A	125	HDPE	New
PP-736	PJ-558	PJ-559	31	#N/A	#N/A	160	HDPE	New
PP-737	PJ-559	PJ-560	31	#N/A	#N/A	200	HDPE	New
PP-738	PJ-560	PJ-561	38	#N/A	#N/A	180	HDPE	New
PP-739	PJ-561	PJ-562	102.5	#N/A	#N/A	125	HDPE	New
PP-740	PJ-562	PJ-563	32	#N/A	#N/A	125	HDPE	New
PP-741	PJ-563	PJ-564	33	#N/A	#N/A	110	HDPE	New
PP-742	PJ-564	PJ-565	32.5	#N/A	#N/A	125	HDPE	New
PP-743	PJ-565	PJ-566	37.5	#N/A	#N/A	140	HDPE	New
PP-744	PJ-566	PJ-561	27.5	#N/A	#N/A	160	HDPE	New
PP-745	PJ-566	PJ-567	75.5	#N/A	#N/A	110	HDPE	New
PP-746	PJ-567	PJ-568	35	#N/A	#N/A	125	HDPE	New
PP-747	PJ-568	PJ-565	76	#N/A	#N/A	110	HDPE	New
PP-748	PJ-564	PJ-569	75	#N/A	#N/A	110	HDPE	New
PP-749	PJ-569	PJ-568	33	#N/A	#N/A	125	HDPE	New
PP-750	PJ-563	PJ-570	77.5	#N/A	#N/A	125	HDPE	New
PP-751	PJ-570	PJ-569	34.5	#N/A	#N/A	140	HDPE	New
PP-752	PJ-563	PJ-571	35.5	#N/A	#N/A	110	HDPE	New
PP-753	PJ-571	PJ-572	75	#N/A	#N/A	125	HDPE	New
PP-754	PJ-572	PJ-570	33.5	#N/A	#N/A	160	HDPE	New
PP-755	PJ-570	PJ-573	41.5	#N/A	#N/A	140	HDPE	New
PP-756	PJ-573	PJ-574	56.5	#N/A	#N/A	160	HDPE	New
PP-757	PJ-574	PJ-575	48	#N/A	#N/A	160	HDPE	New
PP-758	PJ-575	PJ-567	37	#N/A	#N/A	110	HDPE	New
PP-759	PJ-560	PJ-576	142.5	#N/A	#N/A	125	HDPE	New
PP-760	PJ-576	PJ-575	36	#N/A	#N/A	140	HDPE	New
PP-761	PJ-575	J-45	206.5	#N/A	#N/A	110	HDPE	New
PP-762	J-45	PJ-577	32	#N/A	#N/A	140	HDPE	New
PP-763	PJ-577	PJ-578	23	#N/A	#N/A	125	HDPE	New
PP-764	PJ-578	PJ-576	211	#N/A	#N/A	110	HDPE	New
PP-765	PJ-557	PJ-579	88.5	#N/A	#N/A	110	HDPE	New
PP-766	PJ-579	PJ-580	49	#N/A	#N/A	125	HDPE	New
PP-767	PJ-580	PJ-581	37.5	#N/A	#N/A	140	HDPE	New
PP-768	PJ-581	PJ-578	118.5	#N/A	#N/A	140	HDPE	New
PP-769	PJ-577	J-58	45	#N/A	#N/A	110	HDPE	New
PP-770	J-58	PJ-582	63	#N/A	#N/A	140	HDPE	New
PP-771	PJ-582	PJ-583	194.5	#N/A	#N/A	125	HDPE	New
PP-772	PJ-583	PJ-581	32	#N/A	#N/A	110	HDPE	New
PP-773	J-342	PJ-583	28.5	#N/A	#N/A	125	HDPE	New
PP-774	PJ-580	J-341	63	#N/A	#N/A	110	HDPE	New
PP-775	PJ-579	J-340	83.5	#N/A	#N/A	110	HDPE	New
PP-776	J-316	PJ-584	286	#N/A	#N/A	125	HDPE	New
PP-777	PJ-584	PJ-582	26.5	#N/A	#N/A	110	HDPE	New
PP-778	PJ-584	PJ-585	39	#N/A	#N/A	125	HDPE	New
PP-779	PJ-585	J-62	52	#N/A	#N/A	125	HDPE	New
PP-780	J-62	PJ-586	87	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-781	PJ-586	PJ-587	30	#N/A	#N/A	110	HDPE	New
PP-782	PJ-587	PJ-588	26	#N/A	#N/A	110	HDPE	New
PP-783	J-61	PJ-587	78	#N/A	#N/A	110	HDPE	New
PP-784	PJ-586	PJ-589	198.5	#N/A	#N/A	110	HDPE	New
PP-785	PJ-589	PJ-590	125	#N/A	#N/A	110	HDPE	New
PP-786	PJ-590	PJ-591	56.5	#N/A	#N/A	110	HDPE	New
PP-787	PJ-591	PJ-592	26.5	#N/A	#N/A	110	HDPE	New
PP-788	PJ-590	PJ-593	268	#N/A	#N/A	110	HDPE	New
PP-789	PJ-593	PJ-594	59	#N/A	#N/A	110	HDPE	New
PP-790	PJ-594	PJ-595	271.5	#N/A	#N/A	110	HDPE	New
PP-791	PJ-595	PJ-596	174.5	#N/A	#N/A	110	HDPE	New
PP-792	PJ-596	PJ-597	267	#N/A	#N/A	110	HDPE	New
PP-793	PJ-597	PJ-591	404.5	#N/A	#N/A	110	HDPE	New
PP-794	PJ-585	PJ-598	54	#N/A	#N/A	110	HDPE	New
PP-795	J-45	J-44	87.5	#N/A	#N/A	160	HDPE	New
PP-796	J-44	J-23	124	#N/A	#N/A	140	HDPE	New
PP-797	J-23	PJ-599	17.5	#N/A	#N/A	140	HDPE	New
PP-798	PJ-599	PJ-573	67.5	#N/A	#N/A	160	HDPE	New
PP-799	PJ-573	PJ-600	84	#N/A	#N/A	125	HDPE	New
PP-800	PJ-600	PJ-599	46.5	#N/A	#N/A	110	HDPE	New
PP-801	PJ-600	PJ-601	66	#N/A	#N/A	140	HDPE	New
PP-802	PJ-601	J-21	11.5	#N/A	#N/A	250	HDPE	New
PP-803	J-21	J-15	40	#N/A	#N/A	160	HDPE	New
PP-804	J-15	PJ-602	16.5	#N/A	#N/A	160	HDPE	New
PP-805	PJ-602	PJ-603	33	#N/A	#N/A	125	HDPE	New
PP-806	PJ-603	PJ-604	32.5	#N/A	#N/A	160	HDPE	New
PP-807	PJ-604	PJ-605	60.5	#N/A	#N/A	200	HDPE	New
PP-808	PJ-605	PJ-606	44	#N/A	#N/A	200	HDPE	New
PP-809	PJ-606	PJ-607	55	#N/A	#N/A	200	HDPE	New
PP-810	PJ-607	PJ-608	20	#N/A	#N/A	250	HDPE	New
PP-811	PJ-608	PJ-609	114.5	#N/A	#N/A	250	HDPE	New
PP-812	PJ-609	PJ-610	45	#N/A	#N/A	250	HDPE	New
PP-813	PJ-610	PJ-611	39.5	#N/A	#N/A	110	HDPE	New
PP-814	PJ-608	J-2	127.5	#N/A	#N/A	140	HDPE	New
PP-815	J-2	PJ-612	24	#N/A	#N/A	160	HDPE	New
PP-816	PJ-612	PJ-613	34	#N/A	#N/A	110	HDPE	New
PP-817	PJ-612	PJ-614	116.5	#N/A	#N/A	160	HDPE	New
PP-818	PJ-614	PJ-610	33	#N/A	#N/A	250	HDPE	New
PP-819	PJ-609	J-1	30.5	#N/A	#N/A	315	HDPE	New
PP-820	J-1	PJ-614	49.5	#N/A	#N/A	200	HDPE	New
PP-821	PJ-607	J-4	120.5	#N/A	#N/A	125	HDPE	New
PP-822	PJ-606	J-6	74	#N/A	#N/A	110	HDPE	New
PP-823	PJ-605	J-7	57	#N/A	#N/A	110	HDPE	New
PP-824	J-7	PJ-603	85.5	#N/A	#N/A	180	HDPE	New
PP-825	PJ-604	PJ-615	12	#N/A	#N/A	250	HDPE	New
PP-826	PJ-615	PJ-547	82.5	#N/A	#N/A	200	HDPE	New
PP-827	PJ-615	PJ-616	160.5	#N/A	#N/A	125	HDPE	New
PP-828	PJ-616	PJ-571	32.5	#N/A	#N/A	200	HDPE	New
PP-829	PJ-616	PJ-617	38.5	#N/A	#N/A	180	HDPE	New
PP-830	PJ-617	PJ-602	119.5	#N/A	#N/A	160	HDPE	New
PP-831	PJ-601	PJ-618	61.5	#N/A	#N/A	180	HDPE	New
PP-832	PJ-618	PJ-572	35	#N/A	#N/A	180	HDPE	New
PP-833	PJ-617	PJ-618	37	#N/A	#N/A	110	HDPE	New
PP-834	PJ-571	PJ-548	68	#N/A	#N/A	200	HDPE	New
PP-835	PJ-548	PJ-552	194	#N/A	#N/A	140	HDPE	New
PP-836	J-55	J-59	27	#N/A	#N/A	110	HDPE	New
PP-837	J-59	PJ-619	15.5	#N/A	#N/A	110	HDPE	New
PP-838	PJ-619	PJ-620	25	#N/A	#N/A	110	HDPE	New
PP-839	PJ-620	PJ-621	44	#N/A	#N/A	110	HDPE	New
PP-840	J-56	PJ-619	47	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-841	J-57	PJ-620	47	#N/A	#N/A	110	HDPE	New
PP-842	J-65	PJ-622	43.5	#N/A	#N/A	110	HDPE	New
PP-843	PJ-622	PJ-623	32	#N/A	#N/A	110	HDPE	New
PP-844	PJ-623	PJ-624	32.5	#N/A	#N/A	110	HDPE	New
PP-845	PJ-624	PJ-625	36	#N/A	#N/A	125	HDPE	New
PP-846	PJ-625	PJ-626	34	#N/A	#N/A	110	HDPE	New
PP-847	PJ-626	PJ-627	33.5	#N/A	#N/A	110	HDPE	New
PP-848	PJ-627	PJ-628	34.5	#N/A	#N/A	110	HDPE	New
PP-849	PJ-628	PJ-629	66.5	#N/A	#N/A	110	HDPE	New
PP-850	PJ-629	PJ-630	42	#N/A	#N/A	110	HDPE	New
PP-851	PJ-631	PJ-627	49.5	#N/A	#N/A	110	HDPE	New
PP-852	PJ-627	PJ-632	65.5	#N/A	#N/A	110	HDPE	New
PP-853	PJ-632	PJ-629	34	#N/A	#N/A	110	HDPE	New
PP-854	PJ-633	PJ-632	43	#N/A	#N/A	110	HDPE	New
PP-855	PJ-632	PJ-634	35.5	#N/A	#N/A	110	HDPE	New
PP-856	PJ-634	PJ-626	66.5	#N/A	#N/A	110	HDPE	New
PP-857	PJ-626	PJ-635	50.5	#N/A	#N/A	110	HDPE	New
PP-858	PJ-636	PJ-625	48	#N/A	#N/A	110	HDPE	New
PP-859	PJ-625	PJ-637	68.5	#N/A	#N/A	110	HDPE	New
PP-860	PJ-637	PJ-634	33	#N/A	#N/A	110	HDPE	New
PP-861	PJ-634	PJ-638	43	#N/A	#N/A	110	HDPE	New
PP-862	PJ-639	PJ-624	50	#N/A	#N/A	110	HDPE	New
PP-863	PJ-624	PJ-640	35	#N/A	#N/A	110	HDPE	New
PP-864	PJ-640	PJ-641	33	#N/A	#N/A	110	HDPE	New
PP-865	PJ-641	PJ-637	34	#N/A	#N/A	125	HDPE	New
PP-866	PJ-637	PJ-642	280.5	#N/A	#N/A	140	HDPE	New
PP-867	PJ-642	PJ-643	102.5	#N/A	#N/A	110	HDPE	New
PP-868	PJ-644	PJ-641	10.5	#N/A	#N/A	110	HDPE	New
PP-869	PJ-641	J-68	116.5	#N/A	#N/A	110	HDPE	New
PP-870	J-66	PJ-640	113.5	#N/A	#N/A	110	HDPE	New
PP-871	PJ-645	PJ-623	49	#N/A	#N/A	110	HDPE	New
PP-872	PJ-646	PJ-622	52.5	#N/A	#N/A	110	HDPE	New
PP-873	J-64	PJ-647	40.5	#N/A	#N/A	110	HDPE	New
PP-874	PJ-647	PJ-648	31	#N/A	#N/A	110	HDPE	New
PP-875	PJ-648	PJ-649	30	#N/A	#N/A	110	HDPE	New
PP-876	PJ-649	PJ-650	30.5	#N/A	#N/A	110	HDPE	New
PP-877	PJ-650	PJ-651	84.5	#N/A	#N/A	110	HDPE	New
PP-878	PJ-651	PJ-652	29	#N/A	#N/A	110	HDPE	New
PP-879	PJ-652	PJ-649	86	#N/A	#N/A	110	HDPE	New
PP-880	PJ-648	PJ-653	84.5	#N/A	#N/A	110	HDPE	New
PP-881	PJ-653	PJ-652	31.5	#N/A	#N/A	110	HDPE	New
PP-882	PJ-647	PJ-654	84	#N/A	#N/A	110	HDPE	New
PP-883	PJ-654	PJ-653	30	#N/A	#N/A	110	HDPE	New
PP-884	PJ-653	PJ-655	34.5	#N/A	#N/A	110	HDPE	New
PP-885	PJ-655	J-69	52	#N/A	#N/A	110	HDPE	New
PP-886	PJ-654	J-67	28.5	#N/A	#N/A	110	HDPE	New
PP-887	PJ-656	PJ-657	91	#N/A	#N/A	110	HDPE	New
PP-888	PJ-657	PJ-651	39.5	#N/A	#N/A	110	HDPE	New
PP-889	PJ-651	PJ-658	35.5	#N/A	#N/A	110	HDPE	New
PP-890	PJ-658	PJ-659	40.5	#N/A	#N/A	110	HDPE	New
PP-891	PJ-659	PJ-657	32.5	#N/A	#N/A	110	HDPE	New
PP-892	PJ-659	PJ-660	41.5	#N/A	#N/A	110	HDPE	New
PP-893	PJ-658	PJ-655	62	#N/A	#N/A	110	HDPE	New
PP-894	PJ-661	PJ-662	241	#N/A	#N/A	110	HDPE	New
PP-895	PJ-662	PJ-663	80	#N/A	#N/A	110	HDPE	New
PP-896	PJ-663	PJ-664	74	#N/A	#N/A	110	HDPE	New
PP-897	PJ-664	PJ-665	71	#N/A	#N/A	110	HDPE	New
PP-898	PJ-665	J-41	41	#N/A	#N/A	110	HDPE	New
PP-899	J-41	J-52	134.5	#N/A	#N/A	110	HDPE	New
PP-900	J-52	PJ-666	8.5	#N/A	#N/A	110	HDPE	New

BOQ for Z16								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-901	PJ-666	PJ-589	54.5	#N/A	#N/A	110	HDPE	New
PP-902	PJ-666	PJ-667	38.5	#N/A	#N/A	110	HDPE	New
PP-903	PJ-667	PJ-668	246	#N/A	#N/A	110	HDPE	New
PP-904	PJ-668	PJ-669	21.5	#N/A	#N/A	110	HDPE	New
PP-905	PJ-669	PJ-593	71	#N/A	#N/A	110	HDPE	New
PP-906	PJ-593	PJ-670	165	#N/A	#N/A	110	HDPE	New
PP-907	PJ-670	PJ-671	58.5	#N/A	#N/A	110	HDPE	New
PP-908	PJ-670	PJ-672	113.5	#N/A	#N/A	110	HDPE	New
PP-909	PJ-672	PJ-673	49	#N/A	#N/A	110	HDPE	New
PP-910	PJ-673	PJ-674	63	#N/A	#N/A	110	HDPE	New
PP-911	PJ-674	PJ-675	24.5	#N/A	#N/A	110	HDPE	New
PP-912	PJ-675	PJ-676	36.5	#N/A	#N/A	110	HDPE	New
PP-913	PJ-676	PJ-677	119	#N/A	#N/A	110	HDPE	New
PP-914	PJ-677	PJ-678	130	#N/A	#N/A	110	HDPE	New
PP-915	PJ-678	PJ-679	140	#N/A	#N/A	110	HDPE	New
PP-916	PJ-679	PJ-596	280	#N/A	#N/A	110	HDPE	New
PP-917	PJ-594	PJ-673	268	#N/A	#N/A	110	HDPE	New
PP-918	PJ-674	PJ-680	175	#N/A	#N/A	110	HDPE	New
PP-919	PJ-681	PJ-675	54.5	#N/A	#N/A	110	HDPE	New
PP-920	PJ-676	PJ-682	52.5	#N/A	#N/A	110	HDPE	New
PP-921	PJ-672	PJ-683	75.5	#N/A	#N/A	110	HDPE	New
PP-922	PJ-683	PJ-684	84.5	#N/A	#N/A	110	HDPE	New
PP-923	PJ-683	PJ-685	184.5	#N/A	#N/A	110	HDPE	New
PP-924	PJ-683	PJ-686	91.5	#N/A	#N/A	110	HDPE	New
PP-925	PJ-686	PJ-687	116.5	#N/A	#N/A	110	HDPE	New
PP-926	PJ-686	PJ-688	11	#N/A	#N/A	110	HDPE	New
PP-927	PJ-688	PJ-689	72.5	#N/A	#N/A	110	HDPE	New
PP-928	PJ-688	PJ-690	19.5	#N/A	#N/A	110	HDPE	New
PP-929	PJ-690	PJ-691	60	#N/A	#N/A	110	HDPE	New
PP-930	PJ-690	PJ-692	33.5	#N/A	#N/A	125	HDPE	New
PP-931	PJ-692	PJ-693	109.5	#N/A	#N/A	110	HDPE	New
PP-932	PJ-662	PJ-694	82.5	#N/A	#N/A	110	HDPE	New
PP-933	PJ-694	PJ-695	52.5	#N/A	#N/A	110	HDPE	New
PP-934	PJ-694	PJ-696	43.5	#N/A	#N/A	110	HDPE	New
PP-935	PJ-696	PJ-692	22	#N/A	#N/A	125	HDPE	New
PP-936	PJ-696	PJ-642	81	#N/A	#N/A	140	HDPE	New
PP-937	J-39	PJ-697	40.5	#N/A	#N/A	110	HDPE	New
PP-938	PJ-697	PJ-698	27.5	#N/A	#N/A	110	HDPE	New
PP-939	PJ-698	PJ-665	136	#N/A	#N/A	110	HDPE	New
PP-940	PJ-697	PJ-699	137	#N/A	#N/A	110	HDPE	New
PP-941	PJ-700	PJ-664	92	#N/A	#N/A	110	HDPE	New
PP-942	PJ-664	PJ-701	93	#N/A	#N/A	110	HDPE	New
PP-943	PJ-701	PJ-702	3	#N/A	#N/A	110	HDPE	New
PP-944	PJ-702	PJ-703	54	#N/A	#N/A	110	HDPE	New
PP-945	PJ-702	PJ-668	26	#N/A	#N/A	110	HDPE	New
PP-946	PJ-669	PJ-704	50.5	#N/A	#N/A	110	HDPE	New
PP-947	PJ-701	PJ-705	60	#N/A	#N/A	110	HDPE	New
PP-948	J-272	J-275	29.5	#N/A	#N/A	110	HDPE	New
PP-949	PJ-609	PJ-706	138.5	#N/A	#N/A	160	HDPE	New
PP-950	T-1	PJ-609	21	#N/A	#N/A	400	HDPE	New
PP-951	J-116	J-276	25.5	#N/A	#N/A	160	HDPE	New
PP-952	J-276	J-105	37.5	#N/A	#N/A	160	HDPE	New
PP-953	J-208	J-210	21.5	#N/A	#N/A	160	HDPE	New
			54339.50					

Zone -17

Distribution Network Design Output: Zone 17

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	59	21.415	21.427	19.88169	J-1	J-2	232.65	-12,277.57	8,933.38	180	0.78	3.17	19.88169	HDPE	145	0.19
P-10	24	20.688	20.038	6.3562	J-11	J-12	232.55	-12,446.28	8,934.71	110	0.67	4.23	6.3562	HDPE	145	0.1
P-100	27.5	19.682	19.919	-3.41265	J-82	J-78	233.3	-12,271.87	8,634.76	110	0.36	1.34	3.41265	HDPE	145	0.04
P-101	35.5	19.872	19.872	0.08076	J-81	J-83	233.1	-12,338.32	8,628.58	110	0.01	0	0.08076	HDPE	145	0
P-102	58.5	19.682	20.403	1.95489	J-82	J-84	233.3	-12,271.87	8,634.76	110	0.21	0.48	1.95489	HDPE	145	0.03
P-103	54	20.403	19.654	0.12282	J-84	J-85	232.55	-12,271.13	8,576.46	110	0.01	0	0.12282	HDPE	145	0
P-104	115	20.403	19.828	1.31482	J-84	J-86	232.55	-12,271.13	8,576.46	110	0.14	0.23	1.31482	HDPE	145	0.03
P-105	60.5	19.828	20.501	-1.79041	J-86	J-87	233.1	-12,156.27	8,567.82	110	0.19	0.4	1.79041	HDPE	145	0.02
P-106	47.5	20.501	19.683	-2.26661	J-87	J-88	232.45	-12,165.16	8,627.59	110	0.24	0.63	2.26661	HDPE	145	0.03
P-107	62.5	19.683	19.682	0.09202	J-88	J-82	233.3	-12,211.60	8,617.71	110	0.01	0	0.09202	HDPE	145	0
P-108	31.5	19.683	19.909	-2.68037	J-88	J-89	233.3	-12,211.60	8,617.71	110	0.28	0.85	2.68037	HDPE	145	0.03
P-109	37.5	19.909	20.618	-3.76708	J-89	J-90	233.1	-12,212.34	8,649.33	110	0.4	1.6	3.76708	HDPE	145	0.06
P-11	33.5	20.038	20.585	0.59722	J-12	J-13	233.1	-12,469.99	8,932.48	110	0.06	0.05	0.59722	HDPE	145	0
P-110	49.5	20.618	19.868	-4.23809	J-90	J-91	232.45	-12,213.08	8,686.63	110	0.45	2	4.23809	HDPE	145	0.1
P-111	16	19.868	20.101	-6.06723	J-91	J-92	233.3	-12,214.81	8,736.28	125	0.49	2.08	6.06723	HDPE	145	0.03
P-112	30.5	20.101	19.916	-1.97047	J-92	J-93	233.1	-12,230.37	8,732.82	110	0.21	0.48	1.97047	HDPE	145	0.01
P-113	35.5	19.916	19.819	5.01358	J-93	J-94	233.3	-12,260.51	8,727.39	110	0.53	2.72	5.01358	uPVC	145	0.1
P-1139	21.5	18.599	18.544	7.46944	J-386	J-387	232.68	-11,679.65	8,700.55	125	0.61	3.06	7.46944	HDPE	145	0.07
P-114	15	19.819	19.812	1.94702	J-94	J-77	233.3	-12,260.26	8,691.82	110	0.2	0.47	1.94702	HDPE	145	0.01
P-115	35	19.86	20.177	-7.88709	J-76	J-95	233.3	-12,302.75	8,689.59	125	0.64	3.38	7.88709	HDPE	145	0.12
P-116	28.5	20.177	20.928	-8.14524	J-95	J-96	233.1	-12,304.48	8,724.67	125	0.66	3.59	8.14524	HDPE	145	0.1
P-117	17.5	20.928	20.121	-4.63076	J-96	J-97	232.45	-12,305.96	8,753.32	110	0.49	2.35	4.63076	HDPE	145	0.04
P-118	47	20.121	20.791	3.85408	J-97	J-98	233.3	-12,304.48	8,770.61	110	0.41	1.67	3.85408	HDPE	145	0.08
P-119	44	20.791	19.916	7.23417	J-98	J-93	232.55	-12,260.26	8,771.36	125	0.59	2.88	7.23417	HDPE	145	0.13
P-12	18.5	20.585	20.756	-6.03637	J-13	J-14	232.55	-12,472.21	8,966.08	110	0.64	3.84	6.03637	HDPE	145	0.07
P-120	25	20.177	20.177	-0.05689	J-99	J-95	233.1	-12,329.67	8,723.44	110	0.01	0	0.05689	HDPE	145	0
P-121	21	20.08	20.928	-0.0478	J-100	J-96	233.3	-12,284.72	8,753.82	110	0.01	0	0.0478	HDPE	145	0
P-122	48.5	20.928	21.008	-3.82492	J-96	J-101	232.45	-12,305.96	8,753.32	110	0.4	1.65	3.82492	HDPE	145	0.08
P-123	37.5	21.008	20.228	-4.02049	J-101	J-102	232.45	-12,354.38	8,753.82	110	0.42	1.81	4.02049	HDPE	145	0.07
P-124	39	20.228	20.548	-7.5246	J-102	J-103	233.3	-12,352.15	8,791.36	125	0.61	3.1	7.5246	HDPE	145	0.12

P-125	31.5	20.548	20.214	8.92941	J-103	J-104	233.1	-12,347.71	8,830.15	125	0.73	4.26	8.92941	HDPE	145	0.13
P-126	39.5	20.214	21.033	2.52191	J-104	J-105	233.3	-12,379.08	8,833.11	110	0.27	0.76	2.52191	HDPE	145	0.03
P-127	35.5	21.033	20.228	-3.24944	J-105	J-102	232.45	-12,387.48	8,794.58	110	0.34	1.22	3.24944	HDPE	145	0.04
P-128	7.5	20.857	20.878	-5.01525	J-57	J-106	232.45	-12,429.55	8,844.67	110	0.53	2.73	5.01525	HDPE	145	0.02
P-129	13.5	20.878	20.229	0.03075	J-106	J-107	232.45	-12,430.21	8,837.31	110	0	0	0.03075	HDPE	145	0
P-13	55.5	20.756	20.036	-3.51534	J-14	J-15	232.45	-12,473.94	8,984.36	110	0.37	1.41	3.51534	HDPE	145	0.08
P-130	18	20.878	20.929	-5.13473	J-106	J-108	232.45	-12,430.21	8,837.31	110	0.54	2.85	5.13473	HDPE	145	0.05
P-131	33.5	20.929	20.214	-6.16988	J-108	J-104	232.45	-12,412.42	8,835.58	110	0.65	4	6.16988	HDPE	145	0.13
P-132	33	21.033	20.925	5.52576	J-105	J-109	232.45	-12,387.48	8,794.58	110	0.58	3.26	5.52576	HDPE	145	0.11
P-133	38.5	20.925	20.929	-0.83049	J-109	J-108	232.45	-12,420.33	8,797.79	110	0.09	0.1	0.83049	HDPE	145	0
P-134	37.5	20.925	20.13	6.1084	J-109	J-58	232.45	-12,420.33	8,797.79	110	0.64	3.93	6.1084	HDPE	145	0.15
P-135	60.5	19.881	19.881	0.1376	J-49	J-110	233.1	-12,521.93	8,802.93	110	0.01	0	0.1376	HDPE	145	0
P-136	18	19.638	20.466	3.16611	J-50	J-111	233.3	-12,535.51	8,752.54	110	0.33	1.16	3.16611	HDPE	145	0.02
P-137	33	20.466	19.817	0.07508	J-111	J-112	232.45	-12,553.47	8,754.31	110	0.01	0	0.07508	HDPE	145	0
P-138	25.5	20.466	19.592	2.91706	J-111	J-113	232.45	-12,553.47	8,754.31	110	0.31	1	2.91706	HDPE	145	0.03
P-139	108.5	19.592	19.783	0.75779	J-113	J-114	233.3	-12,578.91	8,758.02	110	0.08	0.08	0.75779	HDPE	145	0.01
P-14	31.5	20.787	20.756	8.82909	J-9	J-14	232.55	-12,443.31	8,991.03	125	0.72	4.17	8.82909	HDPE	145	0.13
P-140	7	19.783	19.586	-1.76968	J-114	J-45	233.1	-12,594.47	8,864.48	110	0.19	0.4	1.76968	HDPE	145	0
P-141	24	19.783	20.317	2.21028	J-114	J-115	233.1	-12,594.47	8,864.48	110	0.23	0.6	2.21028	HDPE	145	0.01
P-142	46	20.317	19.553	1.62591	J-115	J-116	232.55	-12,618.43	8,862.26	110	0.17	0.34	1.62591	HDPE	145	0.02
P-143	19.5	19.553	19.752	0.51232	J-116	J-117	233.3	-12,650.30	8,874.85	110	0.05	0.04	0.51232	HDPE	145	0
P-144	57	19.752	19.579	-1.93637	J-117	J-41	233.1	-12,651.04	8,894.12	110	0.2	0.47	1.93637	HDPE	145	0.03
P-145	30.5	19.752	20.382	2.20538	J-117	J-118	233.1	-12,651.04	8,894.12	110	0.23	0.6	2.20538	HDPE	145	0.02
P-146	53.5	20.382	19.615	-2.18782	J-118	J-40	232.45	-12,651.29	8,924.75	110	0.23	0.59	2.18782	HDPE	145	0.03
P-147	30	20.382	19.477	4.13398	J-118	J-119	232.45	-12,651.29	8,924.75	110	0.44	1.91	4.13398	HDPE	145	0.06
P-148	52.5	19.477	19.748	-3.45844	J-119	J-37	233.3	-12,650.79	8,954.89	110	0.36	1.37	3.45844	HDPE	145	0.07
P-149	14	19.477	19.599	7.37298	J-119	J-120	233.3	-12,650.79	8,954.89	110	0.78	5.57	7.37298	HDPE	145	0.08
P-15	76	20.756	19.829	5.89538	J-14	J-16	232.45	-12,473.94	8,984.36	110	0.62	3.68	5.89538	uPVC	145	0.28
P-150	28	19.599	19.274	12.35131	J-120	J-121	233.1	-12,650.79	8,968.72	140	0.8	4.47	12.35131	HDPE	145	0.13
P-151	52.5	19.274	19.879	12.61305	J-121	J-122	233.3	-12,678.70	8,967.98	140	0.82	4.65	12.61305	HDPE	145	0.24
P-152	42	19.879	19.054	6.33967	J-122	J-123	232.45	-12,731.07	8,967.49	110	0.67	4.21	6.33967	HDPE	145	0.18
P-153	126.5	19.054	18.786	2.10725	J-123	J-124	233.1	-12,773.06	8,967.49	110	0.22	0.55	2.10725	HDPE	145	0.07
P-154	66	18.408	19.256	-0.1501	J-126	J-127	233.3	-12,814.64	8,521.36	110	0.02	0	0.1501	HDPE	145	0
P-155	106.5	19.256	18.612	-0.52386	J-127	J-128	232.45	-12,798.28	8,585.27	110	0.06	0.04	0.52386	HDPE	145	0
P-156	59.5	18.612	18.413	-0.19117	J-128	J-129	233.1	-12,772.96	8,688.71	110	0.02	0.01	0.19117	uPVC	145	0
P-157	24.5	18.413	18.608	1.13056	J-129	J-130	233.3	-12,830.08	8,705.69	110	0.12	0.17	1.13056	HDPE	145	0

P-158	131	18.608	18.606	0.29787	J-130	J-125	233.1	-12,854.16	8,710.01	110	0.03	0.01	0.29787	HDPE	145	0
P-159	40	18.612	18.416	-0.80106	J-128	J-131	233.1	-12,772.96	8,688.71	110	0.08	0.09	0.80106	uPVC	145	0
P-16	28	19.829	19.659	2.41326	J-16	J-17	233.1	-12,543.11	8,984.85	110	0.25	0.7	2.41326	HDPE	145	0.02
P-160	103.5	18.416	19.257	0.73161	J-131	J-132	233.3	-12,735.16	8,675.54	110	0.08	0.08	0.73161	HDPE	145	0.01
P-161	40	19.257	19.256	0.10939	J-132	J-127	232.45	-12,759.88	8,574.83	110	0.01	0	0.10939	HDPE	145	0
P-162	84.5	19.156	19.257	-0.19216	J-133	J-132	232.55	-12,778.58	8,492.21	110	0.02	0.01	0.19216	HDPE	145	0
P-163	43.5	19.257	18.608	-0.18722	J-132	J-134	232.45	-12,759.88	8,574.83	110	0.02	0.01	0.18722	HDPE	145	0
P-164	105	18.608	18.419	-0.8432	J-134	J-135	233.1	-12,717.67	8,563.97	110	0.09	0.1	0.8432	HDPE	145	0.01
P-165	35.5	18.419	18.619	-0.35396	J-135	J-136	233.3	-12,692.94	8,665.89	110	0.04	0.02	0.35396	uPVC	145	0
P-166	8	18.619	18.416	1.87714	J-136	J-131	233.1	-12,727.32	8,673.73	110	0.2	0.44	1.87714	uPVC	145	0
P-167	70	18.608	19.256	0.15919	J-134	J-137	233.1	-12,717.67	8,563.97	110	0.02	0	0.15919	HDPE	145	0
P-168	41	18.413	18.626	-1.60596	J-129	J-138	233.3	-12,830.08	8,705.69	110	0.17	0.33	1.60596	uPVC	145	0.01
P-169	48.5	18.626	18.658	-2.31176	J-138	J-139	233.1	-12,822.60	8,746.10	110	0.24	0.65	2.31176	uPVC	145	0.03
P-17	17.5	19.659	20.458	-0.1922	J-17	J-18	233.25	-12,542.86	9,012.76	110	0.02	0.01	0.1922	HDPE	145	0
P-170	49	18.658	18.551	-4.12531	J-139	J-140	233.1	-12,814.76	8,793.74	110	0.43	1.9	4.12531	uPVC	145	0.09
P-171	27	18.551	19.399	0.06144	J-140	J-141	233.3	-12,806.92	8,841.98	110	0.01	0	0.06144	HDPE	145	0
P-172	104.5	18.626	18.426	0.26471	J-138	J-142	233.1	-12,822.60	8,746.10	160	0.01	0	0.26471	uPVC	145	0
P-173	56	18.426	18.619	2.45737	J-142	J-136	233.3	-12,719.48	8,729.21	160	0.12	0.12	2.45737	uPVC	145	0.01
P-174	39	18.426	18.626	0.0045	J-142	J-143	233.3	-12,719.48	8,729.21	160	0	0	0.0045	uPVC	145	0
P-175	59	18.626	18.419	0.94283	J-143	J-135	233.1	-12,680.88	8,723.78	110	0.1	0.12	0.94283	uPVC	145	0.01
P-176	47.5	18.626	18.436	-1.26916	J-143	J-144	233.1	-12,680.88	8,723.78	110	0.13	0.21	1.26916	uPVC	145	0.01
P-177	39	18.436	19.281	2.04795	J-144	J-145	233.3	-12,675.46	8,770.82	160	0.1	0.08	2.04795	uPVC	145	0
P-178	47.5	19.281	18.426	2.75873	J-145	J-142	232.45	-12,714.05	8,776.25	160	0.14	0.15	2.75873	uPVC	145	0.01
P-179	102	18.658	19.281	1.35995	J-139	J-145	233.1	-12,814.76	8,793.74	110	0.14	0.24	1.35995	uPVC	145	0.02
P-18	39	20.458	19.66	-0.3207	J-18	J-19	232.45	-12,543.85	9,030.06	110	0.03	0.02	0.3207	HDPE	145	0
P-180	48.5	19.281	18.433	0.11032	J-145	J-146	232.45	-12,714.05	8,776.25	110	0.01	0	0.11032	HDPE	145	0
P-181	68	18.551	18.903	-4.51417	J-140	J-147	233.3	-12,806.92	8,841.98	110	0.48	2.24	4.51417	HDPE	145	0.15
P-182	44.5	18.903	18.71	-1.08841	J-147	J-148	233.1	-12,774.21	8,877.84	110	0.11	0.16	1.08841	HDPE	145	0.01
P-183	48	18.71	18.71	0.10918	J-148	J-149	233.3	-12,729.95	8,879.22	110	0.01	0	0.10918	HDPE	145	0
P-184	106	18.436	19.453	-3.75479	J-144	J-150	233.3	-12,675.46	8,770.82	110	0.4	1.59	3.75479	HDPE	145	0.17
P-185	55.5	19.453	18.71	-4.122	J-150	J-148	232.45	-12,674.61	8,876.65	110	0.43	1.9	4.122	HDPE	145	0.11
P-186	88.5	18.71	19.879	-5.8573	J-148	J-122	233.3	-12,729.95	8,879.22	110	0.62	3.63	5.8573	HDPE	145	0.32
P-187	146	19.553	19.544	0.63271	J-116	J-151	233.3	-12,650.30	8,874.85	110	0.07	0.06	0.63271	HDPE	145	0.01
P-188	74.5	19.544	20.393	0.13138	J-151	J-152	233.3	-12,641.51	8,729.57	110	0.01	0	0.13138	HDPE	145	0
P-189	62.5	20.393	19.557	-1.23958	J-152	J-153	232.45	-12,654.10	8,655.96	110	0.13	0.2	1.23958	HDPE	145	0.01
P-19	25.5	19.66	19.81	0.05803	J-19	J-20	233.25	-12,505.07	9,032.03	110	0.01	0	0.05803	HDPE	145	0

P-190	104	19.557	19.592	-1.61815	J-153	J-113	233.3	-12,593.09	8,655.96	110	0.17	0.34	1.61815	HDPE	145	0.03
P-191	93.5	20.317	19.568	0.21262	J-115	J-154	232.55	-12,618.43	8,862.26	110	0.02	0.01	0.21262	HDPE	145	0
P-192	233	20.383	20.393	-0.52975	J-155	J-152	232.45	-12,718.13	8,434.83	110	0.06	0.04	0.52975	HDPE	145	0.01
P-193	89	18.903	18.903	-0.20239	J-156	J-157	233.3	-12,584.65	8,233.10	110	0.02	0.01	0.20239	HDPE	145	0
P-194	20	18.903	19.754	-0.85572	J-157	J-158	233.3	-12,525.21	8,299.49	110	0.09	0.1	0.85572	HDPE	145	0
P-195	55.5	19.754	18.907	-0.42912	J-158	J-159	232.45	-12,513.24	8,315.70	110	0.05	0.03	0.42912	HDPE	145	0
P-196	33	18.907	19.757	-0.53828	J-159	J-160	233.3	-12,544.51	8,361.63	110	0.06	0.04	0.53828	HDPE	145	0
P-197	77	19.757	19.664	-0.78841	J-160	J-161	232.45	-12,560.33	8,390.57	110	0.08	0.09	0.78841	HDPE	145	0.01
P-198	50	19.664	18.907	1.07096	J-161	J-162	232.55	-12,483.53	8,387.10	110	0.11	0.16	1.07096	HDPE	145	0.01
P-199	7.5	18.907	19.755	0.58666	J-162	J-163	233.3	-12,491.24	8,340.40	110	0.06	0.05	0.58666	HDPE	145	0
P-2	37	21.427	21.213	19.66339	J-2	J-3	232.45	-12,281.52	8,874.59	180	0.77	3.11	19.66339	HDPE	145	0.12
P-20	11	19.66	19.66	-0.55043	J-19	J-21	233.25	-12,505.07	9,032.03	110	0.06	0.05	0.55043	HDPE	145	0
P-200	26	19.755	19.754	0.65741	J-163	J-158	232.45	-12,495.10	8,334.22	110	0.07	0.06	0.65741	HDPE	145	0
P-201	57.5	18.907	18.907	-0.22281	J-159	J-162	233.3	-12,544.51	8,361.63	110	0.02	0.01	0.22281	HDPE	145	0
P-202	56.5	18.903	18.903	0.27703	J-157	J-164	233.3	-12,525.21	8,299.49	110	0.03	0.01	0.27703	HDPE	145	0
P-203	45	18.903	19.651	0.10236	J-164	J-165	233.3	-12,485.07	8,259.73	110	0.01	0	0.10236	HDPE	145	0
P-204	78.5	18.903	19.652	-0.2346	J-164	J-166	233.3	-12,485.07	8,259.73	110	0.02	0.01	0.2346	HDPE	145	0
P-205	81	19.652	19.75	0.35986	J-166	J-167	232.55	-12,433.74	8,319.17	110	0.04	0.02	0.35986	HDPE	145	0
P-206	41.5	19.75	18.902	0.05882	J-167	J-168	232.45	-12,372.37	8,362.01	110	0.01	0	0.05882	HDPE	145	0
P-207	39.5	18.902	19.65	0.01798	J-168	J-169	233.3	-12,331.46	8,355.07	110	0	0	0.01798	HDPE	145	0
P-208	48	19.65	19.75	-0.181	J-169	J-170	232.55	-12,292.86	8,347.35	110	0.02	0.01	0.181	HDPE	145	0
P-209	40	19.75	18.903	-0.30683	J-170	J-171	232.45	-12,284.76	8,394.43	110	0.03	0.02	0.30683	HDPE	145	0
P-21	26.5	19.66	20.46	-0.63574	J-21	J-22	233.25	-12,507.04	9,042.65	110	0.07	0.06	0.63574	HDPE	145	0
P-210	10	18.903	19.65	0.63249	J-171	J-172	233.3	-12,324.51	8,399.45	110	0.07	0.06	0.63249	HDPE	145	0
P-211	39.5	19.65	18.902	0.21968	J-172	J-173	232.55	-12,326.44	8,389.42	110	0.02	0.01	0.21968	HDPE	145	0
P-212	33.5	18.902	19.75	0.05366	J-173	J-167	233.3	-12,365.81	8,394.82	110	0.01	0	0.05366	HDPE	145	0
P-213	34.5	18.902	19.65	-0.22179	J-168	J-172	233.3	-12,331.46	8,355.07	110	0.02	0.01	0.22179	HDPE	145	0
P-214	36.5	19.75	19.75	-0.15726	J-170	J-174	232.45	-12,284.76	8,394.43	110	0.02	0	0.15726	HDPE	145	0
P-215	43.5	19.75	19.651	-0.33919	J-174	J-175	232.45	-12,276.26	8,429.94	110	0.04	0.02	0.33919	HDPE	145	0
P-216	22.5	19.651	18.905	-0.79852	J-175	J-176	232.55	-12,319.49	8,436.50	110	0.08	0.09	0.79852	HDPE	145	0
P-217	15	18.905	18.903	1.08715	J-176	J-171	233.3	-12,323.35	8,414.50	110	0.11	0.16	1.08715	HDPE	145	0
P-218	79.5	18.905	19.798	-2.15171	J-176	J-177	233.3	-12,323.35	8,414.50	110	0.23	0.57	2.15171	HDPE	145	0.05
P-219	35	19.798	19.699	-0.27584	J-177	J-178	232.45	-12,399.00	8,438.82	110	0.03	0.01	0.27584	HDPE	145	0
P-22	23.5	20.46	19.624	3.76773	J-22	J-23	232.45	-12,533.47	9,042.16	110	0.4	1.61	3.76773	HDPE	145	0.04
P-220	16	19.699	18.945	1.66571	J-178	J-179	232.55	-12,434.12	8,436.50	110	0.18	0.35	1.66571	HDPE	145	0.01
P-221	32.5	18.945	19.694	-0.38995	J-179	J-180	233.3	-12,449.95	8,436.12	110	0.04	0.02	0.38995	HDPE	145	0

P-222	49	19.694	19.664	2.25954	J-180	J-161	232.55	-12,482.37	8,436.12	110	0.24	0.62	2.25954	HDPE	145	0.03
P-223	31.5	19.755	19.756	-0.21858	J-163	J-181	232.45	-12,495.10	8,334.22	110	0.02	0.01	0.21858	HDPE	145	0
P-224	24	19.756	18.908	-0.34481	J-181	J-182	232.45	-12,469.24	8,316.47	110	0.04	0.02	0.34481	HDPE	145	0
P-225	99	18.908	18.945	-1.72029	J-182	J-179	233.3	-12,458.05	8,337.70	110	0.18	0.38	1.72029	HDPE	145	0.04
P-226	30.5	19.652	18.908	-1.02646	J-166	J-182	232.55	-12,433.74	8,319.17	110	0.11	0.14	1.02646	HDPE	145	0
P-227	32.5	19.799	18.951	-0.07394	J-183	J-184	232.45	-12,551.45	8,431.87	110	0.01	0	0.07394	HDPE	145	0
P-228	36.5	18.951	19.694	1.01606	J-184	J-180	233.3	-12,519.03	8,433.80	110	0.11	0.14	1.01606	HDPE	145	0.01
P-229	78	19.694	18.987	-2.07907	J-180	J-185	232.55	-12,482.37	8,436.12	110	0.22	0.53	2.07907	HDPE	145	0.04
P-23	21	19.624	20.308	2.41198	J-23	J-24	233.25	-12,557.19	9,042.41	110	0.25	0.7	2.41198	HDPE	145	0.01
P-230	42.5	18.987	19.82	1.70052	J-185	J-186	233.3	-12,479.67	8,514.08	110	0.18	0.37	1.70052	HDPE	145	0.02
P-231	78.5	19.82	18.951	1.42538	J-186	J-184	232.45	-12,522.12	8,512.15	110	0.15	0.27	1.42538	HDPE	145	0.02
P-232	104.5	19.699	19.017	-2.29512	J-178	J-187	232.55	-12,434.12	8,436.50	110	0.24	0.64	2.29512	HDPE	145	0.07
P-233	50	19.017	19.891	-2.03554	J-187	J-188	233.3	-12,429.88	8,540.71	110	0.21	0.51	2.03554	HDPE	145	0.03
P-234	29.5	19.891	18.987	4.12065	J-188	J-185	232.45	-12,479.67	8,543.80	110	0.43	1.89	4.12065	HDPE	145	0.06
P-235	68	19.651	19.751	0.15465	J-175	J-189	232.55	-12,319.49	8,436.50	110	0.02	0	0.15465	HDPE	145	0
P-236	102.5	19.798	19.02	-2.36925	J-177	J-190	232.45	-12,399.00	8,438.82	110	0.25	0.68	2.36925	HDPE	145	0.07
P-237	33	19.02	19.017	0.68589	J-190	J-187	233.3	-12,397.07	8,541.48	110	0.07	0.07	0.68589	HDPE	145	0
P-238	33	19.891	19.184	-6.412	J-188	J-191	232.45	-12,479.67	8,543.80	110	0.67	4.3	6.412	HDPE	145	0.14
P-239	82	19.184	19.907	3.68158	J-191	J-192	233.3	-12,479.28	8,576.61	110	0.39	1.54	3.68158	HDPE	145	0.13
P-24	21.5	20.308	19.603	1.56385	J-24	J-25	232.55	-12,558.67	9,063.16	110	0.16	0.31	1.56385	HDPE	145	0.01
P-240	29	19.907	19.02	3.42917	J-192	J-190	232.45	-12,397.46	8,570.43	110	0.36	1.35	3.42917	HDPE	145	0.04
P-241	31	19.184	19.36	-10.42555	J-191	J-193	233.3	-12,479.28	8,576.61	125	0.85	5.67	10.42555	HDPE	145	0.18
P-242	53.5	19.36	20.208	0.12168	J-193	J-194	233.3	-12,477.74	8,607.48	110	0.01	0	0.12168	HDPE	145	0
P-243	42	19.706	19.36	10.83487	J-71	J-193	233.1	-12,477.64	8,649.33	140	0.7	3.51	10.83487	HDPE	145	0.15
P-244	53	19.819	20.618	2.8312	J-94	J-90	233.3	-12,260.26	8,691.82	110	0.3	0.95	2.8312	uPVC	145	0.05
P-245	40	20.618	19.73	2.89295	J-90	J-195	232.45	-12,213.08	8,686.63	110	0.3	0.98	2.89295	uPVC	145	0.04
P-246	50.5	19.73	20.662	-3.8227	J-195	J-196	233.3	-12,176.25	8,695.03	110	0.4	1.65	3.8227	HDPE	145	0.08
P-247	31.5	20.662	19.868	-5.51287	J-196	J-91	232.45	-12,184.59	8,744.75	125	0.45	1.74	5.51287	HDPE	145	0.05
P-248	42	19.868	19.943	-3.99979	J-91	J-197	233.3	-12,214.81	8,736.28	110	0.42	1.79	3.99979	HDPE	145	0.08
P-249	9	19.943	19.965	-8.99617	J-197	J-198	233.3	-12,215.16	8,777.47	140	0.58	2.49	8.99617	HDPE	145	0.02
P-25	42.5	19.603	19.741	1.41829	J-25	J-26	233.25	-12,560.40	9,084.65	110	0.15	0.26	1.41829	HDPE	145	0.01
P-250	8.5	19.965	20.838	-9.59304	J-198	J-199	233.3	-12,224.11	8,777.47	140	0.62	2.8	9.59304	HDPE	145	0.02
P-251	21.5	20.838	20.053	-14.05935	J-199	J-200	232.45	-12,232.45	8,775.93	160	0.7	2.96	14.05935	HDPE	145	0.06
P-252	7	20.053	20.791	3.60294	J-200	J-98	233.3	-12,253.45	8,772.23	110	0.38	1.48	3.60294	HDPE	145	0.01
P-253	43	20.838	20.101	4.30029	J-199	J-92	232.45	-12,232.45	8,775.93	110	0.45	2.05	4.30029	HDPE	145	0.09
P-254	37	20.662	20.737	-4.30795	J-196	J-201	232.45	-12,184.59	8,744.75	110	0.45	2.06	4.30795	HDPE	145	0.08

P-255	16	20.737	19.934	-7.08792	J-201	J-202	232.45	-12,192.31	8,781.18	125	0.58	2.77	7.08792	HDPE	145	0.04
P-256	7	19.934	19.943	-4.86447	J-202	J-197	233.3	-12,208.37	8,779.02	125	0.4	1.38	4.86447	HDPE	145	0.01
P-257	32.5	20.737	20.712	2.58554	J-201	J-203	232.45	-12,192.31	8,781.18	110	0.27	0.8	2.58554	HDPE	145	0.03
P-258	36	20.712	20.608	7.24767	J-203	J-204	232.45	-12,160.20	8,785.19	125	0.59	2.89	7.24767	HDPE	145	0.1
P-259	29.5	20.608	20.662	-5.66046	J-204	J-196	232.45	-12,155.57	8,749.69	125	0.46	1.83	5.66046	HDPE	145	0.05
P-26	18	19.741	19.566	3.56588	J-26	J-27	233.1	-12,602.88	9,085.63	110	0.38	1.45	3.56588	uPVC	145	0.03
P-260	10	20.608	20.56	12.73643	J-204	J-205	232.45	-12,155.57	8,749.69	140	0.83	4.73	12.73643	HDPE	145	0.05
P-261	53.5	20.56	20.513	2.72667	J-205	J-206	232.45	-12,145.99	8,752.46	110	0.29	0.88	2.72667	uPVC	145	0.05
P-262	12.5	20.513	19.676	-3.88355	J-206	J-207	232.45	-12,134.88	8,699.97	125	0.32	0.91	3.88355	HDPE	145	0.01
P-263	29	19.676	19.73	-4.07548	J-207	J-195	233.3	-12,147.23	8,698.12	110	0.43	1.86	4.07548	uPVC	145	0.05
P-264	39.5	19.73	19.705	2.27866	J-195	J-208	233.3	-12,176.25	8,695.03	110	0.24	0.63	2.27866	HDPE	145	0.02
P-265	42.5	19.705	19.909	-0.83317	J-208	J-89	233.3	-12,170.39	8,655.82	110	0.09	0.1	0.83317	HDPE	145	0
P-266	30	19.705	20.525	2.85715	J-208	J-209	233.3	-12,170.39	8,655.82	110	0.3	0.96	2.85715	HDPE	145	0.03
P-267	38.5	20.525	19.676	-0.01	J-209	J-207	232.45	-12,140.75	8,660.14	110	0	0	0.01	HDPE	145	0
P-268	29.5	20.501	19.653	0.16355	J-87	J-210	232.45	-12,165.16	8,627.59	110	0.02	0.01	0.16355	HDPE	145	0
P-269	28.5	19.653	20.525	-2.64658	J-210	J-209	233.3	-12,136.11	8,632.04	110	0.28	0.83	2.64658	HDPE	145	0.02
P-27	6.5	19.566	19.368	-1.45589	J-27	J-28	233.25	-12,603.63	9,103.67	110	0.15	0.27	1.45589	HDPE	145	0
P-270	17.5	20.477	19.828	-0.03984	J-211	J-86	232.45	-12,153.71	8,550.53	110	0	0	0.03984	HDPE	145	0
P-271	30	19.828	19.605	2.55837	J-86	J-212	233.1	-12,156.27	8,567.82	110	0.27	0.78	2.55837	HDPE	145	0.02
P-272	62	19.605	19.653	-2.53727	J-212	J-210	233.3	-12,126.23	8,570.91	110	0.27	0.77	2.53727	HDPE	145	0.05
P-273	30	19.605	19.605	-0.06826	J-213	J-212	233.3	-12,120.68	8,541.27	110	0.01	0	0.06826	HDPE	145	0
P-274	33.5	19.605	20.41	4.67381	J-212	J-214	233.3	-12,126.23	8,570.91	125	0.38	1.28	4.67381	HDPE	145	0.04
P-275	63	20.41	19.546	1.37356	J-214	J-215	232.45	-12,092.89	8,575.85	110	0.14	0.25	1.37356	HDPE	145	0.02
P-276	29	19.546	19.558	-1.80198	J-215	J-216	233.3	-12,109.25	8,636.68	110	0.19	0.41	1.80198	HDPE	145	0.01
P-277	39	19.558	20.492	-6.26221	J-216	J-217	233.3	-12,116.66	8,664.47	125	0.51	2.21	6.26221	HDPE	145	0.09
P-278	9	20.492	20.513	-6.43965	J-217	J-206	232.45	-12,125.92	8,702.14	125	0.52	2.32	6.43965	HDPE	145	0.02
P-279	15	20.492	19.644	0.03416	J-217	J-218	232.45	-12,125.92	8,702.14	110	0	0	0.03416	HDPE	145	0
P-28	23	19.741	19.607	-2.33748	J-26	J-29	233.1	-12,602.88	9,085.63	110	0.25	0.66	2.33748	uPVC	145	0.02
P-280	29.5	19.558	20.375	4.23852	J-216	J-219	233.3	-12,116.66	8,664.47	125	0.35	1.07	4.23852	HDPE	145	0.03
P-281	23	20.375	19.488	7.33735	J-219	J-220	232.45	-12,088.56	8,673.73	140	0.48	1.7	7.33735	HDPE	145	0.04
P-282	23.5	19.488	19.445	4.02307	J-220	J-221	233.3	-12,066.02	8,677.43	110	0.42	1.81	4.02307	HDPE	145	0.04
P-283	33	19.445	20.326	-4.05514	J-221	J-222	233.3	-12,043.17	8,682.07	125	0.33	0.99	4.05514	HDPE	145	0.03
P-284	23.5	20.326	19.502	-4.18365	J-222	J-223	232.45	-12,041.32	8,649.03	125	0.34	1.04	4.18365	HDPE	145	0.02
P-285	46	19.502	19.546	-2.86176	J-223	J-215	233.3	-12,064.17	8,644.70	110	0.3	0.96	2.86176	HDPE	145	0.04
P-286	27	20.41	20.41	-0.06144	J-224	J-214	232.45	-12,087.02	8,549.30	110	0.01	0	0.06144	HDPE	145	0
P-287	40	20.41	20.372	2.86705	J-214	J-225	232.45	-12,092.89	8,575.85	110	0.3	0.97	2.86705	HDPE	145	0.04

P-288	63	20.372	19.502	1.62316	J-225	J-223	232.45	-12,053.36	8,582.64	110	0.17	0.34	1.62316	HDPE	145	0.02
P-289	45.5	20.372	19.518	0.90623	J-225	J-226	232.45	-12,053.36	8,582.64	110	0.1	0.11	0.90623	HDPE	145	0.01
P-29	43	19.607	20.308	-0.6537	J-29	J-24	233.25	-12,601.90	9,062.41	110	0.07	0.06	0.6537	HDPE	145	0
P-290	49.5	19.518	20.356	0.27388	J-226	J-227	233.3	-12,032.68	8,561.65	110	0.03	0.01	0.27388	HDPE	145	0
P-291	32.5	20.356	19.518	0.08741	J-227	J-228	232.46	-12,033.91	8,511.93	110	0.01	0	0.08741	HDPE	145	0
P-292	51	19.518	20.356	-0.10248	J-228	J-229	233.3	-12,066.33	8,511.63	110	0.01	0	0.10248	HDPE	145	0
P-293	15	20.356	20.356	0.03416	J-229	J-230	232.46	-12,061.39	8,562.26	110	0	0	0.03416	HDPE	145	0
P-294	28.5	20.356	19.518	-0.35153	J-229	J-226	232.46	-12,061.39	8,562.26	110	0.04	0.02	0.35153	HDPE	145	0
P-295	89.5	20.375	20.495	-3.42171	J-219	J-231	232.45	-12,088.56	8,673.73	110	0.36	1.34	3.42171	uPVC	145	0.12
P-296	14.5	20.495	20.528	-25.1706	J-231	J-232	232.45	-12,117.62	8,758.56	200	0.8	2.94	25.1706	HDPE	145	0.04
P-297	15	20.528	20.56	-9.83124	J-232	J-205	232.46	-12,131.82	8,757.02	160	0.49	1.53	9.83124	HDPE	145	0.02
P-298	21.5	20.495	20.417	21.46352	J-231	J-233	232.45	-12,117.62	8,758.56	180	0.84	3.66	21.46352	HDPE	145	0.08
P-299	84	20.417	20.707	-15.28482	J-233	J-234	232.45	-12,096.62	8,754.55	160	0.76	3.46	15.28482	uPVC	145	0.29
P-3	71	21.213	20.858	-18.38208	J-3	J-4	232.55	-12,318.32	8,877.55	180	0.72	2.74	18.38208	HDPE	145	0.19
P-30	21.5	19.607	19.616	-1.88276	J-29	J-30	233.25	-12,601.90	9,062.41	110	0.2	0.44	1.88276	uPVC	145	0.01
P-300	102	20.528	20.895	-15.63836	J-232	J-235	232.46	-12,131.82	8,757.02	160	0.78	3.61	15.63836	uPVC	145	0.37
P-301	60.5	20.712	20.863	-4.95545	J-203	J-236	232.45	-12,160.20	8,785.19	110	0.52	2.67	4.95545	HDPE	145	0.16
P-302	30	20.863	20.132	-8.16009	J-236	J-237	232.46	-12,166.41	8,845.33	125	0.66	3.6	8.16009	HDPE	145	0.11
P-303	51	17.36	16.524	-1.32249	J-238	J-239	232.45	-12,180.88	8,338.99	110	0.14	0.23	1.32249	uPVC	145	0.01
P-304	20.5	16.524	17.447	-5.88385	J-239	J-240	233.3	-12,130.22	8,345.74	110	0.62	3.66	5.88385	uPVC	145	0.08
P-305	21.5	17.447	16.686	-6.23407	J-240	J-241	232.45	-12,109.96	8,346.71	110	0.66	4.08	6.23407	uPVC	145	0.09
P-306	12	16.686	17.562	-6.4172	J-241	J-242	233.3	-12,088.73	8,350.57	125	0.52	2.31	6.4172	HDPE	145	0.03
P-307	22	17.562	17.589	-3.2556	J-242	J-243	232.45	-12,076.67	8,352.50	110	0.34	1.22	3.2556	uPVC	145	0.03
P-308	29	17.589	16.848	-5.92309	J-243	J-244	232.45	-12,054.96	8,354.91	110	0.62	3.71	5.92309	uPVC	145	0.11
P-309	24	16.848	17.815	-9.71339	J-244	J-245	233.3	-12,026.01	8,353.95	125	0.79	4.97	9.71339	HDPE	145	0.12
P-31	44	19.616	19.624	-1.1545	J-30	J-23	233.25	-12,601.40	9,040.92	110	0.12	0.18	1.1545	HDPE	145	0.01
P-310	9	17.815	17.6	-16.07672	J-245	J-246	232.45	-12,001.89	8,352.50	160	0.8	3.8	16.07672	HDPE	145	0.03
P-311	19.5	17.6	17.864	-2.52781	J-246	J-247	232.7	-11,992.72	8,352.98	110	0.27	0.77	2.52781	uPVC	145	0.01
P-312	40	17.864	17.644	5.5276	J-247	J-248	232.45	-11,973.42	8,351.05	110	0.58	3.26	5.5276	HDPE	145	0.13
P-313	29	17.644	16.796	5.37068	J-248	J-249	232.54	-11,974.39	8,311.01	110	0.57	3.09	5.37068	HDPE	145	0.09
P-314	22.5	16.796	17.63	2.27604	J-249	J-250	233.3	-12,003.33	8,310.04	110	0.24	0.63	2.27604	HDPE	145	0.01
P-315	22	17.63	17.466	5.63768	J-250	J-251	232.45	-12,026.01	8,308.60	110	0.59	3.38	5.63768	HDPE	145	0.07
P-316	45.5	17.466	17.589	-2.44805	J-251	J-243	232.54	-12,048.20	8,310.04	110	0.26	0.72	2.44805	HDPE	145	0.03
P-317	59	17.36	16.364	4.8024	J-238	J-252	232.45	-12,180.88	8,338.99	110	0.51	2.52	4.8024	uPVC	145	0.15
P-318	14.5	16.364	17.09	4.45559	J-252	J-253	233.3	-12,205.48	8,285.44	110	0.47	2.19	4.45559	uPVC	145	0.03
P-319	27	17.09	16.275	4.36119	J-253	J-254	232.54	-12,209.82	8,271.45	110	0.46	2.1	4.36119	uPVC	145	0.06

Distribution Network Design Output: Zone 17

P-32	31.5	19.616	19.77	-0.94883	J-30	J-31	233.25	-12,601.40	9,040.92	110	0.1	0.12	0.94883	HDPE	145	0
P-320	22.5	16.275	16.934	-4.96539	J-254	J-255	233.3	-12,185.70	8,259.39	110	0.52	2.68	4.96539	uPVC	145	0.06
P-321	97	16.934	16.524	-4.17825	J-255	J-239	232.7	-12,163.51	8,254.56	110	0.44	1.94	4.17825	HDPE	145	0.19
P-322	77	16.934	17.109	-1.23391	J-255	J-256	232.7	-12,163.51	8,254.56	110	0.13	0.2	1.23391	uPVC	145	0.02
P-323	48.5	17.109	16.492	-5.1989	J-256	J-257	232.54	-12,087.28	8,246.36	110	0.55	2.91	5.1989	uPVC	145	0.14
P-324	32.5	16.492	17.271	-2.258	J-257	J-258	233.3	-12,039.04	8,245.39	110	0.24	0.62	2.258	uPVC	145	0.02
P-325	67	17.271	16.796	-8.92021	J-258	J-249	232.54	-12,006.71	8,243.95	125	0.73	4.25	8.92021	HDPE	145	0.28
P-326	65.5	17.466	16.492	7.78332	J-251	J-257	232.54	-12,048.20	8,310.04	125	0.63	3.3	7.78332	HDPE	145	0.22
P-327	74	17.271	17.343	-2.88726	J-258	J-259	232.54	-12,006.71	8,243.95	110	0.3	0.98	2.88726	uPVC	145	0.07
P-328	93.5	17.343	17.149	1.69968	J-259	J-260	232.54	-11,932.90	8,240.57	110	0.18	0.37	1.69968	uPVC	145	0.03
P-329	50	17.343	16.39	8.52247	J-259	J-261	232.54	-11,932.90	8,240.57	125	0.69	3.9	8.52247	HDPE	145	0.2
P-33	57	19.77	19.659	-2.37238	J-31	J-17	233.1	-12,599.92	9,009.55	110	0.25	0.68	2.37238	HDPE	145	0.04
P-330	81.5	16.39	17.15	-0.40434	J-261	J-262	233.3	-11,935.31	8,190.40	110	0.04	0.03	0.40434	HDPE	145	0
P-331	46.5	16.988	16.39	-0.10577	J-263	J-261	232.7	-11,981.62	8,192.33	110	0.01	0	0.10577	HDPE	145	0
P-332	22.5	16.39	16.305	8.36517	J-261	J-264	233.3	-11,935.31	8,190.40	125	0.68	3.77	8.36517	HDPE	145	0.08
P-333	71.5	16.305	17.013	2.42343	J-264	J-265	233.3	-11,935.79	8,167.72	110	0.26	0.71	2.42343	HDPE	145	0.05
P-334	64	16.305	16.093	5.58249	J-264	J-266	233.3	-11,935.79	8,167.72	110	0.59	3.32	5.58249	HDPE	145	0.21
P-335	53	16.093	16.692	-0.31723	J-266	J-267	233.3	-11,978.30	8,146.17	110	0.03	0.02	0.31723	HDPE	145	0
P-336	36.5	16.692	16.808	3.22264	J-267	J-268	232.7	-12,029.48	8,159.01	110	0.34	1.2	3.22264	HDPE	145	0.04
P-337	16.5	16.808	16.031	3.10209	J-268	J-269	232.54	-12,064.85	8,167.71	110	0.33	1.12	3.10209	HDPE	145	0.02
P-338	16.5	16.031	16.765	3.61651	J-269	J-270	233.3	-12,066.83	8,151.30	110	0.38	1.49	3.61651	HDPE	145	0.02
P-339	33	16.765	16.605	0.51464	J-270	J-271	232.54	-12,068.21	8,135.10	160	0.03	0.01	0.51464	uPVC	145	0
P-34	29.5	19.77	19.615	1.15524	J-31	J-32	233.1	-12,599.92	9,009.55	110	0.12	0.18	1.15524	HDPE	145	0.01
P-340	8	16.605	16.008	-2.93118	J-271	J-272	232.7	-12,035.81	8,129.77	160	0.15	0.16	2.93118	uPVC	145	0
P-341	14	16.008	16.765	1.83244	J-272	J-273	233.3	-12,027.70	8,129.17	160	0.09	0.07	1.83244	uPVC	145	0
P-342	36	16.765	16.005	1.61863	J-273	J-274	232.54	-12,013.87	8,127.39	160	0.08	0.05	1.61863	uPVC	145	0
P-343	26.5	16.005	16.093	-5.57343	J-274	J-266	233.3	-11,978.30	8,121.07	110	0.59	3.31	5.57343	HDPE	145	0.09
P-344	13.5	16.663	16.822	-0.03075	J-275	J-276	232.7	-12,072.56	8,183.71	110	0	0	0.03075	HDPE	145	0
P-345	14.5	16.822	16.032	4.42952	J-276	J-277	232.54	-12,077.50	8,171.26	110	0.47	2.17	4.42952	HDPE	145	0.03
P-346	7.5	16.032	16.779	3.71265	J-277	J-278	233.3	-12,082.44	8,157.63	110	0.39	1.56	3.71265	HDPE	145	0.01
P-347	11.5	16.779	16.007	3.22288	J-278	J-279	232.54	-12,085.21	8,150.91	110	0.34	1.2	3.22288	HDPE	145	0.01
P-348	6.5	16.007	16.598	3.11641	J-279	J-280	233.3	-12,088.37	8,139.65	110	0.33	1.13	3.11641	HDPE	145	0.01
P-349	28.5	16.598	16.753	1.11323	J-280	J-281	232.7	-12,091.53	8,133.92	110	0.12	0.17	1.11323	HDPE	145	0
P-35	56.5	19.615	19.829	-3.11718	J-32	J-16	233.25	-12,599.43	8,980.16	110	0.33	1.13	3.11718	HDPE	145	0.06
P-350	12	16.753	16.765	-2.93428	J-281	J-270	232.54	-12,069.79	8,123.44	110	0.31	1.01	2.93428	HDPE	145	0.01
P-351	17	15.966	16.753	-3.91674	J-282	J-281	233.3	-12,072.76	8,106.64	110	0.41	1.72	3.91674	HDPE	145	0.03

P-352	98	16.005	16.703	-2.93725	J-274	J-283	233.3	-11,978.30	8,121.07	110	0.31	1.01	2.93725	HDPE	145	0.1
P-353	40	16.005	16.704	9.67344	J-274	J-284	233.3	-11,978.30	8,121.07	160	0.48	1.48	9.67344	uPVC	145	0.06
P-354	90.5	16.704	16.793	-0.85557	J-284	J-285	232.54	-11,985.53	8,081.64	110	0.09	0.1	0.85557	HDPE	145	0.01
P-355	39.5	16.704	16.709	9.34369	J-284	J-286	232.54	-11,985.53	8,081.64	160	0.46	1.39	9.34369	uPVC	145	0.05
P-356	54	16.709	16.615	3.46434	J-286	J-287	232.48	-11,993.25	8,043.04	110	0.36	1.37	3.46434	HDPE	145	0.07
P-357	37	16.615	16.532	3.18914	J-287	J-288	232.5	-11,940.15	8,033.16	110	0.34	1.18	3.18914	HDPE	145	0.04
P-358	52.5	16.532	16.629	-3.60369	J-288	J-289	232.54	-11,947.25	7,997.03	110	0.38	1.48	3.60369	HDPE	145	0.08
P-359	38	16.629	16.709	-8.06039	J-289	J-286	232.52	-11,999.12	8,005.37	160	0.4	1.06	8.06039	uPVC	145	0.04
P-36	10.5	19.615	20.394	4.05298	J-32	J-33	233.25	-12,599.43	8,980.16	110	0.43	1.84	4.05298	HDPE	145	0.02
P-360	15	16.635	16.615	-0.03416	J-290	J-287	232.48	-11,935.82	8,047.67	110	0	0	0.03416	HDPE	145	0
P-361	40.5	16.629	16.557	5.75224	J-289	J-291	232.52	-11,999.12	8,005.37	160	0.29	0.57	5.75224	uPVC	145	0.02
P-362	99	16.557	16.391	5.1644	J-291	J-292	232.57	-12,006.53	7,965.54	160	0.26	0.46	5.1644	uPVC	145	0.05
P-363	47	16.391	16.251	7.08374	J-292	J-293	232.69	-12,023.20	7,867.97	125	0.58	2.77	7.08374	HDPE	145	0.13
P-364	127.5	16.251	16.502	-2.57436	J-293	J-294	232.7	-11,976.27	7,864.57	110	0.27	0.79	2.57436	uPVC	145	0.1
P-365	8.5	16.502	16.532	-6.56998	J-294	J-288	232.55	-11,948.09	7,988.78	125	0.54	2.41	6.56998	HDPE	145	0.02
P-366	18	16.275	16.923	9.17307	J-254	J-295	233.3	-12,185.70	8,259.39	125	0.75	4.47	9.17307	HDPE	145	0.08
P-367	14.5	16.923	16.948	5.38731	J-295	J-296	232.57	-12,193.54	8,243.27	110	0.57	3.11	5.38731	uPVC	145	0.05
P-368	28.5	16.948	16.887	7.21047	J-296	J-297	232.5	-12,197.16	8,229.40	125	0.59	2.86	7.21047	HDPE	145	0.08
P-369	34.5	16.887	16.619	3.51302	J-297	J-298	232.48	-12,208.61	8,203.47	110	0.37	1.41	3.51302	HDPE	145	0.05
P-37	9.5	20.394	19.75	-1.87586	J-33	J-34	232.45	-12,599.43	8,969.78	110	0.2	0.44	1.87586	HDPE	145	0
P-370	99.5	16.619	16.779	-0.22032	J-298	J-278	232.7	-12,177.26	8,189.00	110	0.02	0.01	0.22032	HDPE	145	0
P-371	64	16.887	16.712	3.40868	J-297	J-299	232.48	-12,208.61	8,203.47	110	0.36	1.33	3.40868	uPVC	145	0.09
P-372	33.5	16.712	16.759	2.87396	J-299	J-300	232.57	-12,230.15	8,143.06	110	0.3	0.97	2.87396	uPVC	145	0.03
P-373	48.5	16.759	16.741	1.12034	J-300	J-301	232.49	-12,228.61	8,109.72	110	0.12	0.17	1.12034	uPVC	145	0.01
P-374	42.5	16.741	16.77	-2.38517	J-301	J-302	232.5	-12,180.13	8,109.10	110	0.25	0.69	2.38517	HDPE	145	0.03
P-375	37.5	16.77	16.619	-3.34339	J-302	J-298	232.5	-12,178.28	8,151.71	110	0.35	1.29	3.34339	HDPE	145	0.05
P-376	13	16.741	16.748	3.26902	J-301	J-303	232.5	-12,180.13	8,109.10	160	0.16	0.2	3.26902	uPVC	145	0
P-377	4	16.748	16.751	-2.50351	J-303	J-304	232.49	-12,167.47	8,107.55	110	0.26	0.75	2.50351	HDPE	145	0
P-378	18	16.751	16.757	-2.6764	J-304	J-305	232.49	-12,167.16	8,111.40	110	0.28	0.85	2.6764	HDPE	145	0.02
P-379	20	16.757	16.769	-2.25194	J-305	J-306	232.5	-12,165.27	8,129.36	110	0.24	0.62	2.25194	HDPE	145	0.01
P-38	71	19.75	20.489	-3.33999	J-34	J-35	233.1	-12,598.93	8,960.15	110	0.35	1.28	3.33999	HDPE	145	0.09
P-380	44.5	16.748	16.724	5.63265	J-303	J-307	232.49	-12,167.47	8,107.55	160	0.28	0.54	5.63265	uPVC	145	0.02
P-381	25	16.724	16.698	3.68212	J-307	J-308	232.49	-12,139.03	8,088.69	160	0.18	0.25	3.68212	uPVC	145	0.01
P-382	39.5	16.698	16.725	-1.1825	J-308	J-309	232.51	-12,114.64	8,084.37	110	0.12	0.19	1.1825	HDPE	145	0.01
P-383	31	16.725	16.687	2.17442	J-309	J-310	232.49	-12,076.04	8,076.96	110	0.23	0.58	2.17442	HDPE	145	0.02
P-384	45	16.687	16.698	-0.23171	J-310	J-311	232.51	-12,080.37	8,046.39	110	0.02	0.01	0.23171	HDPE	145	0

P-385	26.5	16.698	16.698	-4.65768	J-311	J-308	232.5	-12,123.59	8,059.36	160	0.23	0.38	4.65768	uPVC	145	0.01
P-386	46.5	16.724	16.518	1.68676	J-307	J-312	232.49	-12,139.03	8,088.69	110	0.18	0.36	1.68676	HDPE	145	0.02
P-387	22	16.518	16.681	1.53098	J-312	J-313	232.68	-12,152.62	8,044.23	110	0.16	0.3	1.53098	HDPE	145	0.01
P-388	22.5	16.681	16.698	-4.21222	J-313	J-311	232.51	-12,131.31	8,038.36	160	0.21	0.32	4.21222	uPVC	145	0.01
P-389	23	16.687	16.695	2.05364	J-310	J-314	232.51	-12,080.37	8,046.39	110	0.22	0.52	2.05364	HDPE	145	0.01
P-39	30.5	20.489	20.475	-5.0816	J-35	J-36	232.45	-12,528.04	8,963.11	110	0.53	2.79	5.0816	HDPE	145	0.09
P-390	48	16.695	16.681	-0.88357	J-314	J-313	232.49	-12,085.61	8,024.16	110	0.09	0.11	0.88357	HDPE	145	0.01
P-391	23.5	16.681	16.672	4.59586	J-313	J-315	232.51	-12,131.31	8,038.36	160	0.23	0.37	4.59586	uPVC	145	0.01
P-392	47.5	16.672	16.674	-0.55589	J-315	J-316	232.51	-12,136.87	8,015.51	110	0.06	0.05	0.55589	HDPE	145	0
P-393	17	16.674	16.695	-0.73902	J-316	J-314	232.51	-12,090.25	8,007.80	110	0.08	0.08	0.73902	HDPE	145	0
P-394	8	16.674	16.664	0.01825	J-316	J-317	232.51	-12,090.25	8,007.80	110	0	0	0.01825	HDPE	145	0
P-395	60.5	16.672	16.669	0.54481	J-315	J-318	232.51	-12,136.87	8,015.51	110	0.06	0.04	0.54481	uPVC	145	0
P-396	21.5	16.669	16.5	0.04894	J-318	J-319	232.51	-12,196.46	8,025.40	110	0.01	0	0.04894	HDPE	145	0
P-397	7.5	16.759	16.757	1.5501	J-300	J-320	232.49	-12,228.61	8,109.72	110	0.16	0.31	1.5501	uPVC	145	0
P-398	69	16.757	16.675	2.7452	J-320	J-321	232.49	-12,229.50	8,102.28	110	0.29	0.89	2.7452	uPVC	145	0.06
P-399	45.5	16.675	16.669	0.9884	J-321	J-318	232.51	-12,241.23	8,034.35	110	0.1	0.13	0.9884	uPVC	145	0.01
P-4	26.5	21.213	20.459	37.73965	J-3	J-5	232.55	-12,318.32	8,877.55	250	0.77	2.1	37.73965	HDPE	145	0.06
P-40	25.5	20.475	20.585	-6.45735	J-36	J-13	232.55	-12,497.66	8,964.84	110	0.68	4.35	6.45735	HDPE	145	0.11
P-400	37	16.669	16.663	1.11024	J-318	J-322	232.51	-12,196.46	8,025.40	110	0.12	0.17	1.11024	HDPE	145	0.01
P-401	14	16.663	16.663	0.50012	J-322	J-323	232.51	-12,203.26	7,988.96	110	0.05	0.04	0.50012	uPVC	145	0
P-402	44	16.663	16.654	-0.41199	J-323	J-324	232.51	-12,189.05	7,988.96	110	0.04	0.03	0.41199	uPVC	145	0
P-403	25.5	16.654	16.672	-4.24997	J-324	J-315	232.52	-12,145.21	7,991.43	160	0.21	0.32	4.24997	uPVC	145	0.01
P-404	44	16.675	16.594	1.39641	J-321	J-325	232.51	-12,241.23	8,034.35	110	0.15	0.26	1.39641	HDPE	145	0.01
P-405	46.5	16.594	16.663	0.38064	J-325	J-322	232.58	-12,249.88	7,991.12	110	0.04	0.02	0.38064	uPVC	145	0
P-406	104	16.663	16.539	0.53263	J-322	J-326	232.51	-12,203.26	7,988.96	110	0.06	0.04	0.53263	HDPE	145	0
P-407	39.5	16.539	16.559	-0.28136	J-326	J-327	232.63	-12,226.41	7,887.68	110	0.03	0.01	0.28136	HDPE	145	0
P-408	96.5	16.559	16.594	-0.59059	J-327	J-325	232.61	-12,265.32	7,895.71	110	0.06	0.05	0.59059	HDPE	145	0.01
P-409	25.5	16.539	16.528	0.42973	J-326	J-328	232.63	-12,226.41	7,887.68	110	0.05	0.03	0.42973	HDPE	145	0
P-41	6	19.75	19.748	1.26743	J-34	J-37	233.1	-12,598.93	8,960.15	110	0.13	0.21	1.26743	HDPE	145	0
P-410	108	16.528	16.663	-0.53467	J-328	J-323	232.64	-12,201.71	7,881.82	110	0.06	0.04	0.53467	HDPE	145	0
P-411	46	16.528	16.516	0.55627	J-328	J-329	232.64	-12,201.71	7,881.82	110	0.06	0.05	0.55627	HDPE	145	0
P-412	112.5	16.516	16.654	-1.87099	J-329	J-324	232.65	-12,156.01	7,879.35	160	0.09	0.07	1.87099	uPVC	145	0.01
P-413	52	16.654	16.62	1.43496	J-324	J-330	232.52	-12,145.21	7,991.43	110	0.15	0.27	1.43496	HDPE	145	0.01
P-414	107	16.62	16.484	1.03245	J-330	J-331	232.54	-12,094.26	7,981.55	110	0.11	0.15	1.03245	HDPE	145	0.02
P-415	45	16.484	16.516	-1.96458	J-331	J-329	232.66	-12,110.93	7,875.95	110	0.21	0.48	1.96458	HDPE	145	0.02
P-416	9	16.62	16.62	-0.02052	J-332	J-330	232.54	-12,085.31	7,980.01	110	0	0	0.02052	HDPE	145	0

P-417	88	16.484	16.391	2.45136	J-331	J-292	232.66	-12,110.93	7,875.95	110	0.26	0.72	2.45136	HDPE	145	0.06
P-418	21.5	16.251	16.144	9.21246	J-293	J-333	232.7	-11,976.27	7,864.57	125	0.75	4.51	9.21246	HDPE	145	0.1
P-419	46	16.144	15.949	8.67446	J-333	J-334	232.71	-11,955.31	7,860.82	125	0.71	4.03	8.67446	HDPE	145	0.19
P-42	24.5	19.748	19.616	-2.37975	J-37	J-38	233.1	-12,598.44	8,953.98	110	0.25	0.68	2.37975	HDPE	145	0.02
P-420	75	15.949	16.034	-0.7189	J-334	J-335	232.72	-11,909.62	7,854.03	110	0.08	0.07	0.7189	uPVC	145	0.01
P-421	55.5	16.034	16.094	0.12623	J-335	J-336	232.64	-11,889.24	7,925.97	110	0.01	0	0.12623	uPVC	145	0
P-422	62	15.92	15.85	-0.14101	J-337	J-338	232.59	-11,838.91	7,972.90	110	0.01	0	0.14101	uPVC	145	0
P-423	68	15.85	15.779	-0.97891	J-338	J-339	232.66	-11,855.58	7,913.31	110	0.1	0.13	0.97891	uPVC	145	0.01
P-424	34.5	15.779	15.949	-9.03979	J-339	J-334	232.74	-11,875.65	7,848.47	125	0.74	4.35	9.03979	HDPE	145	0.15
P-425	38.5	15.779	15.654	7.74028	J-339	J-340	232.74	-11,875.65	7,848.47	125	0.63	3.27	7.74028	HDPE	145	0.13
P-426	57	15.654	15.736	-1.77536	J-340	J-341	232.74	-11,837.37	7,847.85	110	0.19	0.4	1.77536	uPVC	145	0.02
P-427	85.5	15.736	15.835	0.19443	J-341	J-342	232.68	-11,822.24	7,902.81	110	0.02	0.01	0.19443	uPVC	145	0
P-428	35	15.85	15.736	6.96641	J-338	J-341	232.66	-11,855.58	7,913.31	125	0.57	2.69	6.96641	HDPE	145	0.09
P-429	34	15.736	15.64	4.51575	J-341	J-343	232.68	-11,822.24	7,902.81	110	0.48	2.24	4.51575	HDPE	145	0.08
P-43	71	19.616	20.488	-2.99251	J-38	J-39	233.25	-12,597.94	8,929.52	110	0.31	1.05	2.99251	HDPE	145	0.07
P-430	49.5	15.64	15.7	0.11259	J-343	J-344	232.7	-11,789.51	7,893.24	110	0.01	0	0.11259	uPVC	145	0
P-431	35	15.654	15.476	9.21891	J-340	J-345	232.74	-11,837.37	7,847.85	125	0.75	4.52	9.21891	HDPE	145	0.16
P-432	56	15.476	15.64	-4.08597	J-345	J-343	232.76	-11,803.74	7,838.87	110	0.43	1.87	4.08597	uPVC	145	0.1
P-433	48	15.476	15.333	12.98882	J-345	J-346	232.76	-11,803.74	7,838.87	160	0.65	2.56	12.98882	HDPE	145	0.12
P-434	53.5	15.333	15.319	3.48311	J-346	J-347	232.78	-11,757.10	7,827.81	110	0.37	1.39	3.48311	uPVC	145	0.07
P-435	49	15.319	15.369	0.11145	J-347	J-348	232.72	-11,740.90	7,878.59	110	0.01	0	0.11145	uPVC	145	0
P-436	162.5	15.333	15.087	8.90548	J-346	J-349	232.78	-11,757.10	7,827.81	160	0.44	1.27	8.90548	uPVC	145	0.21
P-437	30.5	15.087	15.128	-0.3999	J-349	J-350	232.82	-11,597.43	7,819.31	110	0.04	0.03	0.3999	uPVC	145	0
P-438	140.5	15.128	15.319	-2.81917	J-350	J-347	232.78	-11,603.56	7,849.15	110	0.3	0.94	2.81917	uPVC	145	0.13
P-439	84.5	15.128	15.192	1.83837	J-350	J-351	232.78	-11,603.56	7,849.15	110	0.19	0.42	1.83837	uPVC	145	0.04
P-44	29	20.488	20.489	-1.44487	J-39	J-35	232.45	-12,527.05	8,933.97	160	0.07	0.04	1.44487	uPVC	145	0
P-440	23	15.192	15.199	0.98682	J-351	J-352	232.68	-11,590.71	7,932.74	110	0.1	0.13	0.98682	uPVC	145	0
P-441	99.5	15.199	15.238	0.22626	J-352	J-353	232.67	-11,613.24	7,937.68	110	0.02	0.01	0.22626	uPVC	145	0
P-442	22.5	18.307	18.192	-3.02415	J-354	J-355	232.54	-11,849.78	8,452.91	110	0.32	1.07	3.02415	HDPE	145	0.02
P-443	36.5	18.192	18.278	-4.65686	J-355	J-356	232.68	-11,851.94	8,475.45	110	0.49	2.38	4.65686	HDPE	145	0.09
P-444	62.5	18.278	18.678	-8.83632	J-356	J-357	232.68	-11,852.25	8,511.89	125	0.72	4.17	8.83632	HDPE	145	0.26
P-445	55	18.678	18.823	-3.90634	J-357	J-358	232.54	-11,857.50	8,573.95	110	0.41	1.72	3.90634	HDPE	145	0.09
P-446	47	18.516	18.714	-3.29511	J-359	J-360	232.68	-11,804.39	8,597.42	110	0.35	1.25	3.29511	HDPE	145	0.06
P-447	35	18.714	18.627	-3.64987	J-360	J-361	232.54	-11,803.46	8,644.35	110	0.38	1.51	3.64987	HDPE	145	0.05
P-448	18	18.627	18.833	-8.25878	J-361	J-362	232.68	-11,801.61	8,679.55	125	0.67	3.68	8.25878	HDPE	145	0.07
P-449	6	18.833	18.707	-2.3588	J-362	J-363	232.54	-11,801.92	8,697.77	110	0.25	0.67	2.3588	HDPE	145	0

P-45	6	19.616	19.615	0.38195	J-38	J-40	233.25	-12,597.94	8,929.52	110	0.04	0.02	0.38195	HDPE	145	0
P-450	23	18.707	18.764	-5.20557	J-363	J-364	232.67	-11,801.92	8,703.94	110	0.55	2.92	5.20557	HDPE	145	0.07
P-451	28.5	18.764	18.864	-7.61053	J-364	J-365	232.68	-11,800.68	8,726.79	125	0.62	3.17	7.61053	HDPE	145	0.09
P-452	53	18.864	18.851	-4.85996	J-365	J-366	232.67	-11,800.07	8,755.20	110	0.51	2.57	4.85996	HDPE	145	0.14
P-453	57.5	18.851	18.903	3.88625	J-366	J-367	232.82	-11,852.87	8,757.98	110	0.41	1.7	3.88625	HDPE	145	0.1
P-454	46.5	18.903	18.789	-2.53899	J-367	J-368	232.67	-11,853.17	8,700.24	110	0.27	0.77	2.53899	HDPE	145	0.04
P-455	57	18.851	19.146	-9.12706	J-366	J-369	232.82	-11,852.87	8,757.98	140	0.59	2.55	9.12706	HDPE	145	0.15
P-456	25.5	19.146	19.216	-14.58344	J-369	J-370	232.67	-11,850.40	8,815.10	160	0.73	3.17	14.58344	HDPE	145	0.08
P-457	32.5	19.216	19.219	-17.34516	J-370	J-371	232.68	-11,850.70	8,840.42	160	0.86	4.37	17.34516	HDPE	145	0.14
P-458	52.5	19.216	19.087	6.94283	J-370	J-372	232.68	-11,850.70	8,840.42	125	0.57	2.67	6.94283	HDPE	145	0.14
P-459	31	19.087	18.853	5.00195	J-372	J-373	232.67	-11,798.21	8,842.58	110	0.53	2.71	5.00195	HDPE	145	0.08
P-46	27	19.615	19.579	-2.00258	J-40	J-41	233.25	-12,597.94	8,923.35	110	0.21	0.5	2.00258	HDPE	145	0.01
P-460	18.5	18.853	18.938	9.9308	J-373	J-374	232.82	-11,800.38	8,811.70	140	0.65	2.98	9.9308	HDPE	145	0.06
P-461	38.5	18.938	18.864	6.19061	J-374	J-365	232.68	-11,799.14	8,793.48	125	0.5	2.16	6.19061	HDPE	145	0.08
P-462	61	18.864	18.799	3.02851	J-365	J-375	232.67	-11,800.07	8,755.20	110	0.32	1.07	3.02851	HDPE	145	0.07
P-463	39	18.799	18.713	-3.78317	J-375	J-376	232.67	-11,738.93	8,752.73	110	0.4	1.62	3.78317	HDPE	145	0.06
P-464	62	18.713	18.938	-3.4696	J-376	J-374	232.82	-11,737.39	8,791.94	110	0.37	1.38	3.4696	HDPE	145	0.09
P-465	61.5	19.087	18.909	7.02868	J-372	J-377	232.67	-11,798.21	8,842.58	125	0.57	2.73	7.02868	HDPE	145	0.17
P-466	50.5	18.909	18.713	3.1057	J-377	J-376	232.68	-11,736.77	8,842.27	110	0.33	1.12	3.1057	HDPE	145	0.06
P-467	65	18.713	18.821	2.29989	J-376	J-378	232.82	-11,737.39	8,791.94	110	0.24	0.64	2.29989	HDPE	145	0.04
P-468	47	18.821	18.68	-1.21697	J-378	J-379	232.67	-11,672.55	8,794.72	110	0.13	0.2	1.21697	HDPE	145	0.01
P-469	67.5	18.68	18.909	-3.39203	J-379	J-377	232.82	-11,669.15	8,841.65	110	0.36	1.32	3.39203	HDPE	145	0.09
P-47	73	19.579	20.5	-2.90806	J-41	J-42	233.3	-12,595.97	8,896.67	110	0.31	0.99	2.90806	HDPE	145	0.07
P-470	26.5	18.68	18.82	0.0603	J-379	J-380	232.82	-11,669.15	8,841.65	110	0.01	0	0.0603	HDPE	145	0
P-471	63	18.799	18.764	2.12067	J-375	J-381	232.67	-11,738.93	8,752.73	110	0.22	0.55	2.12067	HDPE	145	0.03
P-472	41	18.764	18.821	-3.45769	J-381	J-378	232.67	-11,675.94	8,753.65	110	0.36	1.37	3.45769	HDPE	145	0.06
P-473	60.5	18.764	18.59	2.15028	J-364	J-382	232.68	-11,800.68	8,726.79	110	0.23	0.57	2.15028	HDPE	145	0.03
P-474	29.5	18.59	18.799	-4.25332	J-382	J-375	232.82	-11,740.17	8,723.09	110	0.45	2.01	4.25332	HDPE	145	0.06
P-475	61	18.707	18.647	2.64211	J-363	J-383	232.67	-11,801.92	8,703.94	110	0.28	0.83	2.64211	HDPE	145	0.05
P-476	21	18.647	18.59	-6.1512	J-383	J-382	232.68	-11,740.78	8,702.09	110	0.65	3.98	6.1512	HDPE	145	0.08
P-477	40.5	18.627	18.551	4.39629	J-361	J-384	232.68	-11,801.61	8,679.55	110	0.46	2.14	4.39629	HDPE	145	0.09
P-478	18	18.551	18.427	-3.56314	J-384	J-385	232.67	-11,761.16	8,678.93	110	0.37	1.45	3.56314	HDPE	145	0.03
P-479	22	18.427	18.647	-5.86199	J-385	J-383	232.82	-11,743.25	8,680.48	110	0.62	3.64	5.86199	HDPE	145	0.08
P-48	27	20.5	20.488	1.83641	J-42	J-39	232.45	-12,523.84	8,907.04	110	0.19	0.42	1.83641	HDPE	145	0.01
P-480	61	18.647	18.599	2.55615	J-383	J-386	232.68	-11,740.78	8,702.09	110	0.27	0.78	2.55615	HDPE	145	0.05
P-481	53	18.599	18.764	-5.22138	J-386	J-381	232.68	-11,679.65	8,700.55	110	0.55	2.94	5.22138	HDPE	145	0.16

P-482	63.5	18.427	18.544	2.0635	J-385	J-387	232.82	-11,743.25	8,680.48	110	0.22	0.53	2.0635	HDPE	145	0.03
P-483	34	18.544	18.239	9.26234	J-387	J-388	232.67	-11,679.96	8,678.93	125	0.75	4.56	9.26234	HDPE	145	0.15
P-484	61	18.239	18.141	11.74006	J-388	J-389	232.82	-11,683.35	8,644.97	140	0.76	4.07	11.74006	HDPE	145	0.25
P-485	30	18.141	18.035	5.48351	J-389	J-390	232.67	-11,688.60	8,584.14	110	0.58	3.22	5.48351	HDPE	145	0.1
P-486	47	18.035	17.763	5.11284	J-390	J-391	232.68	-11,691.38	8,554.19	110	0.54	2.82	5.11284	HDPE	145	0.13
P-487	22.5	17.763	17.781	10.60637	J-391	J-392	232.82	-11,695.70	8,507.57	125	0.86	5.85	10.60637	HDPE	145	0.13
P-49	24	20.5	19.916	-5.02643	J-42	J-43	232.45	-12,523.84	8,907.04	110	0.53	2.74	5.02643	HDPE	145	0.07
P-5	42.5	20.459	20.977	8.92257	J-5	J-6	233.25	-12,345.00	8,878.54	125	0.73	4.25	8.92257	HDPE	145	0.18
P-50	31.5	19.916	19.777	-4.15207	J-43	J-44	233.1	-12,500.13	8,910.25	110	0.44	1.92	4.15207	HDPE	145	0.06
P-51	18.5	19.777	20.038	-5.58614	J-44	J-12	233.3	-12,469.00	8,914.21	110	0.59	3.33	5.58614	HDPE	145	0.06
P-52	25	19.579	19.586	-1.44469	J-41	J-45	233.3	-12,595.97	8,896.67	110	0.15	0.27	1.44469	HDPE	145	0.01
P-53	127.5	19.586	19.971	-3.57704	J-45	J-46	233.3	-12,594.24	8,871.72	110	0.38	1.46	3.57704	HDPE	145	0.19
P-54	29	19.971	19.777	-1.25441	J-46	J-44	233.1	-12,468.01	8,885.31	110	0.13	0.21	1.25441	HDPE	145	0.01
P-55	36.5	19.971	20.652	-2.76144	J-46	J-47	233.1	-12,468.01	8,885.31	110	0.29	0.9	2.76144	HDPE	145	0.03
P-56	39.5	20.652	19.752	3.40907	J-47	J-48	232.45	-12,469.07	8,848.62	110	0.36	1.33	3.40907	HDPE	145	0.05
P-57	59.5	19.752	19.881	3.18395	J-48	J-49	233.3	-12,506.37	8,860.48	110	0.34	1.17	3.18395	HDPE	145	0.07
P-58	52	19.881	19.638	2.65527	J-49	J-50	233.1	-12,521.93	8,802.93	110	0.28	0.84	2.65527	HDPE	145	0.04
P-59	12.5	19.638	20.487	-0.69845	J-50	J-51	233.3	-12,535.51	8,752.54	110	0.07	0.07	0.69845	HDPE	145	0
P-6	125	20.977	21.146	-2.12574	J-6	J-7	232.55	-12,387.49	8,881.75	110	0.22	0.56	2.12574	uPVC	145	0.07
P-60	40	20.487	19.884	-3.11542	J-51	J-52	232.45	-12,523.16	8,750.31	110	0.33	1.13	3.11542	HDPE	145	0.05
P-61	23	19.884	20.561	-3.2587	J-52	J-53	233.1	-12,516.49	8,789.83	110	0.34	1.23	3.2587	HDPE	145	0.03
P-62	67	20.561	20.652	-3.46336	J-53	J-47	232.45	-12,493.52	8,786.38	110	0.36	1.37	3.46336	HDPE	145	0.09
P-63	26	20.652	19.941	-10.01813	J-47	J-54	232.45	-12,469.07	8,848.62	125	0.82	5.27	10.01813	HDPE	145	0.14
P-64	64.5	19.941	20.168	-1.85762	J-54	J-55	233.3	-12,443.13	8,846.40	110	0.2	0.43	1.85762	HDPE	145	0.03
P-65	24	20.168	20.688	3.2165	J-55	J-11	233.1	-12,446.10	8,910.87	110	0.34	1.2	3.2165	HDPE	145	0.03
P-66	45.5	20.168	20.958	-5.37881	J-55	J-56	233.1	-12,446.10	8,910.87	110	0.57	3.1	5.37881	HDPE	145	0.14
P-67	35.5	20.958	20.977	-10.58676	J-56	J-6	232.45	-12,422.88	8,882.22	140	0.69	3.36	10.58676	HDPE	145	0.12
P-68	38	20.958	20.857	4.93737	J-56	J-57	232.45	-12,422.88	8,882.22	110	0.52	2.65	4.93737	HDPE	145	0.1
P-69	13.5	20.857	19.941	9.81843	J-57	J-54	232.45	-12,429.55	8,844.67	125	0.8	5.07	9.81843	HDPE	145	0.07
P-7	28	20.367	20.787	12.54981	J-8	J-9	233.1	-12,448.50	9,018.69	140	0.82	4.6	12.54981	HDPE	145	0.13
P-70	47.5	19.941	20.13	1.31345	J-54	J-58	233.3	-12,443.13	8,846.40	110	0.14	0.23	1.31345	HDPE	145	0.01
P-71	49.5	20.13	20.64	7.11602	J-58	J-59	233.1	-12,457.46	8,800.95	125	0.58	2.8	7.11602	HDPE	145	0.14
P-72	12	20.64	19.762	6.64867	J-59	J-60	232.45	-12,468.57	8,752.78	125	0.54	2.46	6.64867	HDPE	145	0.03
P-73	57	19.762	19.857	4.0648	J-60	J-61	233.3	-12,470.55	8,740.93	110	0.43	1.85	4.0648	HDPE	145	0.11
P-74	39.5	19.857	19.57	4.49117	J-61	J-62	233.1	-12,474.17	8,688.14	110	0.47	2.22	4.49117	HDPE	145	0.09
P-75	43.5	19.57	19.586	-1.74621	J-62	J-63	233.3	-12,493.69	8,653.53	110	0.18	0.39	1.74621	HDPE	145	0.02

Distribution Network Design Output: Zone 17

P-76	99.5	19.586	20.487	-2.07136	J-63	J-51	233.3	-12,536.67	8,651.55	110	0.22	0.53	2.07136	HDPE	145	0.05
P-77	28.5	20.64	20.64	-0.06485	J-64	J-59	232.45	-12,495.67	8,761.72	110	0.01	0	0.06485	HDPE	145	0
P-78	43.5	20.64	19.991	0.09895	J-59	J-65	232.45	-12,468.57	8,752.78	110	0.01	0	0.09895	HDPE	145	0
P-79	24	19.762	19.746	2.37239	J-60	J-66	233.3	-12,470.55	8,740.93	110	0.25	0.68	2.37239	HDPE	145	0.02
P-8	57	20.787	20.809	3.45582	J-9	J-10	232.55	-12,443.31	8,991.03	110	0.36	1.37	3.45582	uPVC	145	0.08
P-80	55.5	19.746	20.468	1.96193	J-66	J-67	233.3	-12,453.18	8,724.42	110	0.21	0.48	1.96193	HDPE	145	0.03
P-81	17	20.468	19.88	4.57261	J-67	J-68	232.55	-12,414.89	8,684.41	110	0.48	2.3	4.57261	HDPE	145	0.04
P-82	8.5	19.88	19.662	4.42647	J-68	J-69	233.1	-12,420.08	8,668.10	110	0.47	2.16	4.42647	HDPE	145	0.02
P-83	20.5	19.662	20.482	3.45551	J-69	J-70	233.3	-12,424.28	8,660.69	110	0.36	1.37	3.45551	HDPE	145	0.03
P-84	46	20.482	19.706	5.06138	J-70	J-71	232.45	-12,432.18	8,641.67	110	0.53	2.77	5.06138	HDPE	145	0.13
P-85	16.5	19.706	19.57	-6.01112	J-71	J-62	233.1	-12,477.64	8,649.33	110	0.63	3.81	6.01112	HDPE	145	0.06
P-86	57	19.857	19.662	-0.77539	J-61	J-69	233.1	-12,474.17	8,688.14	110	0.08	0.09	0.77539	HDPE	145	0
P-87	50	20.468	19.768	-2.88923	J-67	J-72	232.55	-12,414.89	8,684.41	110	0.3	0.98	2.88923	HDPE	145	0.05
P-88	61.5	19.768	19.968	0.13987	J-72	J-73	233.3	-12,365.24	8,688.36	110	0.01	0	0.13987	HDPE	145	0
P-89	25.5	19.768	19.801	-3.34061	J-72	J-74	233.3	-12,365.24	8,688.36	110	0.35	1.28	3.34061	HDPE	145	0.03
P-9	17	20.809	20.688	3.28753	J-10	J-11	232.45	-12,429.23	8,935.94	110	0.35	1.25	3.28753	HDPE	145	0.02
P-90	57.5	19.801	20.001	0.13078	J-74	J-75	233.3	-12,339.55	8,688.61	110	0.01	0	0.13078	HDPE	145	0
P-91	37	19.801	19.86	-3.74425	J-74	J-76	233.3	-12,339.55	8,688.61	110	0.39	1.59	3.74425	HDPE	145	0.06
P-92	27.5	19.86	19.812	3.91658	J-76	J-77	233.3	-12,302.75	8,689.59	110	0.41	1.72	3.91658	HDPE	145	0.05
P-93	27	19.812	19.919	5.70555	J-77	J-78	233.3	-12,275.33	8,689.59	110	0.6	3.46	5.70555	HDPE	145	0.09
P-94	78.5	19.919	19.681	1.99048	J-78	J-79	233.1	-12,273.60	8,662.42	110	0.21	0.49	1.99048	HDPE	145	0.04
P-95	68.5	19.681	19.88	0.06761	J-79	J-68	233.3	-12,352.15	8,658.22	110	0.01	0	0.06761	HDPE	145	0
P-96	79	20.482	20.519	-1.9367	J-70	J-80	232.45	-12,432.18	8,641.67	110	0.2	0.47	1.9367	HDPE	145	0.04
P-97	32	20.519	19.681	-1.51588	J-80	J-79	232.45	-12,354.87	8,626.36	110	0.16	0.3	1.51588	HDPE	145	0.01
P-98	16.5	20.519	19.872	-0.71074	J-80	J-81	232.45	-12,354.87	8,626.36	110	0.07	0.07	0.71074	HDPE	145	0
P-99	66.5	19.872	19.682	-1.06095	J-81	J-82	233.1	-12,338.32	8,628.58	110	0.11	0.15	1.06095	HDPE	145	0.01
PP-1000	22	19.648	19.308	5.87748	PJ-737	PJ-738	232.44	-11,999.10	9,094.07	110	0.62	3.66	5.87748	HDPE	145	0.08
PP-1001	110	19.308	19.049	4.6445	PJ-738	PJ-739	232.7	-12,001.80	9,116.07	110	0.49	2.36	4.6445	HDPE	145	0.26
PP-1002	59	19.049	19.265	-1.46963	PJ-739	PJ-740	232.7	-12,014.54	9,225.29	110	0.15	0.28	1.46963	HDPE	145	0.02
PP-1003	23.5	19.265	19.423	-1.65724	PJ-740	PJ-741	232.5	-11,955.87	9,230.31	110	0.17	0.35	1.65724	HDPE	145	0.01
PP-1004	16.5	19.423	19.344	-2.33114	PJ-741	PJ-742	232.35	-11,953.56	9,207.15	110	0.25	0.66	2.33114	HDPE	145	0.01
PP-1005	18	19.344	19.457	-3.33696	PJ-742	PJ-743	232.44	-11,952.01	9,190.94	110	0.35	1.28	3.33696	HDPE	145	0.02
PP-1006	20.5	19.457	19.368	-5.24102	PJ-743	PJ-744	232.35	-11,950.08	9,173.19	110	0.55	2.96	5.24102	HDPE	145	0.06
PP-1007	31.5	19.368	19.563	-8.97954	PJ-744	PJ-745	232.5	-11,947.00	9,152.73	125	0.73	4.3	8.97954	HDPE	145	0.14
PP-1008	57	19.563	19.308	-0.80326	PJ-745	PJ-738	232.44	-11,945.07	9,121.47	110	0.08	0.09	0.80326	HDPE	145	0.01
PP-1009	33	19.648	19.747	-1.44775	PJ-737	PJ-746	232.44	-11,999.10	9,094.07	110	0.15	0.27	1.44775	HDPE	145	0.01

PP-1010	23.5	19.747	19.639	2.55506	PJ-746	PJ-747	232.35	-11,966.29	9,097.54	110	0.27	0.78	2.55506	HDPE	145	0.02
PP-1011	15	19.639	19.526	5.80189	PJ-747	PJ-748	232.44	-11,943.14	9,100.63	110	0.61	3.57	5.80189	HDPE	145	0.05
PP-1012	6	19.526	19.563	8.39117	PJ-748	PJ-745	232.5	-11,945.07	9,115.68	125	0.68	3.8	8.39117	HDPE	145	0.02
PP-1013	32.5	19.641	19.867	2.94705	PJ-736	PJ-749	232.7	-11,987.60	8,993.87	110	0.31	1.02	2.94705	HDPE	145	0.03
PP-1014	100	19.867	19.747	4.35865	PJ-749	PJ-746	232.44	-11,955.49	8,998.35	110	0.46	2.1	4.35865	HDPE	145	0.21
PP-1015	55	19.639	19.804	-3.45944	PJ-747	PJ-750	232.44	-11,943.14	9,100.63	110	0.36	1.37	3.45944	HDPE	145	0.08
PP-1016	32	19.804	19.725	-4.47788	PJ-750	PJ-751	232.35	-11,936.96	9,046.21	110	0.47	2.21	4.47788	HDPE	145	0.07
PP-1017	14	19.725	19.919	-7.6817	PJ-751	PJ-752	232.5	-11,935.03	9,014.17	125	0.63	3.22	7.6817	HDPE	145	0.05
PP-1018	23	19.919	19.867	-5.31112	PJ-752	PJ-749	232.35	-11,932.33	9,000.28	125	0.43	1.63	5.31112	HDPE	145	0.04
PP-1019	54	19.867	20.111	-7.19904	PJ-749	PJ-753	232.44	-11,955.49	8,998.35	125	0.59	2.86	7.19904	HDPE	145	0.15
PP-1020	21.5	20.111	20.107	-16.54676	PJ-753	PJ-733	232.35	-11,954.33	8,944.70	160	0.82	4.01	16.54676	HDPE	145	0.09
PP-1021	52.5	19.997	20.111	7.62615	PJ-656	PJ-753	232.56	-11,956.92	8,892.03	140	0.5	1.83	7.62615	HDPE	145	0.1
PP-1022	23	20.111	20.018	16.63053	PJ-753	PJ-754	232.35	-11,954.33	8,944.70	160	0.83	4.05	16.63053	HDPE	145	0.09
PP-1023	22.5	20.018	19.796	7.65684	PJ-754	PJ-755	232.35	-11,931.56	8,943.54	125	0.62	3.2	7.65684	HDPE	145	0.07
PP-1024	34.5	19.796	19.919	2.53319	PJ-755	PJ-752	232.5	-11,930.40	8,965.93	110	0.27	0.77	2.53319	HDPE	145	0.03
PP-1025	22	19.751	20.038	6.50347	PJ-658	PJ-756	232.56	-11,937.47	8,850.65	125	0.53	2.37	6.50347	HDPE	145	0.05
PP-1026	18	20.038	19.903	1.42965	PJ-756	PJ-757	232.22	-11,934.26	8,872.53	110	0.15	0.27	1.42965	HDPE	145	0
PP-1027	36	19.903	20.075	-3.15937	PJ-757	PJ-758	232.35	-11,934.26	8,890.28	110	0.33	1.16	3.15937	HDPE	145	0.04
PP-1028	17.5	20.075	20.018	-8.8304	PJ-758	PJ-754	232.22	-11,933.49	8,926.18	125	0.72	4.17	8.8304	HDPE	145	0.07
PP-1029	46.5	19.796	19.676	4.8883	PJ-755	PJ-759	232.5	-11,930.40	8,965.93	110	0.51	2.6	4.8883	HDPE	145	0.12
PP-1030	27	19.676	19.921	4.60328	PJ-759	PJ-760	232.5	-11,885.24	8,953.96	125	0.38	1.25	4.60328	HDPE	145	0.03
PP-1031	48.5	19.921	20.075	-5.43909	PJ-760	PJ-758	232.22	-11,884.86	8,926.95	110	0.57	3.17	5.43909	HDPE	145	0.15
PP-1032	50	19.903	19.799	4.35253	PJ-757	PJ-761	232.35	-11,934.26	8,890.28	110	0.46	2.1	4.35253	HDPE	145	0.1
PP-1033	35	19.799	19.921	1.23421	PJ-761	PJ-760	232.35	-11,884.47	8,891.83	110	0.13	0.2	1.23421	HDPE	145	0.01
PP-1034	38.5	19.921	19.784	10.93779	PJ-760	PJ-762	232.22	-11,884.86	8,926.95	140	0.71	3.57	10.93779	HDPE	145	0.14
PP-1035	49.5	19.784	19.407	5.91201	PJ-762	PJ-763	232.22	-11,846.26	8,926.95	125	0.48	1.98	5.91201	HDPE	145	0.1
PP-1036	84	19.407	19.087	5.60846	PJ-763	J-372	232.5	-11,796.86	8,926.56	125	0.46	1.8	5.60846	HDPE	145	0.15
PP-1037	86.5	19.784	19.216	4.62902	PJ-762	J-370	232.22	-11,846.26	8,926.95	125	0.38	1.26	4.62902	HDPE	145	0.11
PP-1038	22.5	19.799	19.907	2.87387	PJ-761	PJ-764	232.35	-11,884.47	8,891.83	110	0.3	0.97	2.87387	HDPE	145	0.02
PP-1039	29	19.907	19.219	7.50768	PJ-764	J-371	232.22	-11,883.31	8,869.44	125	0.61	3.09	7.50768	HDPE	145	0.09
PP-1040	54	19.219	19.82	-8.99168	J-371	PJ-659	232.82	-11,883.43	8,840.42	125	0.73	4.31	8.99168	HDPE	145	0.23
PP-1041	51	20.038	19.907	4.86689	PJ-756	PJ-764	232.22	-11,934.26	8,872.53	110	0.51	2.58	4.86689	HDPE	145	0.13
PP-1042	53.5	19.605	19.824	4.5131	PJ-660	PJ-765	232.56	-11,938.09	8,804.95	110	0.47	2.24	4.5131	HDPE	145	0.12
PP-1043	37	19.824	19.219	1.19255	PJ-765	J-371	232.22	-11,884.47	8,803.44	110	0.13	0.19	1.19255	HDPE	145	0.01
PP-1044	25.5	19.839	19.717	7.16671	PJ-661	PJ-766	232.3	-11,941.79	8,772.84	125	0.58	2.83	7.16671	HDPE	145	0.07
PP-1045	30.5	19.717	19.512	4.00835	PJ-766	PJ-767	232.35	-11,916.12	8,772.95	110	0.42	1.8	4.00835	HDPE	145	0.05

PP-1046	30.5	19.512	19.824	-3.04541	PJ-767	PJ-765	232.5	-11,885.63	8,772.95	110	0.32	1.08	3.04541	HDPE	145	0.03
PP-1047	70.5	19.459	19.717	-2.87073	PJ-493	PJ-766	232.54	-11,920.50	8,702.75	110	0.3	0.97	2.87073	HDPE	145	0.07
PP-1048	92	19.512	19.552	6.70587	PJ-767	PJ-495	232.5	-11,885.63	8,772.95	125	0.55	2.5	6.70587	HDPE	145	0.23
PP-1049	27	18.909	18.939	0.06144	J-377	PJ-768	232.68	-11,736.77	8,842.27	110	0.01	0	0.06144	HDPE	145	0
PP-1050	59.5	19.676	19.955	-0.01739	PJ-759	PJ-769	232.5	-11,885.24	8,953.96	110	0	0	0.01739	HDPE	145	0
PP-1051	29.5	19.955	19.651	2.66571	PJ-769	PJ-770	232.22	-11,887.94	9,013.40	110	0.28	0.85	2.66571	HDPE	145	0.02
PP-1052	47	19.651	19.804	-0.71375	PJ-770	PJ-750	232.5	-11,890.26	9,042.74	110	0.08	0.07	0.71375	HDPE	145	0
PP-1053	47	19.725	19.955	2.99234	PJ-751	PJ-769	232.5	-11,935.03	9,014.17	110	0.31	1.05	2.99234	HDPE	145	0.05
PP-1054	77	19.651	19.568	3.03044	PJ-770	PJ-771	232.5	-11,890.26	9,042.74	110	0.32	1.07	3.03044	HDPE	145	0.08
PP-1055	48	19.568	19.526	2.74621	PJ-771	PJ-748	232.5	-11,897.21	9,119.54	110	0.29	0.89	2.74621	HDPE	145	0.04
PP-1056	21	18.821	19.27	-0.33646	J-378	PJ-772	232.67	-11,672.55	8,794.72	110	0.04	0.02	0.33646	HDPE	145	0
PP-1057	17.5	19.27	18.841	0.00542	PJ-772	PJ-773	232.22	-11,651.46	8,792.22	110	0	0	0.00542	HDPE	145	0
PP-1058	48.5	18.841	19.27	-0.14468	PJ-773	PJ-774	232.65	-11,633.97	8,792.22	110	0.02	0	0.14468	HDPE	145	0
PP-1059	20.5	19.27	18.843	-0.81102	PJ-774	PJ-775	232.22	-11,630.95	8,840.47	110	0.09	0.09	0.81102	HDPE	145	0
PP-1060	17.5	18.843	18.68	-1.75437	PJ-775	J-379	232.65	-11,651.46	8,840.47	110	0.18	0.39	1.75437	HDPE	145	0.01
PP-1061	48	19.27	18.843	-0.53858	PJ-772	PJ-775	232.22	-11,651.46	8,792.22	110	0.06	0.04	0.53858	HDPE	145	0
PP-1062	46	18.843	18.993	0.10463	PJ-775	PJ-776	232.65	-11,651.46	8,840.47	110	0.01	0	0.10463	HDPE	145	0
PP-1063	45.5	18.841	19.27	-0.1035	PJ-777	PJ-774	232.65	-11,629.14	8,885.70	110	0.01	0	0.1035	HDPE	145	0
PP-1064	24	19.27	19.27	0.24792	PJ-774	PJ-778	232.22	-11,630.95	8,840.47	110	0.03	0.01	0.24792	HDPE	145	0
PP-1065	42.5	19.27	19.17	0.09668	PJ-778	PJ-779	232.22	-11,606.83	8,841.07	110	0.01	0	0.09668	HDPE	145	0
PP-1066	65	19.423	19.122	0.43513	PJ-741	PJ-780	232.35	-11,953.56	9,207.15	110	0.05	0.03	0.43513	HDPE	145	0
PP-1067	13.5	19.122	19.263	2.25237	PJ-780	PJ-781	232.65	-11,888.58	9,212.62	110	0.24	0.62	2.25237	HDPE	145	0.01
PP-1068	20.5	19.263	19.427	2.56004	PJ-781	PJ-782	232.5	-11,875.07	9,212.62	110	0.27	0.78	2.56004	HDPE	145	0.02
PP-1069	14	19.427	19.281	3.15154	PJ-782	PJ-783	232.32	-11,854.81	9,213.10	110	0.33	1.15	3.15154	HDPE	145	0.02
PP-1070	49	19.281	19.424	-1.47606	PJ-783	PJ-784	232.45	-11,840.82	9,213.10	110	0.16	0.28	1.47606	HDPE	145	0.01
PP-1071	20	19.424	19.252	-1.63298	PJ-784	PJ-785	232.32	-11,835.51	9,164.38	110	0.17	0.34	1.63298	HDPE	145	0.01
PP-1072	16.5	19.252	19.115	-2.62016	PJ-785	PJ-786	232.5	-11,855.29	9,161.48	110	0.28	0.82	2.62016	HDPE	145	0.01
PP-1073	9.5	19.115	19.457	-3.2985	PJ-786	PJ-787	232.65	-11,871.69	9,161.48	110	0.35	1.26	3.2985	HDPE	145	0.01
PP-1074	66	19.457	19.368	-3.4702	PJ-787	PJ-744	232.32	-11,881.34	9,160.52	110	0.37	1.38	3.4702	HDPE	145	0.09
PP-1075	65.5	19.457	19.334	1.66757	PJ-743	PJ-788	232.35	-11,950.08	9,173.19	110	0.18	0.35	1.66757	HDPE	145	0.02
PP-1076	19.5	19.334	19.129	1.47428	PJ-788	PJ-789	232.45	-11,884.72	9,179.33	110	0.16	0.28	1.47428	HDPE	145	0.01
PP-1077	14	19.129	19.122	2.02759	PJ-789	PJ-780	232.65	-11,887.13	9,198.63	110	0.21	0.51	2.02759	HDPE	145	0.01
PP-1078	65.5	19.344	19.129	0.77843	PJ-742	PJ-789	232.44	-11,952.01	9,190.94	110	0.08	0.09	0.77843	HDPE	145	0.01
PP-1079	51.5	19.115	19.263	0.5021	PJ-786	PJ-781	232.65	-11,871.69	9,161.48	110	0.05	0.04	0.5021	HDPE	145	0
PP-1080	51.5	19.427	19.252	-0.78707	PJ-782	PJ-785	232.32	-11,854.81	9,213.10	110	0.08	0.09	0.78707	HDPE	145	0
PP-1081	29.5	19.281	19.167	4.41725	PJ-783	PJ-790	232.45	-11,840.82	9,213.10	110	0.46	2.15	4.41725	HDPE	145	0.06

PP-1082	42.5	19.167	19.132	4.25351	PJ-790	PJ-791	232.5	-11,811.10	9,213.52	110	0.45	2.01	4.25351	HDPE	145	0.09
PP-1083	26.5	19.132	18.884	4.06243	PJ-791	PJ-792	232.45	-11,807.74	9,171.23	110	0.43	1.84	4.06243	HDPE	145	0.05
PP-1084	24.5	18.884	19.201	1.98718	PJ-792	PJ-793	232.65	-11,781.45	9,172.42	110	0.21	0.49	1.98718	HDPE	145	0.01
PP-1085	42.5	19.201	19.057	1.59832	PJ-793	PJ-794	232.32	-11,756.95	9,173.21	110	0.17	0.33	1.59832	HDPE	145	0.01
PP-1086	24.5	19.057	19.016	-1.65109	PJ-794	PJ-795	232.45	-11,759.32	9,215.50	110	0.17	0.35	1.65109	HDPE	145	0.01
PP-1087	42.5	19.016	18.884	-1.80346	PJ-795	PJ-792	232.5	-11,783.82	9,214.91	110	0.19	0.41	1.80346	HDPE	145	0.02
PP-1088	13	18.884	19.083	0.02961	PJ-792	PJ-796	232.65	-11,781.45	9,172.42	110	0	0	0.02961	HDPE	145	0
PP-1089	7.5	18.933	19.132	-0.01711	PJ-797	PJ-791	232.65	-11,809.51	9,163.72	110	0	0	0.01711	HDPE	145	0
PP-1090	52	19.201	19.071	0.11827	PJ-793	PJ-798	232.32	-11,756.95	9,173.21	110	0.01	0	0.11827	HDPE	145	0
PP-1091	29.5	19.057	18.976	3.02996	PJ-794	PJ-799	232.45	-11,759.32	9,215.50	110	0.32	1.07	3.02996	HDPE	145	0.03
PP-1092	28	18.976	19.144	1.84118	PJ-799	PJ-800	232.5	-11,729.88	9,214.91	110	0.19	0.43	1.84118	HDPE	145	0.01
PP-1093	27.5	19.144	19.134	1.6839	PJ-800	PJ-801	232.32	-11,702.01	9,215.70	110	0.18	0.36	1.6839	HDPE	145	0.01
PP-1094	106.5	18.976	19.016	0.81589	PJ-799	PJ-802	232.5	-11,729.88	9,214.91	110	0.09	0.09	0.81589	HDPE	145	0.01
PP-1095	26	19.016	19.145	0.51461	PJ-802	PJ-803	232.45	-11,725.92	9,108.59	110	0.05	0.04	0.51461	HDPE	145	0
PP-1096	107	19.145	19.144	0.2122	PJ-803	PJ-800	232.32	-11,699.84	9,108.79	110	0.02	0.01	0.2122	HDPE	145	0
PP-1097	49	19.134	18.954	0.11145	PJ-801	PJ-804	232.32	-11,674.35	9,216.49	110	0.01	0	0.11145	HDPE	145	0
PP-1098	40.5	19.134	19.125	1.3064	PJ-801	PJ-805	232.32	-11,674.35	9,216.49	110	0.14	0.23	1.3064	HDPE	145	0.01
PP-1099	59.5	19.125	18.995	0.13532	PJ-805	PJ-806	232.32	-11,633.84	9,220.44	110	0.01	0	0.13532	HDPE	145	0
PP-1100	51	19.125	19.12	0.82774	PJ-805	PJ-807	232.32	-11,633.84	9,220.44	110	0.09	0.1	0.82774	HDPE	145	0
PP-1101	42	19.12	18.99	0.09554	PJ-807	PJ-808	232.32	-11,583.25	9,225.18	110	0.01	0	0.09554	HDPE	145	0
PP-1102	49.5	19.12	19.118	0.40819	PJ-807	PJ-809	232.32	-11,583.25	9,225.18	110	0.04	0.03	0.40819	HDPE	145	0
PP-1103	65	19.118	18.938	0.14783	PJ-809	PJ-810	232.32	-11,534.24	9,230.32	110	0.02	0	0.14783	HDPE	145	0
PP-1104	93	19.263	19.134	-0.21148	PJ-811	PJ-812	232.32	-12,237.58	9,307.12	110	0.02	0.01	0.21148	HDPE	145	0
PP-1105	92.5	19.134	19.265	-0.19318	PJ-812	PJ-813	232.45	-12,144.71	9,311.94	110	0.02	0.01	0.19318	HDPE	145	0
PP-1106	86.5	19.265	19.135	-0.01698	PJ-813	PJ-814	232.32	-12,052.44	9,316.77	110	0	0	0.01698	HDPE	145	0
PP-1107	43.5	19.135	19.264	0.09895	PJ-814	PJ-815	232.45	-11,966.20	9,321.59	110	0.01	0	0.09895	HDPE	145	0
PP-1108	100.5	19.136	18.857	-0.22853	PJ-816	PJ-817	232.45	-12,239.39	9,269.73	110	0.02	0.01	0.22853	HDPE	145	0
PP-1109	89	18.857	19.087	-0.17132	PJ-817	PJ-818	232.73	-12,139.28	9,276.36	110	0.02	0.01	0.17132	HDPE	145	0
PP-1110	89	19.087	19.266	0.26491	PJ-818	PJ-819	232.5	-12,050.63	9,281.79	110	0.03	0.01	0.26491	HDPE	145	0
PP-1111	33	19.266	19.135	0.48654	PJ-819	PJ-814	232.32	-11,961.98	9,289.03	110	0.05	0.04	0.48654	HDPE	145	0
PP-1112	42	18.863	19.093	-0.09554	PJ-820	PJ-821	232.73	-12,179.08	9,244.40	110	0.01	0	0.09554	HDPE	145	0
PP-1113	89.5	19.093	18.866	-0.45944	PJ-821	PJ-822	232.5	-12,137.47	9,248.62	110	0.05	0.03	0.45944	HDPE	145	0
PP-1114	89.5	18.866	19.087	0.82306	PJ-822	PJ-823	232.73	-12,048.22	9,256.46	110	0.09	0.1	0.82306	HDPE	145	0.01
PP-1115	26.5	19.087	19.266	0.55929	PJ-823	PJ-819	232.5	-11,958.97	9,262.49	110	0.06	0.05	0.55929	HDPE	145	0
PP-1116	40.5	19.281	19.101	-0.09213	PJ-824	PJ-825	232.32	-12,176.67	9,211.83	110	0.01	0	0.09213	HDPE	145	0
PP-1117	90.5	19.101	18.91	-1.84438	PJ-825	PJ-826	232.5	-12,136.27	9,216.06	110	0.19	0.43	1.84438	HDPE	145	0.04

PP-1118	32	18.91	19.049	-5.65713	PJ-826	PJ-739	232.73	-12,046.41	9,224.50	110	0.6	3.41	5.65713	HDPE	145	0.11
PP-1119	33.5	19.264	19.134	-0.07622	PJ-827	PJ-812	232.32	-12,148.33	9,345.11	110	0.01	0	0.07622	HDPE	145	0
PP-1120	36	19.134	18.857	-0.67428	PJ-812	PJ-817	232.45	-12,144.71	9,311.94	110	0.07	0.07	0.67428	HDPE	145	0
PP-1121	28	18.857	19.093	-1.30785	PJ-817	PJ-821	232.73	-12,139.28	9,276.36	110	0.14	0.23	1.30785	HDPE	145	0.01
PP-1122	32.5	19.093	19.101	-1.3805	PJ-821	PJ-825	232.5	-12,137.47	9,248.62	110	0.15	0.25	1.3805	HDPE	145	0.01
PP-1123	35	19.265	19.087	-0.66277	PJ-813	PJ-818	232.32	-12,052.44	9,316.77	110	0.07	0.06	0.66277	HDPE	145	0
PP-1124	25.5	19.087	18.866	-1.64125	PJ-818	PJ-822	232.5	-12,050.63	9,281.79	110	0.17	0.34	1.64125	HDPE	145	0.01
PP-1125	32	18.866	18.91	-3.46145	PJ-822	PJ-826	232.73	-12,048.22	9,256.46	110	0.36	1.37	3.46145	HDPE	145	0.04
PP-1126	62.5	12.611	12.589	3.37785	PJ-543	PJ-828	232.36	-10,828.66	8,308.10	110	0.36	1.31	3.37785	HDPE	145	0.08
PP-1127	217.5	12.589	12.4	2.55244	PJ-828	PJ-829	232.3	-10,876.36	8,348.43	110	0.27	0.78	2.55244	HDPE	145	0.17
PP-1128	44	12.4	11.973	1.7737	PJ-829	PJ-830	232.32	-11,043.41	8,479.90	110	0.19	0.4	1.7737	HDPE	145	0.02
PP-1129	55.5	11.973	12.369	1.3496	PJ-830	PJ-831	232.73	-11,079.60	8,505.23	110	0.14	0.24	1.3496	HDPE	145	0.01
PP-1130	43.5	12.369	12.186	0.78796	PJ-831	PJ-832	232.32	-11,113.97	8,548.65	110	0.08	0.09	0.78796	HDPE	145	0
PP-1131	27.5	12.186	12.365	0.38545	PJ-832	PJ-833	232.5	-11,149.55	8,573.37	110	0.04	0.02	0.38545	HDPE	145	0
PP-1132	71	11.955	12.365	-0.16147	PJ-834	PJ-833	232.73	-11,206.84	8,531.16	110	0.02	0	0.16147	HDPE	145	0
PP-1133	53	12.365	12.186	-0.12055	PJ-835	PJ-832	232.32	-11,179.70	8,529.95	110	0.01	0	0.12055	HDPE	145	0
PP-1134	74	11.96	12.369	-0.16829	PJ-836	PJ-831	232.73	-11,164.02	8,498.60	110	0.02	0.01	0.16829	HDPE	145	0
PP-1135	43.5	12.382	11.973	-0.09895	PJ-837	PJ-830	232.32	-11,100.70	8,467.24	110	0.01	0	0.09895	HDPE	145	0
PP-1136	40.5	12.4	12.22	0.09213	PJ-829	PJ-838	232.32	-11,043.41	8,479.90	110	0.01	0	0.09213	HDPE	145	0
PP-1137	19.5	12.589	12.569	0.14448	PJ-828	PJ-839	232.3	-10,876.36	8,348.43	110	0.02	0	0.14448	HDPE	145	0
PP-1138	22	12.569	12.549	0.05007	PJ-839	PJ-840	232.32	-10,887.22	8,332.15	110	0.01	0	0.05007	HDPE	145	0
PP-1140	33	20.317	20.46	4.59222	PJ-400	J-22	232.67	-12,536.12	9,074.84	110	0.48	2.32	4.59222	HDPE	145	0.08
PP-1141	94	12.538	12.647	0.21376	PJ-558	PJ-841	232.84	-10,909.93	7,904.22	110	0.02	0.01	0.21376	HDPE	145	0
PP-488	50	18.853	19.146	-5.1551	J-373	J-369	232.82	-11,800.38	8,811.70	110	0.54	2.87	5.1551	HDPE	145	0.14
PP-489	**22**	**1.796**	**21.786**	**245.375**	**T-1**	**PJ-393**	**233**	**-12,239.67**	**9,004.39**	**400**	**1.95**	**6.82**	**245.375**	HDPE	**145**	**0.15**
PP-490	80	21.786	21.415	244.61332	PJ-393	J-1	232.82	-12,260.39	9,011.55	400	1.95	6.78	244.61332	HDPE	145	0.54
PP-491	35	21.415	20.858	62.41617	J-1	J-4	232.65	-12,277.57	8,933.38	280	1.01	3.07	62.41617	HDPE	145	0.11
PP-492	44	20.858	21.216	40.91923	J-4	PJ-394	233.1	-12,309.19	8,948.20	280	0.66	1.4	40.91923	HDPE	145	0.06
PP-493	45	21.216	20.962	41.8558	PJ-394	PJ-395	232.68	-12,348.70	8,967.70	250	0.85	2.54	41.8558	HDPE	145	0.11
PP-494	35	20.962	21.146	34.59219	PJ-395	J-7	232.82	-12,389.46	8,986.85	200	1.1	5.3	34.59219	HDPE	145	0.19
PP-495	13	21.146	20.857	32.07311	J-7	PJ-396	232.45	-12,420.83	9,002.39	200	1.02	4.61	32.07311	HDPE	145	0.06
PP-496	19	20.857	20.367	28.60369	PJ-396	J-8	232.68	-12,431.76	9,009.69	200	0.91	3.73	28.60369	HDPE	145	0.07
PP-497	38	20.367	20.036	12.81594	J-8	J-15	233.1	-12,448.50	9,018.69	140	0.83	4.79	12.81594	HDPE	145	0.18
PP-498	8	20.036	20.445	9.0698	J-15	PJ-397	233.25	-12,480.61	9,039.44	140	0.59	2.52	9.0698	HDPE	145	0.02
PP-499	25	20.445	20.455	10.36343	PJ-397	PJ-398	232.82	-12,487.03	9,044.59	125	0.84	5.61	10.36343	HDPE	145	0.14
PP-500	23	20.455	20.339	6.64165	PJ-398	PJ-399	232.67	-12,508.64	9,057.55	110	0.7	4.59	6.64165	HDPE	145	0.11

PP-501	9.5	20.339	20.317	7.92248	PJ-399	PJ-400	232.68	-12,528.09	9,069.60	125	0.65	3.41	7.92248	HDPE	145	0.03
PP-502	21.5	20.317	20.142	3.18471	PJ-400	PJ-401	232.67	-12,536.12	9,074.84	110	0.34	1.18	3.18471	HDPE	145	0.03
PP-503	31	20.142	20.211	4.55733	PJ-401	PJ-402	232.82	-12,554.65	9,085.96	110	0.48	2.28	4.55733	HDPE	145	0.07
PP-504	24.5	20.211	20.149	5.25315	PJ-402	PJ-403	232.68	-12,579.97	9,103.87	110	0.55	2.97	5.25315	HDPE	145	0.07
PP-505	22	20.149	20.104	3.72955	PJ-403	PJ-404	232.67	-12,600.66	9,117.45	110	0.39	1.58	3.72955	HDPE	145	0.03
PP-506	17.5	20.104	19.919	4.87959	PJ-404	PJ-405	232.68	-12,619.49	9,128.88	110	0.51	2.59	4.87959	HDPE	145	0.05
PP-507	21	19.919	20.007	5.24566	PJ-405	PJ-406	232.82	-12,634.62	9,137.52	110	0.55	2.96	5.24566	HDPE	145	0.06
PP-508	35	20.007	19.912	4.72226	PJ-406	PJ-407	232.67	-12,652.53	9,148.02	110	0.5	2.44	4.72226	HDPE	145	0.09
PP-509	86	19.912	19.631	3.81449	PJ-407	PJ-408	232.68	-12,683.10	9,165.31	110	0.4	1.64	3.81449	HDPE	145	0.14
PP-510	61.5	19.631	19.693	3.31787	PJ-408	PJ-409	232.82	-12,762.14	9,198.97	110	0.35	1.27	3.31787	HDPE	145	0.08
PP-511	76	19.693	19.644	2.29452	PJ-409	PJ-410	232.68	-12,819.88	9,219.97	110	0.24	0.64	2.29452	HDPE	145	0.05
PP-512	129	19.644	19.6	1.82843	PJ-410	PJ-411	232.68	-12,893.06	9,240.96	110	0.19	0.42	1.82843	HDPE	145	0.05
PP-513	37	19.6	19.362	4.67727	PJ-411	PJ-412	232.67	-12,893.98	9,112.21	110	0.49	2.4	4.67727	HDPE	145	0.09
PP-514	35	19.362	19.464	3.01704	PJ-412	PJ-413	232.82	-12,895.53	9,075.46	110	0.32	1.06	3.01704	HDPE	145	0.04
PP-515	73.5	19.464	18.786	2.62022	PJ-413	J-124	232.68	-12,897.07	9,040.26	110	0.28	0.82	2.62022	HDPE	145	0.06
PP-516	241	18.786	19.036	3.72485	J-124	PJ-414	233.3	-12,899.78	8,966.74	110	0.39	1.57	3.72485	HDPE	145	0.38
PP-517	43	19.036	18.988	2.74657	PJ-414	PJ-415	232.67	-12,928.26	8,727.48	110	0.29	0.89	2.74657	HDPE	145	0.04
PP-518	79	18.988	18.972	1.22169	PJ-415	PJ-416	232.68	-12,967.47	8,745.39	110	0.13	0.2	1.22169	HDPE	145	0.02
PP-519	76.5	18.972	19.112	0.17397	PJ-416	PJ-417	232.68	-13,042.50	8,768.55	110	0.02	0.01	0.17397	HDPE	145	0
PP-520	86.5	18.972	18.979	0.49751	PJ-416	PJ-418	232.68	-13,042.50	8,768.55	110	0.05	0.04	0.49751	HDPE	145	0
PP-521	144	18.979	18.967	0.32742	PJ-418	PJ-419	232.67	-13,051.46	8,854.69	110	0.03	0.02	0.32742	HDPE	145	0
PP-522	98	18.979	19.114	-0.57677	PJ-418	PJ-420	232.67	-13,051.46	8,854.69	110	0.06	0.05	0.57677	HDPE	145	0
PP-523	98.5	19.114	18.988	-1.02355	PJ-420	PJ-415	232.54	-12,954.13	8,843.04	110	0.11	0.14	1.02355	HDPE	145	0.01
PP-524	102	19.025	19.166	-0.23194	PJ-421	PJ-422	232.68	-13,011.25	8,677.23	110	0.02	0.01	0.23194	HDPE	145	0
PP-525	9.5	19.166	19.036	-0.31099	PJ-422	PJ-414	232.54	-12,919.86	8,722.93	110	0.03	0.02	0.31099	HDPE	145	0
PP-526	67	19.166	18.608	-0.32681	PJ-422	J-130	232.54	-12,919.86	8,722.93	110	0.03	0.02	0.32681	HDPE	145	0
PP-527	33	19.464	19.464	0.07508	PJ-413	PJ-423	232.68	-12,897.07	9,040.26	110	0.01	0	0.07508	HDPE	145	0
PP-528	123.5	19.362	19.617	1.21573	PJ-412	PJ-424	232.82	-12,895.53	9,075.46	110	0.13	0.2	1.21573	HDPE	145	0.02
PP-529	46	19.617	19.477	0.10463	PJ-424	PJ-425	232.54	-12,771.90	9,074.58	110	0.01	0	0.10463	HDPE	145	0
PP-530	107	19.617	19.054	0.48245	PJ-424	J-123	232.54	-12,771.90	9,074.58	110	0.05	0.04	0.48245	HDPE	145	0
PP-531	89.5	19.054	18.903	3.88504	J-123	J-147	233.1	-12,773.06	8,967.49	110	0.41	1.7	3.88504	HDPE	145	0.15
PP-532	75	19.6	19.829	-3.39678	PJ-411	PJ-426	232.67	-12,893.98	9,112.21	110	0.36	1.32	3.39678	HDPE	145	0.1
PP-533	107	19.829	19.693	-0.46745	PJ-426	PJ-409	232.54	-12,818.80	9,113.21	110	0.05	0.03	0.46745	HDPE	145	0
PP-534	59	19.829	19.781	-3.47727	PJ-426	PJ-427	232.54	-12,818.80	9,113.21	110	0.37	1.38	3.47727	HDPE	145	0.08
PP-535	86	19.781	19.631	0.03427	PJ-427	PJ-408	232.67	-12,759.62	9,113.17	110	0	0	0.03427	HDPE	145	0
PP-536	77	19.781	19.909	-4.01629	PJ-427	PJ-428	232.67	-12,759.62	9,113.17	110	0.42	1.81	4.01629	HDPE	145	0.14

PP-537	31	19.909	20.136	-5.09028	PJ-428	PJ-429	232.68	-12,682.81	9,113.55	110	0.54	2.8	5.09028	HDPE	145	0.09
PP-538	35	20.136	20.007	-0.31646	PJ-429	PJ-406	232.54	-12,651.94	9,113.17	110	0.03	0.02	0.31646	HDPE	145	0
PP-539	52	19.912	19.909	0.51443	PJ-407	PJ-428	232.68	-12,683.10	9,165.31	110	0.05	0.04	0.51443	HDPE	145	0
PP-540	146	19.909	19.274	0.89271	PJ-428	J-121	232.68	-12,682.81	9,113.55	110	0.09	0.11	0.89271	HDPE	145	0.02
PP-541	25.5	19.274	19.903	0.05803	J-121	PJ-430	233.3	-12,678.70	8,967.98	110	0.01	0	0.05803	HDPE	145	0
PP-542	39	19.599	20.026	-1.2638	J-120	PJ-431	233.1	-12,650.79	8,968.72	110	0.13	0.21	1.2638	HDPE	145	0.01
PP-543	97	20.026	20.158	0.74448	PJ-431	PJ-432	232.68	-12,651.55	9,007.80	110	0.08	0.08	0.74448	HDPE	145	0.01
PP-544	8.5	20.158	20.136	4.94325	PJ-432	PJ-429	232.54	-12,650.78	9,104.68	110	0.52	2.65	4.94325	HDPE	145	0.02
PP-545	16	20.158	20.064	-4.47504	PJ-432	PJ-433	232.54	-12,650.78	9,104.68	110	0.47	2.21	4.47504	HDPE	145	0.04
PP-546	31	20.064	19.566	-4.89554	PJ-433	J-27	232.67	-12,634.57	9,103.90	110	0.52	2.61	4.89554	HDPE	145	0.08
PP-547	20.5	19.599	20.054	-3.94534	J-120	PJ-434	233.1	-12,650.79	8,968.72	110	0.42	1.75	3.94534	HDPE	145	0.04
PP-548	31	20.054	20.394	-5.81283	PJ-434	J-33	232.68	-12,630.32	8,968.43	110	0.61	3.58	5.81283	HDPE	145	0.11
PP-549	19.5	20.026	20.05	-2.36185	PJ-431	PJ-435	232.68	-12,651.55	9,007.80	110	0.25	0.68	2.36185	HDPE	145	0.01
PP-550	41	20.05	20.054	-1.65715	PJ-435	PJ-434	232.67	-12,632.25	9,009.34	110	0.17	0.35	1.65715	HDPE	145	0.01
PP-551	94.5	20.05	20.064	-1.05713	PJ-435	PJ-433	232.67	-12,632.25	9,009.34	110	0.11	0.15	1.05713	HDPE	145	0.01
PP-552	33.5	20.064	19.919	-1.03452	PJ-433	PJ-405	232.67	-12,634.57	9,103.90	110	0.11	0.15	1.03452	HDPE	145	0
PP-553	77	19.919	20.228	-1.73938	PJ-405	PJ-436	232.82	-12,634.62	9,137.52	110	0.18	0.38	1.73938	HDPE	145	0.03
PP-554	16.5	20.228	20.1	-0.72419	PJ-436	PJ-437	232.54	-12,644.60	9,213.13	110	0.08	0.08	0.72419	HDPE	145	0
PP-555	41	20.1	20.094	-0.85497	PJ-437	PJ-438	232.67	-12,646.15	9,229.34	110	0.09	0.1	0.85497	HDPE	145	0
PP-556	16	20.094	20.237	-1.25065	PJ-438	PJ-439	232.68	-12,605.24	9,230.89	110	0.13	0.21	1.25065	HDPE	145	0
PP-557	29	20.237	20.133	-2.75587	PJ-439	PJ-440	232.54	-12,606.01	9,215.06	110	0.29	0.9	2.75587	HDPE	145	0.03
PP-558	7.5	20.133	20.139	-4.41304	PJ-440	PJ-441	232.67	-12,603.31	9,186.11	110	0.46	2.15	4.41304	HDPE	145	0.02
PP-559	61.5	20.139	20.149	0.22908	PJ-441	PJ-403	232.68	-12,602.15	9,178.78	110	0.02	0.01	0.22908	HDPE	145	0
PP-560	8	20.149	19.368	1.48891	PJ-403	J-28	232.67	-12,600.66	9,117.45	110	0.16	0.29	1.48891	HDPE	145	0
PP-561	56.5	20.104	20.128	-1.36834	PJ-404	PJ-442	232.68	-12,619.49	9,128.88	110	0.14	0.25	1.36834	HDPE	145	0.01
PP-562	17	20.128	20.133	-1.53549	PJ-442	PJ-440	232.67	-12,620.43	9,184.42	110	0.16	0.3	1.53549	HDPE	145	0.01
PP-563	38.5	20.228	20.237	-1.31533	PJ-436	PJ-439	232.54	-12,644.60	9,213.13	110	0.14	0.23	1.31533	HDPE	145	0.01
PP-564	58.5	20.094	20.233	0.13305	PJ-438	PJ-443	232.68	-12,605.24	9,230.89	110	0.01	0	0.13305	HDPE	145	0
PP-565	32	20.139	20.232	-4.8718	PJ-441	PJ-444	232.68	-12,602.15	9,178.78	110	0.51	2.58	4.8718	HDPE	145	0.08
PP-566	76.5	20.232	20.211	0.99597	PJ-444	PJ-402	232.67	-12,570.30	9,179.31	110	0.1	0.14	0.99597	HDPE	145	0.01
PP-567	17.5	20.232	20.431	-6.15427	PJ-444	PJ-445	232.67	-12,570.30	9,179.31	110	0.65	3.98	6.15427	HDPE	145	0.07
PP-568	29.5	20.431	20.314	-1.87384	PJ-445	PJ-446	232.54	-12,552.77	9,180.54	110	0.2	0.44	1.87384	HDPE	145	0.01
PP-569	65	20.314	20.142	1.63979	PJ-446	PJ-401	232.67	-12,552.77	9,151.15	110	0.17	0.34	1.63979	HDPE	145	0.02
PP-570	43	20.339	20.351	-1.45254	PJ-399	PJ-447	232.68	-12,528.09	9,069.60	110	0.15	0.27	1.45254	HDPE	145	0.01
PP-571	40	20.351	20.351	1.37946	PJ-447	PJ-448	232.68	-12,528.56	9,112.37	110	0.15	0.25	1.37946	HDPE	145	0.01
PP-572	23	20.351	20.314	3.78082	PJ-448	PJ-446	232.67	-12,529.79	9,152.38	110	0.4	1.62	3.78082	HDPE	145	0.04

PP-573	17.5	20.351	20.51	-3.06053	PJ-447	PJ-449	232.68	-12,528.56	9,112.37	110	0.32	1.09	3.06053	HDPE	145	0.02
PP-574	53.5	20.51	20.455	-3.49098	PJ-449	PJ-398	232.54	-12,511.27	9,111.13	110	0.37	1.39	3.49098	HDPE	145	0.07
PP-575	20	20.351	20.38	-3.55819	PJ-448	PJ-450	232.67	-12,529.79	9,152.38	110	0.37	1.44	3.55819	HDPE	145	0.03
PP-576	41.5	20.38	20.51	-0.17464	PJ-450	PJ-449	232.67	-12,509.79	9,152.63	110	0.02	0.01	0.17464	HDPE	145	0
PP-577	21.5	20.431	20.478	-4.43621	PJ-445	PJ-451	232.54	-12,552.77	9,180.54	110	0.47	2.17	4.43621	HDPE	145	0.05
PP-578	30.5	20.478	20.351	-0.89874	PJ-451	PJ-448	232.54	-12,531.28	9,182.77	110	0.09	0.11	0.89874	HDPE	145	0
PP-579	20.5	20.478	20.509	-3.70234	PJ-451	PJ-452	232.54	-12,531.28	9,182.77	110	0.39	1.55	3.70234	HDPE	145	0.03
PP-580	30	20.509	20.38	-0.3069	PJ-452	PJ-450	232.54	-12,511.02	9,182.77	110	0.03	0.02	0.3069	HDPE	145	0
PP-581	33.5	20.38	20.439	-3.97467	PJ-450	PJ-453	232.67	-12,509.79	9,152.63	110	0.42	1.77	3.97467	HDPE	145	0.06
PP-582	33	20.439	20.424	1.09837	PJ-453	PJ-454	232.67	-12,476.19	9,151.15	110	0.12	0.16	1.09837	HDPE	145	0.01
PP-583	37	20.424	20.509	3.59442	PJ-454	PJ-452	232.68	-12,474.22	9,184.00	110	0.38	1.47	3.59442	HDPE	145	0.05
PP-584	42.5	20.592	20.462	-0.09668	PJ-455	PJ-456	232.54	-12,515.47	9,216.61	110	0.01	0	0.09668	HDPE	145	0
PP-585	32	20.462	20.424	2.72799	PJ-456	PJ-454	232.67	-12,472.73	9,215.87	110	0.29	0.88	2.72799	HDPE	145	0.03
PP-586	13.5	20.603	20.473	-0.03075	PJ-457	PJ-458	232.54	-12,471.00	9,239.83	110	0	0	0.03075	HDPE	145	0
PP-587	10.5	20.473	20.462	3.01796	PJ-458	PJ-456	232.67	-12,471.99	9,226.24	110	0.32	1.06	3.01796	HDPE	145	0.01
PP-588	55.5	20.439	20.61	-5.35045	PJ-453	PJ-459	232.67	-12,476.19	9,151.15	110	0.56	3.07	5.35045	HDPE	145	0.17
PP-589	52	20.61	20.445	1.48693	PJ-459	PJ-397	232.67	-12,480.70	9,096.06	110	0.16	0.29	1.48693	HDPE	145	0.01
PP-590	41	20.61	20.716	-7.17503	PJ-459	PJ-460	232.67	-12,480.70	9,096.06	125	0.58	2.84	7.17503	HDPE	145	0.12
PP-591	131.5	20.716	20.655	3.66611	PJ-460	PJ-461	232.68	-12,439.94	9,090.51	110	0.39	1.53	3.66611	HDPE	145	0.2
PP-592	44	20.655	20.473	3.20336	PJ-461	PJ-458	232.54	-12,428.21	9,221.42	110	0.34	1.19	3.20336	HDPE	145	0.05
PP-593	14	20.525	20.655	-0.03189	PJ-462	PJ-461	232.67	-12,426.05	9,235.32	110	0	0	0.03189	HDPE	145	0
PP-594	72.5	20.367	20.716	2.87982	J-8	PJ-460	233.1	-12,448.50	9,018.69	110	0.3	0.98	2.87982	HDPE	145	0.07
PP-595	19.5	20.716	20.77	-8.56268	PJ-460	PJ-463	232.68	-12,439.94	9,090.51	140	0.56	2.27	8.56268	HDPE	145	0.04
PP-596	39	20.77	20.781	-2.11379	PJ-463	PJ-464	232.67	-12,420.35	9,090.22	110	0.22	0.55	2.11379	HDPE	145	0.02
PP-597	58.5	20.781	20.96	-2.3355	PJ-464	PJ-465	232.68	-12,414.18	9,128.51	110	0.25	0.66	2.3355	HDPE	145	0.04
PP-598	35.5	20.96	21.177	-2.54926	PJ-465	PJ-466	232.54	-12,356.13	9,120.85	110	0.27	0.78	2.54926	HDPE	145	0.03
PP-599	57	21.177	20.77	3.68548	PJ-466	PJ-463	232.35	-12,363.29	9,086.03	110	0.39	1.54	3.68548	HDPE	145	0.09
PP-600	81.5	20.77	20.857	-3.21133	PJ-463	PJ-396	232.67	-12,420.35	9,090.22	110	0.34	1.19	3.21133	HDPE	145	0.1
PP-601	102.5	21.177	20.962	-6.6781	PJ-466	PJ-395	232.35	-12,363.29	9,086.03	125	0.54	2.49	6.6781	HDPE	145	0.25
PP-602	37.5	20.962	21.241	0.08531	PJ-395	PJ-467	232.82	-12,389.46	8,986.85	110	0.01	0	0.08531	HDPE	145	0
PP-603	54.5	19.916	20.475	-1.12448	J-43	J-36	233.1	-12,500.13	8,910.25	110	0.12	0.17	1.12448	HDPE	145	0.01
PP-604	42	21.545	21.216	-0.09554	PJ-468	PJ-394	232.35	-12,350.85	8,925.84	110	0.01	0	0.09554	HDPE	145	0
PP-605	72	21.216	21.237	-1.49366	PJ-394	PJ-469	232.68	-12,348.70	8,967.70	110	0.16	0.29	1.49366	HDPE	145	0.02
PP-606	48.5	21.237	20.858	-2.66355	PJ-469	J-4	232.68	-12,300.28	8,995.69	110	0.28	0.84	2.66355	HDPE	145	0.04
PP-607	47.5	21.237	21.372	0.7879	PJ-469	PJ-470	232.68	-12,300.28	8,995.69	110	0.08	0.09	0.7879	HDPE	145	0
PP-608	72.5	21.372	21.561	0.16488	PJ-470	PJ-471	232.54	-12,290.64	9,042.40	110	0.02	0	0.16488	HDPE	145	0

PP-609	77	21.372	21.372	-0.17511	PJ-472	PJ-470	232.54	-12,336.18	9,079.83	110	0.02	0.01	0.17511	HDPE	145	0
PP-610	116.5	21.924	21.786	-0.26491	PJ-473	PJ-393	232.68	-12,213.06	9,056.29	110	0.03	0.01	0.26491	HDPE	145	0
PP-611	40	21.415	21.489	161.82888	J-1	PJ-474	232.65	-12,277.57	8,933.38	355	1.63	5.64	161.82888	HDPE	145	0.23
PP-612	55	21.489	21.299	0.12509	PJ-474	PJ-475	232.35	-12,242.01	8,915.42	110	0.01	0	0.12509	HDPE	145	0
PP-613	48.5	20.459	20.548	28.54989	J-5	J-103	233.25	-12,345.00	8,878.54	250	0.58	1.25	28.54989	HDPE	145	0.06
PP-614	41.5	20.548	21.019	11.73095	J-103	PJ-476	233.1	-12,347.71	8,830.15	160	0.58	2.12	11.73095	HDPE	145	0.09
PP-615	55.5	21.019	21.209	-0.31272	PJ-476	PJ-477	232.54	-12,308.39	8,832.82	110	0.03	0.02	0.31272	HDPE	145	0
PP-616	74.5	21.209	21.489	-15.98515	PJ-477	PJ-474	232.35	-12,253.58	8,842.08	160	0.8	3.76	15.98515	HDPE	145	0.28
PP-617	27	21.489	21.175	145.27186	PJ-474	PJ-478	232.35	-12,242.01	8,915.42	355	1.47	4.62	145.27186	HDPE	145	0.12
PP-618	62.5	21.175	21.035	0.14214	PJ-478	PJ-479	232.54	-12,218.08	8,902.68	110	0.01	0	0.14214	HDPE	145	0
PP-619	30.5	21.019	20.954	11.75375	PJ-476	PJ-480	232.54	-12,308.39	8,832.82	160	0.58	2.13	11.75375	HDPE	145	0.06
PP-620	32	20.954	20.121	8.70427	PJ-480	J-97	232.54	-12,308.00	8,802.33	140	0.57	2.34	8.70427	HDPE	145	0.07
PP-621	53	20.954	21.095	2.78684	PJ-480	PJ-481	232.54	-12,308.00	8,802.33	110	0.29	0.92	2.78684	HDPE	145	0.05
PP-622	33	21.095	21.209	-15.30182	PJ-481	PJ-477	232.35	-12,255.51	8,808.89	160	0.76	3.47	15.30182	HDPE	145	0.11
PP-623	36.5	21.095	20.053	17.81012	PJ-481	J-200	232.35	-12,255.51	8,808.89	180	0.7	2.59	17.81012	HDPE	145	0.09
PP-624	122.5	19.965	20.722	0.27855	J-198	PJ-482	233.3	-12,224.11	8,777.47	110	0.03	0.01	0.27855	HDPE	145	0
PP-625	65	19.934	20.928	-2.42357	J-202	PJ-483	233.3	-12,208.37	8,779.02	110	0.26	0.71	2.42357	HDPE	145	0.05
PP-626	48.5	20.928	21.047	0.11032	PJ-483	PJ-484	232.35	-12,211.90	8,844.01	110	0.01	0	0.11032	HDPE	145	0
PP-627	45.5	20.928	20.863	-2.89541	PJ-483	J-236	232.35	-12,211.90	8,844.01	110	0.3	0.99	2.89541	HDPE	145	0.04
PP-628	15	21.175	21.256	144.89209	PJ-478	PJ-485	232.54	-12,218.08	8,902.68	355	1.46	4.6	144.89209	HDPE	145	0.07
PP-629	40.5	21.256	20.132	84.12507	PJ-485	J-237	232.39	-12,204.95	8,894.96	280	1.37	5.33	84.12507	HDPE	145	0.22
PP-630	30.5	20.132	20.895	75.73531	J-237	J-235	233.3	-12,169.80	8,875.28	315	0.97	2.47	75.73531	HDPE	145	0.08
PP-631	40.5	20.895	20.707	59.7036	J-235	J-234	232.46	-12,144.18	8,858.29	250	1.22	4.91	59.7036	HDPE	145	0.2
PP-632	52.5	20.707	20.373	44.01634	J-234	PJ-486	232.45	-12,109.59	8,837.30	225	1.11	4.66	44.01634	HDPE	145	0.24
PP-633	24	20.373	20.538	37.06186	PJ-486	PJ-487	232.54	-12,064.46	8,810.05	200	1.18	6.02	37.06186	HDPE	145	0.14
PP-634	31	20.538	20.084	32.31002	PJ-487	PJ-488	232.23	-12,044.39	8,797.31	200	1.03	4.67	32.31002	HDPE	145	0.14
PP-635	23.5	20.084	20.096	27.70889	PJ-488	PJ-489	232.54	-12,017.76	8,781.87	180	1.09	5.87	27.70889	HDPE	145	0.14
PP-636	41.5	20.096	20.033	26.40849	PJ-489	PJ-490	232.39	-11,997.31	8,770.29	180	1.04	5.37	26.40849	HDPE	145	0.22
PP-637	19	20.033	19.65	29.41977	PJ-490	PJ-491	232.23	-11,963.34	8,746.75	200	0.94	3.92	29.41977	HDPE	145	0.07
PP-638	18	19.65	19.883	41.61832	PJ-491	PJ-492	232.54	-11,947.90	8,735.94	225	1.05	4.2	41.61832	HDPE	145	0.08
PP-639	25	19.883	19.459	32.14681	PJ-492	PJ-493	232.23	-11,937.48	8,721.28	200	1.02	4.62	32.14681	HDPE	145	0.12
PP-640	7.5	19.459	19.728	34.78332	PJ-493	PJ-494	232.54	-11,920.50	8,702.75	200	1.11	5.35	34.78332	HDPE	145	0.04
PP-641	34.5	19.728	19.552	25.75538	PJ-494	PJ-495	232.23	-11,913.17	8,702.37	180	1.01	5.12	25.75538	HDPE	145	0.18
PP-642	7	19.552	19.21	32.15771	PJ-495	PJ-496	232.23	-11,886.15	8,680.75	200	1.02	4.63	32.15771	HDPE	145	0.03
PP-643	33.5	19.21	18.789	23.20827	PJ-496	J-368	232.54	-11,880.36	8,676.51	180	0.91	4.23	23.20827	HDPE	145	0.14
PP-644	53	18.789	18.823	13.94495	J-368	J-358	232.82	-11,855.64	8,653.61	140	0.91	5.6	13.94495	HDPE	145	0.3

PP-645	23.5	18.823	18.516	9.7396	J-358	J-359	232.49	-11,821.37	8,613.47	125	0.79	5	9.7396	HDPE	145	0.12
PP-646	58	18.516	18.531	12.74253	J-359	PJ-497	232.68	-11,804.39	8,597.42	140	0.83	4.74	12.74253	HDPE	145	0.27
PP-647	27.5	18.531	18.269	16.75314	PJ-497	PJ-498	232.39	-11,766.12	8,553.77	160	0.83	4.1	16.75314	HDPE	145	0.11
PP-648	13	18.269	18.366	16.55587	PJ-498	PJ-499	232.54	-11,747.59	8,533.70	160	0.82	4.01	16.55587	HDPE	145	0.05
PP-649	17	18.366	18.148	16.615	PJ-499	PJ-500	232.39	-11,739.10	8,524.05	160	0.83	4.04	16.615	HDPE	145	0.07
PP-650	40	18.148	17.781	10.69509	PJ-500	J-392	232.54	-11,725.98	8,512.86	125	0.87	5.95	10.69509	HDPE	145	0.24
PP-651	11.5	17.781	18.179	21.13318	J-392	PJ-501	232.67	-11,696.94	8,485.03	180	0.83	3.55	21.13318	HDPE	145	0.04
PP-652	83.5	18.179	17.728	37.68227	PJ-501	PJ-502	232.23	-11,688.92	8,476.96	225	0.95	3.5	37.68227	HDPE	145	0.29
PP-653	23.5	17.728	17.251	36.60913	PJ-502	PJ-503	232.39	-11,629.10	8,419.07	200	1.17	5.88	36.60913	HDPE	145	0.14
PP-654	282	17.251	16.023	35.54394	PJ-503	PJ-504	232.73	-11,611.73	8,403.25	200	1.13	5.57	35.54394	HDPE	145	1.57
PP-655	107	16.023	15.345	34.65954	PJ-504	PJ-505	232.39	-11,416.05	8,199.85	200	1.1	5.32	34.65954	HDPE	145	0.57
PP-656	44.5	15.345	15.125	22.7148	PJ-505	PJ-506	232.5	-11,342.05	8,122.81	180	0.89	4.06	22.7148	HDPE	145	0.18
PP-657	35.5	15.125	14.949	22.00085	PJ-506	PJ-507	232.54	-11,312.65	8,089.47	180	0.86	3.83	22.00085	HDPE	145	0.14
PP-658	38.5	14.949	15.161	21.25507	PJ-507	PJ-508	232.58	-11,289.64	8,062.66	180	0.84	3.59	21.25507	HDPE	145	0.14
PP-659	98.5	15.161	14.183	9.70495	PJ-508	PJ-509	232.23	-11,265.04	8,033.23	125	0.79	4.97	9.70495	HDPE	145	0.49
PP-660	44.5	14.183	14.047	4.18129	PJ-509	PJ-510	232.72	-11,202.32	7,957.00	110	0.44	1.95	4.18129	HDPE	145	0.09
PP-661	268.5	14.047	14.766	-6.90555	PJ-510	PJ-511	232.77	-11,175.30	7,921.78	125	0.56	2.64	6.90555	HDPE	145	0.71
PP-662	38	14.766	14.832	-8.00484	PJ-511	PJ-512	232.76	-11,440.17	7,890.42	140	0.52	2	8.00484	HDPE	145	0.08
PP-663	135	14.832	15.087	-8.55966	PJ-512	J-349	232.77	-11,475.87	7,877.88	140	0.56	2.27	8.55966	HDPE	145	0.31
PP-664	35.5	14.832	14.872	0.08076	PJ-512	PJ-513	232.77	-11,475.87	7,877.88	110	0.01	0	0.08076	HDPE	145	0
PP-665	88.5	14.875	14.766	-0.20125	PJ-514	PJ-511	232.65	-11,471.53	7,973.40	110	0.02	0.01	0.20125	HDPE	145	0
PP-666	106	15.199	15.317	0.24104	J-352	PJ-515	232.67	-11,613.24	7,937.68	110	0.03	0.01	0.24104	HDPE	145	0
PP-667	108	15.192	15.3	0.24558	J-351	PJ-516	232.68	-11,590.71	7,932.74	110	0.03	0.01	0.24558	HDPE	145	0
PP-668	25.5	15.192	15.172	0.05803	J-351	PJ-517	232.68	-11,590.71	7,932.74	110	0.01	0	0.05803	HDPE	145	0
PP-669	123	15.161	14.71	0.27968	PJ-508	PJ-518	232.23	-11,265.04	8,033.23	110	0.03	0.01	0.27968	HDPE	145	0
PP-670	117	15.125	15.153	0.26604	PJ-506	PJ-519	232.54	-11,312.65	8,089.47	110	0.03	0.01	0.26604	HDPE	145	0
PP-671	127	14.949	14.988	0.28878	PJ-507	PJ-520	232.58	-11,289.64	8,062.66	110	0.03	0.01	0.28878	HDPE	145	0
PP-672	140.5	15.161	14.369	10.3599	PJ-508	PJ-521	232.23	-11,265.04	8,033.23	140	0.67	3.23	10.3599	HDPE	145	0.45
PP-673	112.5	14.369	14.849	-10.33275	PJ-521	PJ-522	232.57	-11,140.57	8,089.19	140	0.67	3.21	10.33275	HDPE	145	0.36
PP-674	145	14.849	15.345	-11.27063	PJ-522	PJ-505	232.45	-11,210.52	8,177.00	140	0.73	3.77	11.27063	HDPE	145	0.55
PP-675	137	14.183	13.868	4.88706	PJ-509	PJ-523	232.72	-11,202.32	7,957.00	110	0.51	2.6	4.88706	HDPE	145	0.36
PP-676	102	13.868	14.369	-6.03504	PJ-523	PJ-521	232.68	-11,078.33	8,008.14	110	0.64	3.84	6.03504	HDPE	145	0.39
PP-677	232	14.369	13.308	13.32309	PJ-521	PJ-524	232.57	-11,140.57	8,089.19	140	0.87	5.14	13.32309	HDPE	145	1.19
PP-678	88.5	13.308	13.024	4.47086	PJ-524	PJ-525	232.44	-10,955.79	8,226.21	110	0.47	2.2	4.47086	HDPE	145	0.19
PP-679	79.5	13.024	12.964	-0.15886	PJ-525	PJ-526	232.53	-10,897.41	8,159.63	110	0.02	0	0.15886	HDPE	145	0
PP-680	39	12.964	13.107	-8.85987	PJ-526	PJ-527	232.59	-10,906.10	8,105.11	125	0.72	4.2	8.85987	HDPE	145	0.16

PP-681	55	13.107	13.167	0.12509	PJ-527	PJ-528	232.61	-10,938.42	8,083.40	110	0.01	0	0.12509	HDPE	145	0
PP-682	77.5	14.849	14.899	0.17624	PJ-522	PJ-529	232.45	-11,210.52	8,177.00	110	0.02	0.01	0.17624	HDPE	145	0
PP-683	141.5	13.868	13.179	10.05703	PJ-523	PJ-530	232.68	-11,078.33	8,008.14	125	0.82	5.31	10.05703	HDPE	145	0.75
PP-684	18	13.179	13.107	9.23964	PJ-530	PJ-527	232.62	-10,953.86	8,073.75	125	0.75	4.53	9.23964	HDPE	145	0.08
PP-685	100	13.179	13.068	0.2274	PJ-530	PJ-531	232.62	-10,953.86	8,073.75	110	0.02	0.01	0.2274	HDPE	145	0
PP-686	97	13.308	13.396	0.93459	PJ-524	PJ-532	232.44	-10,955.79	8,226.21	110	0.1	0.12	0.93459	HDPE	145	0.01
PP-687	79	13.396	13.003	0.53442	PJ-532	PJ-533	232.34	-11,020.44	8,298.45	110	0.06	0.04	0.53442	HDPE	145	0
PP-688	33.5	13.003	12.973	0.07622	PJ-533	PJ-534	232.73	-10,979.43	8,366.00	110	0.01	0	0.07622	HDPE	145	0
PP-689	44.5	13.003	13.003	-0.10122	PJ-535	PJ-533	232.73	-11,018.03	8,388.31	110	0.01	0	0.10122	HDPE	145	0
PP-690	41.5	13.308	13.145	6.87411	PJ-524	PJ-536	232.44	-10,955.79	8,226.21	110	0.72	4.89	6.87411	HDPE	145	0.2
PP-691	59	13.145	13.195	0.13419	PJ-536	PJ-537	232.4	-10,931.18	8,259.86	110	0.01	0	0.13419	HDPE	145	0
PP-692	49	13.145	12.886	6.4	PJ-536	PJ-538	232.4	-10,931.18	8,259.86	110	0.67	4.28	6.4	HDPE	145	0.21
PP-693	22.5	12.886	12.841	4.26006	PJ-538	PJ-539	232.45	-10,894.40	8,227.29	110	0.45	2.01	4.26006	HDPE	145	0.05
PP-694	29	12.841	12.735	5.56095	PJ-539	PJ-540	232.45	-10,872.08	8,227.29	110	0.59	3.3	5.56095	HDPE	145	0.1
PP-695	34	12.735	12.624	5.54378	PJ-540	PJ-541	232.46	-10,843.14	8,227.29	110	0.58	3.28	5.54378	HDPE	145	0.11
PP-696	67.5	12.624	12.63	3.06954	PJ-541	PJ-542	232.46	-10,809.37	8,227.89	110	0.32	1.1	3.06954	HDPE	145	0.07
PP-697	25	12.63	12.611	3.70647	PJ-542	PJ-543	232.38	-10,806.95	8,295.44	110	0.39	1.56	3.70647	HDPE	145	0.04
PP-698	28.5	12.611	12.581	0.06485	PJ-543	PJ-544	232.36	-10,828.66	8,308.10	110	0.01	0	0.06485	HDPE	145	0
PP-699	52.5	12.886	12.804	1.85798	PJ-538	PJ-545	232.45	-10,894.40	8,227.29	110	0.2	0.43	1.85798	HDPE	145	0.02
PP-700	70.5	12.804	12.841	1.5783	PJ-545	PJ-539	232.51	-10,897.41	8,174.83	110	0.17	0.32	1.5783	HDPE	145	0.02
PP-701	42	12.964	12.908	4.03275	PJ-526	PJ-546	232.59	-10,906.10	8,105.11	110	0.42	1.82	4.03275	HDPE	145	0.08
PP-702	39.5	12.908	13.024	-4.15794	PJ-546	PJ-525	232.57	-10,871.93	8,129.16	110	0.44	1.93	4.15794	HDPE	145	0.08
PP-703	67.5	12.908	12.686	6.31877	PJ-546	PJ-547	232.57	-10,871.93	8,129.16	110	0.66	4.18	6.31877	HDPE	145	0.28
PP-704	41	12.686	12.735	0.21932	PJ-547	PJ-540	232.51	-10,838.74	8,186.67	110	0.02	0.01	0.21932	HDPE	145	0
PP-705	27.5	12.686	12.588	5.79022	PJ-547	PJ-548	232.51	-10,838.74	8,186.67	110	0.61	3.56	5.79022	HDPE	145	0.1
PP-706	42.5	12.588	12.624	1.60847	PJ-548	PJ-541	232.51	-10,811.27	8,185.48	110	0.17	0.33	1.60847	HDPE	145	0.01
PP-707	23.5	12.624	12.588	3.70186	PJ-541	PJ-549	232.46	-10,809.37	8,227.89	110	0.39	1.55	3.70186	HDPE	145	0.04
PP-708	13.5	12.588	12.566	1.07926	PJ-549	PJ-550	232.46	-10,785.78	8,228.76	110	0.11	0.16	1.07926	HDPE	145	0
PP-709	30.5	12.566	12.533	-1.30927	PJ-550	PJ-551	232.48	-10,786.17	8,215.12	110	0.14	0.23	1.30927	HDPE	145	0.01
PP-710	26	12.533	12.588	-3.96345	PJ-551	PJ-548	232.52	-10,785.38	8,184.69	110	0.42	1.76	3.96345	HDPE	145	0.05
PP-711	48	12.588	12.603	2.42931	PJ-549	PJ-552	232.46	-10,785.78	8,228.76	110	0.26	0.71	2.42931	HDPE	145	0.03
PP-712	29.5	12.603	12.63	0.91434	PJ-552	PJ-542	232.41	-10,784.19	8,276.58	110	0.1	0.12	0.91434	HDPE	145	0
PP-713	83	12.533	12.468	2.33698	PJ-551	PJ-553	232.52	-10,785.38	8,184.69	110	0.25	0.66	2.33698	HDPE	145	0.05
PP-714	34.5	12.468	12.51	-0.7115	PJ-553	PJ-554	232.53	-10,702.43	8,182.48	110	0.07	0.07	0.7115	HDPE	145	0
PP-715	84	12.51	12.566	-2.09748	PJ-554	PJ-550	232.49	-10,701.95	8,217.22	110	0.22	0.54	2.09748	HDPE	145	0.05
PP-716	16.5	12.51	12.527	1.07902	PJ-554	PJ-555	232.49	-10,701.95	8,217.22	110	0.11	0.16	1.07902	HDPE	145	0

PP-717	94.5	12.527	12.603	-1.1239	PJ-555	PJ-552	232.47	-10,700.99	8,233.62	110	0.12	0.17	1.1239	HDPE	145	0.02
PP-718	225.5	14.047	12.706	9.86258	PJ-510	PJ-556	232.77	-11,175.30	7,921.78	125	0.8	5.12	9.86258	HDPE	145	1.15
PP-719	142.5	12.706	12.491	4.16421	PJ-556	PJ-557	232.96	-10,993.30	7,791.52	110	0.44	1.93	4.16421	HDPE	145	0.28
PP-720	62	12.491	12.538	1.28121	PJ-557	PJ-558	232.9	-10,869.79	7,860.99	110	0.13	0.22	1.28121	HDPE	145	0.01
PP-721	55	12.538	12.565	0.58772	PJ-558	PJ-559	232.84	-10,909.93	7,904.22	110	0.06	0.05	0.58772	HDPE	145	0
PP-722	34.5	12.565	12.575	-0.22342	PJ-559	PJ-560	232.81	-10,864.85	7,936.02	110	0.02	0.01	0.22342	HDPE	145	0
PP-723	29.5	12.575	12.566	-0.46679	PJ-560	PJ-561	232.8	-10,830.58	7,941.58	110	0.05	0.03	0.46679	HDPE	145	0
PP-724	6	12.566	12.568	-1.50702	PJ-561	PJ-562	232.81	-10,800.93	7,943.13	110	0.16	0.29	1.50702	HDPE	145	0
PP-725	45.5	12.568	12.64	-1.98809	PJ-562	PJ-563	232.81	-10,795.38	7,945.29	110	0.21	0.49	1.98809	HDPE	145	0.02
PP-726	67	12.64	12.759	-2.17369	PJ-563	PJ-564	232.76	-10,822.86	7,981.72	110	0.23	0.58	2.17369	HDPE	145	0.04
PP-727	42	12.759	12.835	-2.72562	PJ-564	PJ-565	232.68	-10,861.45	8,036.37	110	0.29	0.88	2.72562	HDPE	145	0.04
PP-728	40	12.835	12.964	-4.21239	PJ-565	PJ-526	232.64	-10,884.61	8,071.26	110	0.44	1.97	4.21239	HDPE	145	0.08
PP-729	39.5	12.908	12.857	1.44332	PJ-546	PJ-566	232.57	-10,871.93	8,129.16	110	0.15	0.27	1.44332	HDPE	145	0.01
PP-730	42.5	12.857	12.835	-1.20368	PJ-566	PJ-565	232.61	-10,850.03	8,096.27	110	0.13	0.19	1.20368	HDPE	145	0.01
PP-731	43	12.857	12.778	2.36278	PJ-566	PJ-567	232.61	-10,850.03	8,096.27	110	0.25	0.68	2.36278	HDPE	145	0.03
PP-732	41	12.778	12.759	-0.21087	PJ-567	PJ-564	232.66	-10,827.80	8,059.53	110	0.02	0.01	0.21087	HDPE	145	0
PP-733	62.5	12.778	12.67	2.24054	PJ-567	PJ-568	232.66	-10,827.80	8,059.53	110	0.24	0.61	2.24054	HDPE	145	0.04
PP-734	41.5	12.67	12.64	0.16456	PJ-568	PJ-563	232.73	-10,791.36	8,008.89	110	0.02	0	0.16456	HDPE	145	0
PP-735	63	12.67	12.577	1.69627	PJ-568	PJ-569	232.73	-10,791.36	8,008.89	110	0.18	0.37	1.69627	HDPE	145	0.02
PP-736	43.5	12.577	12.568	-0.26504	PJ-569	PJ-562	232.8	-10,754.00	7,958.26	110	0.03	0.01	0.26504	HDPE	145	0
PP-737	16.5	12.491	12.49	2.38052	PJ-557	PJ-570	232.9	-10,869.79	7,860.99	110	0.25	0.69	2.38052	HDPE	145	0.01
PP-738	31	12.49	12.503	1.30682	PJ-570	PJ-571	232.89	-10,855.89	7,870.26	110	0.14	0.23	1.30682	HDPE	145	0.01
PP-739	56.5	12.503	12.565	-0.47917	PJ-571	PJ-559	232.87	-10,831.81	7,890.02	110	0.05	0.04	0.47917	HDPE	145	0
PP-740	30	12.503	12.522	0.37108	PJ-571	PJ-572	232.87	-10,831.81	7,890.02	110	0.04	0.02	0.37108	HDPE	145	0
PP-741	36.5	12.522	12.566	-0.87649	PJ-572	PJ-561	232.85	-10,806.80	7,907.00	110	0.09	0.11	0.87649	HDPE	145	0
PP-742	21.5	12.545	12.575	-0.04894	PJ-573	PJ-560	232.83	-10,827.80	7,920.28	110	0.01	0	0.04894	HDPE	145	0
PP-743	66	12.522	12.534	0.94629	PJ-572	PJ-574	232.85	-10,806.80	7,907.00	110	0.1	0.12	0.94629	HDPE	145	0.01
PP-744	21	12.534	12.542	0.74845	PJ-574	PJ-575	232.83	-10,741.03	7,909.16	110	0.08	0.08	0.74845	HDPE	145	0
PP-745	45	12.542	12.577	-1.61683	PJ-575	PJ-569	232.82	-10,725.59	7,923.36	110	0.17	0.33	1.61683	HDPE	145	0.02
PP-746	69.5	12.542	12.596	2.05718	PJ-575	PJ-576	232.82	-10,725.59	7,923.36	110	0.22	0.52	2.05718	HDPE	145	0.04
PP-747	39	12.596	12.583	0.74233	PJ-576	PJ-577	232.73	-10,659.52	7,901.44	110	0.08	0.08	0.74233	HDPE	145	0
PP-748	5.5	12.583	12.583	-0.16949	PJ-577	PJ-578	232.74	-10,680.21	7,868.10	110	0.02	0	0.16949	HDPE	145	0
PP-749	20.5	12.583	12.573	-0.46969	PJ-578	PJ-579	232.74	-10,683.29	7,863.77	110	0.05	0.03	0.46969	HDPE	145	0
PP-750	19	12.573	12.568	-1.39176	PJ-579	PJ-580	232.75	-10,695.34	7,847.41	110	0.15	0.25	1.39176	HDPE	145	0
PP-751	16	12.568	12.564	-1.71696	PJ-580	PJ-581	232.76	-10,708.30	7,833.51	110	0.18	0.37	1.71696	HDPE	145	0.01
PP-752	36	12.564	12.562	-1.98534	PJ-581	PJ-582	232.77	-10,721.58	7,824.25	110	0.21	0.49	1.98534	HDPE	145	0.02

PP-753	13	12.562	12.56	-2.25372	PJ-582	PJ-583	232.79	-10,750.60	7,802.95	110	0.24	0.62	2.25372	HDPE	145	0.01
PP-754	30	12.56	12.541	-1.73803	PJ-583	PJ-584	232.8	-10,761.72	7,795.84	110	0.18	0.38	1.73803	HDPE	145	0.01
PP-755	132.5	12.541	12.467	-1.8171	PJ-584	PJ-585	232.83	-10,785.80	7,777.94	110	0.19	0.42	1.8171	HDPE	145	0.06
PP-756	102	12.467	12.706	-4.62983	PJ-585	PJ-556	232.96	-10,909.62	7,732.86	110	0.49	2.35	4.62983	HDPE	145	0.24
PP-757	116	12.49	12.541	0.70195	PJ-570	PJ-584	232.89	-10,855.89	7,870.26	110	0.07	0.07	0.70195	HDPE	145	0.01
PP-758	32.5	12.541	12.581	0.07394	PJ-584	PJ-586	232.83	-10,785.80	7,777.94	110	0.01	0	0.07394	HDPE	145	0
PP-759	117.5	12.503	12.56	0.88061	PJ-571	PJ-583	232.87	-10,831.81	7,890.02	110	0.09	0.11	0.88061	HDPE	145	0.01
PP-760	34.5	12.562	12.602	0.07849	PJ-582	PJ-587	232.79	-10,750.60	7,802.95	110	0.01	0	0.07849	HDPE	145	0
PP-761	33	12.604	12.564	-0.07508	PJ-588	PJ-581	232.73	-10,701.20	7,798.31	110	0.01	0	0.07508	HDPE	145	0
PP-762	54	12.508	12.568	-0.12282	PJ-589	PJ-580	232.82	-10,742.27	7,875.20	110	0.01	0	0.12282	HDPE	145	0
PP-763	53	12.523	12.583	-0.12055	PJ-590	PJ-578	232.8	-10,718.49	7,903.60	110	0.01	0	0.12055	HDPE	145	0
PP-764	93.5	12.573	12.698	0.61965	PJ-579	PJ-591	232.75	-10,695.34	7,847.41	110	0.07	0.06	0.61965	HDPE	145	0.01
PP-765	31.5	12.698	12.707	0.2641	PJ-591	PJ-592	232.62	-10,616.29	7,797.39	110	0.03	0.01	0.2641	HDPE	145	0
PP-766	92.5	12.707	12.583	-0.6003	PJ-592	PJ-577	232.61	-10,599.00	7,823.63	110	0.06	0.05	0.6003	HDPE	145	0
PP-767	97.5	12.596	12.716	0.84648	PJ-576	PJ-593	232.73	-10,659.52	7,901.44	110	0.09	0.1	0.84648	HDPE	145	0.01
PP-768	57.5	12.716	12.707	-0.45173	PJ-593	PJ-592	232.6	-10,566.89	7,871.18	110	0.05	0.03	0.45173	HDPE	145	0
PP-769	148.5	12.698	12.663	-0.84376	PJ-591	PJ-594	232.62	-10,616.29	7,797.39	110	0.09	0.1	0.84376	HDPE	145	0.01
PP-770	75	12.663	12.601	-1.35192	PJ-594	PJ-595	232.67	-10,699.35	7,674.19	110	0.14	0.24	1.35192	HDPE	145	0.02
PP-771	12.5	12.601	12.595	-1.5509	PJ-595	PJ-596	232.75	-10,773.14	7,659.68	110	0.16	0.31	1.5509	HDPE	145	0
PP-772	154	12.595	12.467	-1.92947	PJ-596	PJ-585	232.76	-10,780.25	7,649.18	110	0.2	0.46	1.92947	HDPE	145	0.07
PP-773	127	12.698	12.856	0.28878	PJ-591	PJ-597	232.62	-10,616.29	7,797.39	110	0.03	0.01	0.28878	HDPE	145	0
PP-774	208	12.716	12.988	0.47292	PJ-593	PJ-598	232.6	-10,566.89	7,871.18	110	0.05	0.03	0.47292	HDPE	145	0.01
PP-775	23	12.468	12.417	2.72901	PJ-553	PJ-599	232.53	-10,702.43	8,182.48	110	0.29	0.88	2.72901	HDPE	145	0.02
PP-776	13	12.417	12.388	2.40607	PJ-599	PJ-600	232.56	-10,701.81	8,159.38	110	0.25	0.7	2.40607	HDPE	145	0.01
PP-777	30	12.388	12.348	1.66009	PJ-600	PJ-601	232.58	-10,701.05	8,146.48	110	0.17	0.35	1.66009	HDPE	145	0.01
PP-778	41.5	12.348	12.288	0.0944	PJ-601	PJ-602	232.61	-10,701.43	8,116.64	110	0.01	0	0.0944	HDPE	145	0
PP-779	53	12.417	12.407	0.12055	PJ-599	PJ-603	232.56	-10,701.81	8,159.38	110	0.01	0	0.12055	HDPE	145	0
PP-780	72	12.388	12.376	0.48448	PJ-600	PJ-604	232.58	-10,701.05	8,146.48	110	0.05	0.04	0.48448	HDPE	145	0
PP-781	62	12.376	12.457	-0.42825	PJ-604	PJ-605	232.59	-10,629.13	8,148.00	110	0.05	0.03	0.42825	HDPE	145	0
PP-782	31	12.457	12.434	0.96751	PJ-605	PJ-606	232.51	-10,629.52	8,209.75	110	0.1	0.13	0.96751	HDPE	145	0
PP-783	49.5	12.434	12.375	-0.35905	PJ-606	PJ-607	232.53	-10,600.19	8,199.33	110	0.04	0.02	0.35905	HDPE	145	0
PP-784	30	12.375	12.376	-0.53984	PJ-607	PJ-604	232.59	-10,599.41	8,149.93	110	0.06	0.04	0.53984	HDPE	145	0
PP-785	24.5	12.348	12.332	1.34739	PJ-601	PJ-608	232.61	-10,701.43	8,116.64	110	0.14	0.24	1.34739	HDPE	145	0.01
PP-786	116	12.332	12.311	0.24062	PJ-608	PJ-609	232.62	-10,676.99	8,115.19	110	0.03	0.01	0.24062	HDPE	145	0
PP-787	69	12.311	12.397	-0.78197	PJ-609	PJ-610	232.64	-10,561.20	8,115.19	110	0.08	0.09	0.78197	HDPE	145	0.01
PP-788	45	12.397	12.434	-1.04119	PJ-610	PJ-606	232.56	-10,557.73	8,183.89	110	0.11	0.15	1.04119	HDPE	145	0.01

PP-789	41	12.332	12.279	0.69409	PJ-608	PJ-611	232.62	-10,676.99	8,115.19	110	0.07	0.07	0.69409	HDPE	145	0
PP-790	117.5	12.279	12.269	-0.05055	PJ-611	PJ-612	232.67	-10,677.38	8,074.28	110	0.01	0	0.05055	HDPE	145	0
PP-791	43	12.269	12.311	-0.5042	PJ-612	PJ-609	232.68	-10,560.05	8,071.96	110	0.05	0.04	0.5042	HDPE	145	0
PP-792	19.5	12.269	12.289	0.04439	PJ-612	PJ-613	232.68	-10,560.05	8,071.96	110	0	0	0.04439	HDPE	145	0
PP-793	84.5	12.279	12.189	0.19216	PJ-611	PJ-614	232.67	-10,677.38	8,074.28	110	0.02	0.01	0.19216	HDPE	145	0
PP-794	75.5	12.457	12.527	-1.77888	PJ-605	PJ-555	232.51	-10,629.52	8,209.75	110	0.19	0.4	1.77888	HDPE	145	0.03
PP-795	182.5	17.454	17.728	-0.41495	PJ-615	PJ-502	232.66	-11,809.69	8,392.14	110	0.04	0.03	0.41495	HDPE	145	0
PP-796	81.5	17.251	17.53	0.18534	PJ-503	PJ-616	232.73	-11,611.73	8,403.25	110	0.02	0.01	0.18534	HDPE	145	0
PP-797	52	18.179	17.878	-12.22703	PJ-501	PJ-617	232.23	-11,688.92	8,476.96	140	0.79	4.39	12.22703	HDPE	145	0.23
PP-798	26	17.878	18.335	-7.46652	PJ-617	PJ-618	232.76	-11,739.72	8,466.09	110	0.79	5.7	7.46652	HDPE	145	0.15
PP-799	30.5	18.335	18.276	-3.84272	PJ-618	PJ-619	232.45	-11,765.58	8,464.16	110	0.4	1.66	3.84272	HDPE	145	0.05
PP-800	54.5	18.276	18.307	-1.25309	PJ-619	J-354	232.56	-11,795.69	8,458.37	110	0.13	0.21	1.25309	HDPE	145	0.01
PP-801	23.5	18.307	18.39	1.54252	J-354	PJ-620	232.54	-11,849.78	8,452.91	110	0.16	0.31	1.54252	HDPE	145	0.01
PP-802	22	18.39	18.36	-8.17219	PJ-620	PJ-621	232.45	-11,872.88	8,448.33	125	0.67	3.61	8.17219	HDPE	145	0.08
PP-803	20	18.36	18.807	-4.12984	PJ-621	PJ-622	232.56	-11,873.65	8,470.33	110	0.43	1.9	4.12984	HDPE	145	0.04
PP-804	25.5	18.807	18.563	-4.46437	PJ-622	PJ-623	232.15	-11,893.72	8,472.65	110	0.47	2.2	4.46437	HDPE	145	0.06
PP-805	19.5	18.563	18.823	4.30732	PJ-623	PJ-624	232.45	-11,894.49	8,498.12	110	0.45	2.06	4.30732	HDPE	145	0.04
PP-806	27.5	18.823	18.36	4.20041	PJ-624	PJ-621	232.15	-11,874.81	8,497.74	110	0.44	1.96	4.20041	HDPE	145	0.05
PP-807	74	18.563	18.775	-9.04228	PJ-623	PJ-625	232.45	-11,894.49	8,498.12	125	0.74	4.36	9.04228	HDPE	145	0.32
PP-808	6	18.775	19.185	-0.91264	PJ-625	PJ-626	232.56	-11,894.88	8,572.23	110	0.1	0.11	0.91264	HDPE	145	0
PP-809	21	19.185	18.723	7.41036	PJ-626	PJ-627	232.15	-11,888.70	8,572.61	125	0.6	3.01	7.41036	HDPE	145	0.06
PP-810	10.5	18.723	18.678	13.3855	PJ-627	J-357	232.55	-11,867.86	8,572.23	140	0.87	5.19	13.3855	HDPE	145	0.05
PP-811	15.5	18.678	18.713	8.12923	J-357	PJ-628	232.54	-11,857.50	8,573.95	125	0.66	3.58	8.12923	HDPE	145	0.06
PP-812	38	18.713	18.481	8.00755	PJ-628	PJ-629	232.45	-11,842.00	8,573.39	125	0.65	3.48	8.00755	HDPE	145	0.13
PP-813	46	18.481	18.728	7.81653	PJ-629	PJ-630	232.55	-11,839.30	8,535.56	125	0.64	3.33	7.81653	HDPE	145	0.15
PP-814	37.5	18.728	18.307	5.51205	PJ-630	PJ-631	232.15	-11,794.53	8,525.53	110	0.58	3.25	5.51205	HDPE	145	0.12
PP-815	43.5	18.307	17.878	5.03679	PJ-631	PJ-617	232.45	-11,766.35	8,500.44	110	0.53	2.75	5.03679	HDPE	145	0.12
PP-816	36	18.307	18.366	0.20923	PJ-631	PJ-499	232.45	-11,766.35	8,500.44	110	0.02	0.01	0.20923	HDPE	145	0
PP-817	30.5	18.148	17.763	5.72093	PJ-500	J-391	232.54	-11,725.98	8,512.86	110	0.6	3.48	5.72093	HDPE	145	0.11
PP-818	27.5	18.728	18.314	2.05207	PJ-630	PJ-632	232.15	-11,794.53	8,525.53	110	0.22	0.52	2.05207	HDPE	145	0.01
PP-819	47	18.314	18.335	3.85915	PJ-632	PJ-618	232.55	-11,796.85	8,498.51	110	0.41	1.68	3.85915	HDPE	145	0.08
PP-820	23	18.276	18.707	-2.83521	PJ-619	PJ-633	232.56	-11,795.69	8,458.37	110	0.3	0.95	2.83521	HDPE	145	0.02
PP-821	17.5	18.707	18.314	-1.67889	PJ-633	PJ-632	232.15	-11,797.23	8,481.14	110	0.18	0.36	1.67889	HDPE	145	0.01
PP-822	57	18.314	18.278	-3.82476	PJ-632	J-356	232.55	-11,796.85	8,498.51	110	0.4	1.65	3.82476	HDPE	145	0.09
PP-823	55	18.192	18.707	1.37349	J-355	PJ-633	232.68	-11,851.94	8,475.45	110	0.14	0.25	1.37349	HDPE	145	0.01
PP-824	77	18.179	18.155	-4.83135	PJ-501	PJ-634	232.23	-11,688.92	8,476.96	110	0.51	2.54	4.83135	HDPE	145	0.2

PP-825	40.5	18.155	18.163	-5.18043	PJ-634	PJ-635	232.45	-11,661.76	8,540.58	110	0.55	2.89	5.18043	HDPE	145	0.12
PP-826	29	18.163	18.141	-5.33849	PJ-635	J-389	232.56	-11,659.83	8,581.10	110	0.56	3.06	5.33849	HDPE	145	0.09
PP-827	58	18.141	18.259	0.51334	J-389	PJ-636	232.67	-11,688.60	8,584.14	110	0.05	0.04	0.51334	HDPE	145	0
PP-828	54.5	18.259	18.269	0.01876	PJ-636	PJ-498	232.55	-11,746.28	8,588.05	110	0	0	0.01876	HDPE	145	0
PP-829	43	18.115	18.035	-0.09781	PJ-637	J-390	232.6	-11,733.93	8,559.49	110	0.01	0	0.09781	HDPE	145	0
PP-830	18	18.155	18.155	-0.04098	PJ-638	PJ-634	232.45	-11,679.90	8,541.35	110	0	0	0.04098	HDPE	145	0
PP-831	99	18.531	18.535	-4.43011	PJ-497	PJ-639	232.39	-11,766.12	8,553.77	110	0.47	2.17	4.43011	HDPE	145	0.21
PP-832	26	18.535	18.551	-7.76728	PJ-639	J-384	232.6	-11,762.11	8,652.89	125	0.63	3.29	7.76728	HDPE	145	0.09
PP-833	79	18.535	18.239	2.87334	PJ-639	J-388	232.6	-11,762.11	8,652.89	110	0.3	0.97	2.87334	HDPE	145	0.08
PP-834	52.5	18.259	18.259	0.11941	PJ-636	PJ-640	232.55	-11,746.28	8,588.05	110	0.01	0	0.11941	HDPE	145	0
PP-835	37	18.714	18.804	0.08417	J-360	PJ-641	232.54	-11,803.46	8,644.35	110	0.01	0	0.08417	HDPE	145	0
PP-836	51.5	18.903	18.833	6.07167	J-367	J-362	232.67	-11,853.17	8,700.24	110	0.64	3.88	6.07167	HDPE	145	0.2
PP-837	82.5	18.789	18.723	6.23437	J-368	PJ-627	232.82	-11,855.64	8,653.61	110	0.66	4.08	6.23437	HDPE	145	0.34
PP-838	104	19.185	19.21	-8.62087	PJ-626	PJ-496	232.15	-11,888.70	8,572.61	125	0.7	3.99	8.62087	HDPE	145	0.41
PP-839	70	19.728	19.111	8.77326	PJ-494	PJ-642	232.23	-11,913.17	8,702.37	125	0.71	4.12	8.77326	HDPE	145	0.29
PP-840	59	19.111	18.977	11.83999	PJ-642	PJ-643	232.56	-11,917.65	8,632.44	140	0.77	4.13	11.83999	HDPE	145	0.24
PP-841	24.5	18.977	18.775	8.36727	PJ-643	PJ-625	232.45	-11,919.19	8,573.39	125	0.68	3.77	8.36727	HDPE	145	0.09
PP-842	89.5	19.883	19.115	9.17024	PJ-492	PJ-644	232.23	-11,937.48	8,721.28	125	0.75	4.47	9.17024	HDPE	145	0.4
PP-843	32.5	19.115	19.111	3.43395	PJ-644	PJ-642	232.6	-11,950.07	8,632.44	110	0.36	1.35	3.43395	HDPE	145	0.04
PP-844	61.5	19.115	18.951	14.92481	PJ-644	PJ-645	232.6	-11,950.07	8,632.44	160	0.74	3.31	14.92481	HDPE	145	0.2
PP-845	29	18.951	18.817	5.5442	PJ-645	PJ-646	232.56	-11,956.25	8,571.07	110	0.58	3.28	5.5442	HDPE	145	0.1
PP-846	9	18.817	18.977	-3.26238	PJ-646	PJ-643	232.6	-11,927.30	8,569.91	110	0.34	1.23	3.26238	HDPE	145	0.01
PP-847	7.5	21.256	21.158	60.62373	PJ-485	PJ-647	232.39	-12,204.95	8,894.96	250	1.24	5.05	60.62373	HDPE	145	0.04
PP-848	26	21.158	20.947	29.30095	PJ-647	PJ-648	232.45	-12,205.79	8,902.52	200	0.93	3.9	29.30095	HDPE	145	0.1
PP-849	102	20.947	20.518	29.00991	PJ-648	PJ-649	232.56	-12,205.79	8,928.46	200	0.92	3.82	29.00991	HDPE	145	0.39
PP-850	127	20.518	20.089	28.48925	PJ-649	PJ-650	232.6	-12,103.90	8,925.37	200	0.91	3.7	28.48925	HDPE	145	0.47
PP-851	32	20.089	20.166	3.00355	PJ-650	PJ-651	232.56	-11,976.68	8,924.14	110	0.32	1.05	3.00355	HDPE	145	0.03
PP-853	103.5	20.601	21.158	-31.01127	PJ-652	PJ-647	232.56	-12,102.35	8,898.20	200	0.99	4.33	31.01127	HDPE	145	0.45
PP-854	60	20.166	20.285	-31.67086	PJ-651	PJ-653	232.45	-11,976.99	8,892.03	200	1.01	4.5	31.67086	HDPE	145	0.27
PP-855	65.5	20.285	20.601	-30.62702	PJ-653	PJ-652	232.6	-12,036.89	8,896.35	200	0.97	4.23	30.62702	HDPE	145	0.28
PP-856	90.5	20.373	20.285	1.53495	PJ-486	PJ-653	232.54	-12,064.46	8,810.05	110	0.16	0.3	1.53495	HDPE	145	0.03
PP-857	81.5	20.096	20.026	0.9673	PJ-489	PJ-654	232.39	-11,997.31	8,770.29	110	0.1	0.13	0.9673	HDPE	145	0.01
PP-858	14	20.026	20.274	0.75013	PJ-654	PJ-655	232.45	-11,992.74	8,851.58	110	0.08	0.08	0.75013	HDPE	145	0
PP-859	41	20.274	20.166	-15.24965	PJ-655	PJ-651	232.2	-11,978.84	8,851.27	160	0.76	3.45	15.24965	HDPE	145	0.14
PP-860	20	20.166	19.997	19.07687	PJ-651	PJ-656	232.45	-11,976.99	8,892.03	180	0.75	2.94	19.07687	HDPE	145	0.06
PP-861	42.5	19.997	19.949	11.18923	PJ-656	PJ-657	232.56	-11,956.92	8,892.03	140	0.73	3.72	11.18923	HDPE	145	0.16

PP-862	20.5	19.949	20.274	-15.82809	PJ-657	PJ-655	232.45	-11,958.47	8,849.42	160	0.79	3.69	15.82809	HDPE	145	0.08
PP-863	103	20.033	19.949	-3.38303	PJ-490	PJ-657	232.23	-11,963.34	8,746.75	110	0.36	1.31	3.38303	HDPE	145	0.14
PP-864	21	19.949	19.751	23.20911	PJ-657	PJ-658	232.45	-11,958.47	8,849.42	180	0.91	4.23	23.20911	HDPE	145	0.09
PP-865	10	19.751	19.82	16.58509	PJ-658	PJ-659	232.56	-11,937.47	8,850.65	160	0.82	4.02	16.58509	HDPE	145	0.04
PP-866	35.5	19.82	19.605	7.36715	PJ-659	PJ-660	232.45	-11,937.47	8,840.46	125	0.6	2.98	7.36715	HDPE	145	0.11
PP-867	32.5	19.605	19.839	2.57778	PJ-660	PJ-661	232.56	-11,938.09	8,804.95	110	0.27	0.79	2.57778	HDPE	145	0.03
PP-868	37.5	19.839	19.65	-4.8061	PJ-661	PJ-491	232.3	-11,941.79	8,772.84	125	0.39	1.35	4.8061	HDPE	145	0.05
PP-869	29	19.65	19.865	-17.24	PJ-491	PJ-662	232.54	-11,947.90	8,735.94	160	0.86	4.32	17.24	HDPE	145	0.13
PP-870	43	19.865	19.985	-34.84671	PJ-662	PJ-663	232.45	-11,976.99	8,738.26	200	1.11	5.37	34.84671	HDPE	145	0.23
PP-871	37	19.985	20.084	-4.39306	PJ-663	PJ-488	232.56	-12,019.29	8,745.05	110	0.46	2.13	4.39306	HDPE	145	0.08
PP-872	26.5	19.985	20.358	-55.51076	PJ-663	PJ-664	232.56	-12,019.29	8,745.05	250	1.13	4.29	55.51076	HDPE	145	0.11
PP-873	49	20.358	20.538	-4.51535	PJ-664	PJ-487	232.3	-12,045.54	8,748.45	110	0.48	2.24	4.51535	HDPE	145	0.11
PP-874	5.5	20.417	20.289	36.49593	J-233	PJ-665	232.45	-12,096.62	8,754.55	225	0.92	3.3	36.49593	HDPE	145	0.02
PP-875	21.5	20.289	20.187	32.50588	PJ-665	PJ-666	232.56	-12,091.24	8,753.70	200	1.03	4.72	32.50588	HDPE	145	0.1
PP-876	63.5	20.187	20.373	-4.89545	PJ-666	PJ-486	232.56	-12,069.93	8,751.85	110	0.52	2.61	4.89545	HDPE	145	0.17
PP-877	24.5	20.187	20.358	38.44177	PJ-666	PJ-664	232.56	-12,069.93	8,751.85	225	0.97	3.63	38.44177	HDPE	145	0.09
PP-878	43.5	20.358	20.42	-12.87992	PJ-664	PJ-667	232.3	-12,045.54	8,748.45	180	0.51	1.42	12.87992	HDPE	145	0.06
PP-879	23	20.42	19.445	-7.89742	PJ-667	J-221	232.3	-12,044.30	8,704.91	160	0.39	1.02	7.89742	HDPE	145	0.02
PP-880	30.5	19.488	20.517	3.13917	J-220	PJ-668	233.3	-12,066.02	8,677.43	125	0.26	0.61	3.13917	HDPE	145	0.02
PP-881	49.5	20.517	20.289	-3.81608	PJ-668	PJ-665	232.25	-12,074.87	8,706.77	110	0.4	1.64	3.81608	HDPE	145	0.08
PP-882	46	20.187	20.194	-1.39401	PJ-666	PJ-669	232.56	-12,069.93	8,751.85	125	0.11	0.14	1.39401	HDPE	145	0.01
PP-883	9.5	20.194	20.517	-6.75173	PJ-669	PJ-668	232.56	-12,065.61	8,706.15	140	0.44	1.46	6.75173	HDPE	145	0.01
PP-884	21.5	20.194	20.42	5.18261	PJ-669	PJ-667	232.56	-12,065.61	8,706.15	125	0.42	1.55	5.18261	HDPE	145	0.03
PP-885	121.5	19.985	19.677	24.53872	PJ-663	PJ-670	232.56	-12,019.29	8,745.05	180	0.96	4.69	24.53872	HDPE	145	0.57
PP-886	192	19.677	18.879	12.27797	PJ-670	PJ-671	232.3	-12,018.37	8,623.71	140	0.8	4.42	12.27797	HDPE	145	0.85
PP-887	28	18.879	18.57	0.06371	PJ-671	PJ-672	232.25	-12,017.13	8,431.65	110	0.01	0	0.06371	HDPE	145	0
PP-888	43.5	18.879	18.706	11.61517	PJ-671	PJ-673	232.25	-12,017.13	8,431.65	140	0.75	3.99	11.61517	HDPE	145	0.17
PP-889	35	18.706	18.566	-9.57277	PJ-673	PJ-674	232.25	-11,984.09	8,441.23	125	0.78	4.84	9.57277	HDPE	145	0.17
PP-890	65	18.566	19.192	-12.95353	PJ-674	PJ-675	232.56	-11,984.40	8,476.42	140	0.84	4.88	12.95353	HDPE	145	0.32
PP-891	80.5	19.192	19.273	-18.3655	PJ-675	PJ-676	232.25	-11,983.17	8,541.57	160	0.91	4.86	18.3655	HDPE	145	0.39
PP-892	12	19.273	19.617	-7.19609	PJ-676	PJ-677	232.56	-11,981.31	8,622.16	125	0.59	2.85	7.19609	HDPE	145	0.03
PP-893	104	19.617	19.865	-17.20654	PJ-677	PJ-662	232.25	-11,981.01	8,634.21	160	0.86	4.31	17.20654	HDPE	145	0.45
PP-894	37	19.677	19.273	11.46387	PJ-670	PJ-676	232.3	-12,018.37	8,623.71	140	0.74	3.89	11.46387	HDPE	145	0.14
PP-895	31	19.617	19.115	9.67621	PJ-677	PJ-644	232.25	-11,981.01	8,634.21	125	0.79	4.94	9.67621	HDPE	145	0.15
PP-896	52.5	18.706	18.524	20.89007	PJ-673	PJ-678	232.25	-11,984.09	8,441.23	180	0.82	3.48	20.89007	HDPE	145	0.18
PP-897	38.5	18.524	18.657	-24.73594	PJ-678	PJ-679	232.25	-11,932.02	8,435.05	180	0.97	4.76	24.73594	HDPE	145	0.18

PP-898	36.5	18.657	18.854	-11.70076	PJ-679	PJ-680	232.3	-11,928.93	8,473.26	140	0.76	4.04	11.70076	HDPE	145	0.15
PP-899	19	18.854	18.566	-3.11017	PJ-680	PJ-674	232.25	-11,965.21	8,475.96	110	0.33	1.13	3.11017	HDPE	145	0.02
PP-900	24	19.192	19.077	5.02658	PJ-675	PJ-681	232.25	-11,983.17	8,541.57	110	0.53	2.74	5.02658	HDPE	145	0.07
PP-901	30.5	19.077	18.951	-9.10548	PJ-681	PJ-645	232.3	-11,959.04	8,540.81	125	0.74	4.41	9.10548	HDPE	145	0.13
PP-902	30.5	18.817	18.734	8.6508	PJ-646	PJ-682	232.6	-11,927.30	8,569.91	125	0.7	4.01	8.6508	HDPE	145	0.12
PP-903	31.5	18.734	19.077	-4.92413	PJ-682	PJ-681	232.56	-11,927.39	8,539.26	110	0.52	2.63	4.92413	HDPE	145	0.08
PP-904	65	19.077	18.854	8.86459	PJ-681	PJ-680	232.3	-11,959.04	8,540.81	125	0.72	4.2	8.86459	HDPE	145	0.27
PP-905	66	18.657	18.734	-13.28388	PJ-679	PJ-682	232.3	-11,928.93	8,473.26	140	0.86	5.11	13.28388	HDPE	145	0.34
PP-906	35	18.807	18.657	0.15147	PJ-622	PJ-679	232.15	-11,893.72	8,472.65	110	0.02	0	0.15147	HDPE	145	0
PP-907	40.5	18.524	18.443	2.52986	PJ-678	PJ-683	232.25	-11,932.02	8,435.05	110	0.27	0.77	2.52986	HDPE	145	0.03
PP-908	35	18.443	18.39	-9.53165	PJ-683	PJ-620	232.3	-11,891.88	8,431.58	140	0.62	2.77	9.53165	HDPE	145	0.1
PP-909	47.5	18.524	18.315	42.68916	PJ-678	PJ-684	232.25	-11,932.02	8,435.05	225	1.07	4.41	42.68916	HDPE	145	0.21
PP-910	46.5	18.315	18.362	-11.61126	PJ-684	PJ-685	232.25	-11,933.95	8,387.58	160	0.58	2.08	11.61126	HDPE	145	0.1
PP-911	38	18.362	18.443	-11.80342	PJ-685	PJ-683	232.3	-11,887.63	8,393.75	160	0.59	2.14	11.80342	HDPE	145	0.08
PP-912	57	18.315	18.098	21.96285	PJ-684	PJ-686	232.25	-11,933.95	8,387.58	180	0.86	3.82	21.96285	HDPE	145	0.22
PP-913	91	18.098	17.483	7.87163	PJ-686	PJ-687	232.25	-11,991.07	8,384.11	125	0.64	3.37	7.87163	HDPE	145	0.31
PP-914	99	17.483	17.558	4.08929	PJ-687	PJ-688	232.56	-12,081.77	8,376.39	110	0.43	1.87	4.08929	HDPE	145	0.18
PP-915	29.5	17.558	17.36	3.79711	PJ-688	J-238	232.3	-12,180.19	8,368.28	110	0.4	1.63	3.79711	HDPE	145	0.05
PP-916	39.5	17.102	16.364	-0.08986	PJ-689	J-252	232.56	-12,241.94	8,301.12	110	0.01	0	0.08986	HDPE	145	0
PP-917	24.5	17.562	17.483	-3.29464	J-242	PJ-687	232.45	-12,076.67	8,352.50	110	0.35	1.25	3.29464	HDPE	145	0.03
PP-918	56	17.596	17.447	-0.12737	PJ-690	J-240	232.3	-12,106.86	8,290.70	110	0.01	0	0.12737	HDPE	145	0
PP-919	23.5	16.686	17.734	0.05348	J-241	PJ-691	233.3	-12,088.73	8,350.57	110	0.01	0	0.05348	HDPE	145	0
PP-920	45.5	16.848	17.63	3.5663	J-244	J-250	233.3	-12,026.01	8,353.95	110	0.38	1.45	3.5663	HDPE	145	0.07
PP-921	42.5	17.815	16.796	6.19164	J-245	J-249	232.45	-12,001.89	8,352.50	110	0.65	4.03	6.19164	HDPE	145	0.17
PP-922	31	18.098	17.6	13.68423	PJ-686	J-246	232.25	-11,991.07	8,384.11	180	0.54	1.59	13.68423	HDPE	145	0.05
PP-923	40	17.864	18.099	-8.28167	J-247	PJ-692	232.45	-11,973.42	8,351.05	140	0.54	2.13	8.28167	HDPE	145	0.09
PP-924	36.5	18.099	18.315	-31.91125	PJ-692	PJ-684	232.3	-11,933.56	8,351.30	200	1.02	4.56	31.91125	HDPE	145	0.17
PP-925	80	17.109	17.398	0.18193	J-256	PJ-693	232.54	-12,087.28	8,246.36	110	0.02	0.01	0.18193	HDPE	145	0
PP-926	14	18.099	18.039	23.42378	PJ-692	PJ-694	232.3	-11,933.56	8,351.30	180	0.92	4.3	23.42378	HDPE	145	0.06
PP-927	66.5	18.039	17.487	12.25465	PJ-694	PJ-695	232.3	-11,933.56	8,337.40	140	0.8	4.4	12.25465	HDPE	145	0.29
PP-928	38	17.487	17.797	0.08645	PJ-695	PJ-696	232.56	-11,933.95	8,271.02	110	0.01	0	0.08645	HDPE	145	0
PP-929	30.5	17.343	17.487	-13.67326	J-259	PJ-695	232.54	-11,932.90	8,240.57	140	0.89	5.4	13.67326	HDPE	145	0.16
PP-930	30.5	17.487	17.501	-1.88136	PJ-695	PJ-697	232.56	-11,933.95	8,271.02	110	0.2	0.44	1.88136	HDPE	145	0.01
PP-931	65	17.501	17.993	-5.1074	PJ-697	PJ-698	232.56	-11,903.46	8,274.49	110	0.54	2.82	5.1074	HDPE	145	0.18
PP-932	27	17.993	18.039	-10.92469	PJ-698	PJ-694	232.25	-11,906.55	8,339.33	140	0.71	3.56	10.92469	HDPE	145	0.1
PP-933	24.5	17.993	17.603	5.55238	PJ-698	PJ-699	232.25	-11,906.55	8,339.33	110	0.58	3.29	5.55238	HDPE	145	0.08

PP-934	56	17.603	17.912	0.12737	PJ-699	PJ-700	232.56	-11,882.23	8,340.11	110	0.01	0	0.12737	HDPE	145	0
PP-935	26	17.603	17.528	5.18284	PJ-699	PJ-701	232.56	-11,882.23	8,340.11	110	0.55	2.9	5.18284	HDPE	145	0.08
PP-936	16	17.528	17.485	4.98949	PJ-701	PJ-702	232.56	-11,877.60	8,319.65	110	0.53	2.7	4.98949	HDPE	145	0.04
PP-937	26.5	17.485	17.478	1.44081	PJ-702	PJ-703	232.56	-11,878.37	8,303.44	110	0.15	0.27	1.44081	HDPE	145	0.01
PP-938	22.5	17.478	17.501	-2.95772	PJ-703	PJ-697	232.56	-11,881.07	8,277.19	110	0.31	1.03	2.95772	HDPE	145	0.02
PP-939	21.5	17.528	17.837	0.04894	PJ-701	PJ-704	232.56	-11,877.60	8,319.65	110	0.01	0	0.04894	HDPE	145	0
PP-940	72	17.485	17.395	3.28832	PJ-702	PJ-705	232.56	-11,878.37	8,303.44	110	0.35	1.25	3.28832	HDPE	145	0.09
PP-941	25	17.395	17.679	2.99494	PJ-705	PJ-706	232.56	-11,821.63	8,267.93	110	0.32	1.05	2.99494	HDPE	145	0.03
PP-942	56.5	17.679	17.478	-4.15863	PJ-706	PJ-703	232.25	-11,833.99	8,245.93	110	0.44	1.93	4.15863	HDPE	145	0.11
PP-943	16	17.655	17.395	-0.03643	PJ-707	PJ-705	232.3	-11,807.35	8,260.21	110	0	0	0.03643	HDPE	145	0
PP-944	30.5	17.679	17.149	6.8989	PJ-706	J-260	232.25	-11,833.99	8,245.93	125	0.56	2.64	6.8989	HDPE	145	0.08
PP-945	43.5	17.149	17.15	8.21773	J-260	J-262	232.7	-11,844.61	8,217.41	125	0.67	3.65	8.21773	HDPE	145	0.16
PP-946	45.5	17.15	17.013	7.42572	J-262	J-265	232.54	-11,855.71	8,175.44	125	0.61	3.03	7.42572	HDPE	145	0.14
PP-947	31.5	17.013	16.703	9.5115	J-265	J-283	232.54	-11,873.07	8,133.47	125	0.78	4.78	9.5115	HDPE	145	0.15
PP-948	37	16.703	16.793	6.19568	J-283	J-285	232.7	-11,885.19	8,104.49	110	0.65	4.03	6.19568	HDPE	145	0.15
PP-949	89.5	16.793	16.465	4.84673	J-285	PJ-708	232.46	-11,900.62	8,070.83	110	0.51	2.56	4.84673	HDPE	145	0.23
PP-950	17.5	16.465	16.502	-3.64661	PJ-708	J-294	232.56	-11,930.86	7,986.95	110	0.38	1.51	3.64661	HDPE	145	0.03
PP-951	48	16.465	16.293	8.14091	PJ-708	PJ-709	232.56	-11,930.86	7,986.95	125	0.66	3.59	8.14091	HDPE	145	0.17
PP-952	80.5	16.293	16.144	-0.20148	PJ-709	J-333	232.56	-11,939.35	7,939.48	110	0.02	0.01	0.20148	HDPE	145	0
PP-953	36.5	15.85	16.034	-6.58666	J-338	J-335	232.66	-11,855.58	7,913.31	110	0.69	4.52	6.58666	HDPE	145	0.16
PP-954	52.5	16.034	16.293	-7.93085	J-335	PJ-709	232.64	-11,889.24	7,925.97	125	0.65	3.42	7.93085	HDPE	145	0.18
PP-955	40	16.576	16.557	-0.09099	PJ-710	J-291	232.55	-12,045.49	7,973.83	110	0.01	0	0.09099	HDPE	145	0
PP-956	19.5	16.557	16.547	0.04439	J-291	PJ-711	232.57	-12,006.53	7,965.54	110	0	0	0.04439	HDPE	145	0
PP-957	89	16.695	16.629	1.79574	J-314	J-289	232.49	-12,085.61	8,024.16	110	0.19	0.41	1.79574	HDPE	145	0.04
PP-958	28	16.687	16.697	0.06371	J-310	PJ-712	232.51	-12,080.37	8,046.39	110	0.01	0	0.06371	HDPE	145	0
PP-959	27	16.751	16.991	0.06144	J-304	PJ-713	232.49	-12,167.16	8,111.40	110	0.01	0	0.06144	HDPE	145	0
PP-960	95.5	16.757	15.966	-0.72801	J-305	J-282	232.5	-12,165.27	8,129.36	110	0.08	0.08	0.72801	HDPE	145	0.01
PP-961	5.5	15.966	16.758	2.92041	J-282	PJ-714	233.3	-12,072.76	8,106.64	110	0.31	1	2.92041	HDPE	145	0.01
PP-962	29.5	16.758	16.725	3.58431	PJ-714	J-309	232.5	-12,067.49	8,105.44	110	0.38	1.46	3.58431	HDPE	145	0.04
PP-963	30.5	16.758	16.681	-0.81287	PJ-714	PJ-715	232.5	-12,067.49	8,105.44	110	0.09	0.09	0.81287	HDPE	145	0
PP-964	31	16.681	16.742	2.2384	PJ-715	PJ-716	232.58	-12,038.93	8,094.25	110	0.24	0.61	2.2384	HDPE	145	0.02
PP-965	24	16.742	16.704	-0.74423	PJ-716	J-284	232.5	-12,008.82	8,087.69	110	0.08	0.08	0.74423	HDPE	145	0
PP-966	21	16.628	16.707	-0.0478	PJ-717	PJ-718	232.58	-12,036.61	8,053.72	110	0.01	0	0.0478	HDPE	145	0
PP-967	38.5	16.707	16.742	-2.77002	PJ-718	PJ-716	232.5	-12,015.77	8,049.86	110	0.29	0.91	2.77002	HDPE	145	0.03
PP-968	23.5	16.709	16.707	-2.53347	J-286	PJ-718	232.48	-11,993.25	8,043.04	110	0.27	0.77	2.53347	HDPE	145	0.02
PP-969	35.5	16.681	16.605	-3.27185	PJ-715	J-271	232.58	-12,038.93	8,094.25	110	0.34	1.24	3.27185	HDPE	145	0.04

PP-970	22	16.765	16.726	0.05007	J-273	PJ-719	232.54	-12,013.87	8,127.39	110	0.01	0	0.05007	HDPE	145	0
PP-971	33	16.008	16.692	-4.88871	J-272	J-267	233.3	-12,027.70	8,129.17	110	0.51	2.6	4.88871	HDPE	145	0.09
PP-972	98.5	16.692	17.271	-8.93106	J-267	J-258	232.7	-12,029.48	8,159.01	125	0.73	4.26	8.93106	HDPE	145	0.42
PP-973	17	16.031	16.032	-0.62815	J-269	J-277	233.3	-12,066.83	8,151.30	110	0.07	0.06	0.62815	HDPE	145	0
PP-974	20.5	16.765	16.007	-0.01888	J-270	J-279	232.54	-12,068.21	8,135.10	110	0	0	0.01888	HDPE	145	0
PP-975	74.5	16.598	16.769	1.75419	J-280	J-306	232.7	-12,091.53	8,133.92	110	0.18	0.39	1.75419	HDPE	145	0.03
PP-976	14	16.769	16.77	-0.74447	J-306	J-302	232.5	-12,164.25	8,149.22	110	0.08	0.08	0.74447	HDPE	145	0
PP-977	82.5	16.948	17.243	-2.10853	J-296	PJ-720	232.5	-12,197.16	8,229.40	110	0.22	0.55	2.10853	HDPE	145	0.05
PP-978	50.5	17.243	17.137	-7.18728	PJ-720	PJ-721	232.25	-12,121.53	8,196.14	125	0.59	2.85	7.18728	HDPE	145	0.14
PP-979	10	17.137	17.109	-3.29309	PJ-721	J-256	232.5	-12,092.58	8,237.83	110	0.35	1.25	3.29309	HDPE	145	0.01
PP-980	55.5	17.243	16.822	4.65016	PJ-720	J-276	232.25	-12,121.53	8,196.14	110	0.49	2.37	4.65016	HDPE	145	0.13
PP-981	48.5	17.137	17.15	-4.14204	PJ-721	PJ-722	232.5	-12,092.58	8,237.83	110	0.44	1.91	4.14204	HDPE	145	0.09
PP-982	28	17.15	16.492	-4.44566	PJ-722	J-257	232.58	-12,047.81	8,218.92	110	0.47	2.18	4.44566	HDPE	145	0.06
PP-983	28.5	17.15	17.03	0.06485	PJ-722	PJ-723	232.58	-12,047.81	8,218.92	110	0.01	0	0.06485	HDPE	145	0
PP-984	45	16.923	16.847	3.60952	J-295	PJ-724	232.57	-12,193.54	8,243.27	110	0.38	1.48	3.60952	HDPE	145	0.07
PP-985	115	16.847	16.687	3.24572	PJ-724	PJ-725	232.58	-12,235.38	8,260.21	110	0.34	1.22	3.24572	HDPE	145	0.14
PP-986	10.5	16.687	16.781	2.08948	PJ-725	PJ-726	232.6	-12,266.65	8,149.44	110	0.22	0.54	2.08948	HDPE	145	0.01
PP-987	27	16.781	16.712	-0.25162	PJ-726	J-299	232.5	-12,257.00	8,145.97	110	0.03	0.01	0.25162	HDPE	145	0
PP-988	33	16.757	16.556	-1.44409	J-320	PJ-727	232.49	-12,229.50	8,102.28	110	0.15	0.27	1.44409	HDPE	145	0.01
PP-989	45	16.556	16.781	-2.15349	PJ-727	PJ-726	232.7	-12,262.40	8,101.20	110	0.23	0.57	2.15349	HDPE	145	0.03
PP-990	117	16.556	16.655	0.26604	PJ-727	PJ-728	232.7	-12,262.40	8,101.20	110	0.03	0.01	0.26604	HDPE	145	0
PP-991	100	16.687	16.581	0.64354	PJ-725	PJ-729	232.6	-12,266.65	8,149.44	110	0.07	0.06	0.64354	HDPE	145	0.01
PP-992	33	16.581	16.681	0.07508	PJ-729	PJ-730	232.7	-12,365.45	8,165.65	110	0.01	0	0.07508	HDPE	145	0
PP-993	58.5	16.581	16.781	0.13305	PJ-729	PJ-731	232.7	-12,365.45	8,165.65	110	0.01	0	0.13305	HDPE	145	0
PP-994	50.5	19.746	20.345	0.11486	J-66	PJ-732	233.3	-12,453.18	8,724.42	110	0.01	0	0.11486	HDPE	145	0
PP-995	21	20.089	20.107	25.07644	PJ-650	PJ-733	232.56	-11,976.68	8,924.14	180	0.99	4.88	25.07644	HDPE	145	0.1
PP-996	31	20.107	19.731	8.36253	PJ-733	PJ-734	232.44	-11,975.73	8,945.30	125	0.68	3.77	8.36253	HDPE	145	0.12
PP-997	31	19.731	19.93	0.07053	PJ-734	PJ-735	232.7	-11,985.44	8,968.25	110	0.01	0	0.07053	HDPE	145	0
PP-998	25.5	19.731	19.641	8.09302	PJ-734	PJ-736	232.7	-11,985.44	8,968.25	125	0.66	3.55	8.09302	HDPE	145	0.09
PP-999	101	19.641	19.648	4.78444	PJ-736	PJ-737	232.7	-11,987.60	8,993.87	110	0.5	2.5	4.78444	HDPE	145	0.25
	53967.5															

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	J-1	J-2	59	75	PVC	180	HDPE	Replacement
P-2	J-2	J-3	37	75	PVC	180	HDPE	Replacement
P-3	J-3	J-4	71	75	PVC	180	HDPE	Replacement
P-4	J-3	J-5	26.5	75	PVC	250	HDPE	Replacement
P-5	J-5	J-6	42.5	75	PVC	125	HDPE	Replacement
P-6	J-6	J-7	125	110	PVC	110	uPVC	Retained
P-7	J-8	J-9	28	75	PVC	140	HDPE	Replacement
P-8	J-9	J-10	57	110	PVC	110	uPVC	Retained
P-9	J-10	J-11	17	75	PVC	110	HDPE	Replacement
P-10	J-11	J-12	24	75	PVC	110	HDPE	Replacement
P-11	J-12	J-13	33.5	75	PVC	110	HDPE	Replacement
P-12	J-13	J-14	18.5	75	PVC	110	HDPE	Replacement
P-13	J-14	J-15	55.5	75	PVC	110	HDPE	Replacement
P-14	J-9	J-14	31.5	110	PVC	125	HDPE	Replacement
P-15	J-14	J-16	76	110	PVC	110	uPVC	Retained
P-16	J-16	J-17	28	75	PVC	110	HDPE	Replacement
P-17	J-17	J-18	17.5	75	PVC	110	HDPE	Replacement
P-18	J-18	J-19	39	75	PVC	110	HDPE	Replacement
P-19	J-19	J-20	25.5	75	PVC	110	HDPE	Replacement
P-20	J-19	J-21	11	75	PVC	110	HDPE	Replacement
P-21	J-21	J-22	26.5	75	PVC	110	HDPE	Replacement
P-22	J-22	J-23	23.5	75	PVC	110	HDPE	Replacement
P-23	J-23	J-24	21	75	PVC	110	HDPE	Replacement
P-24	J-24	J-25	21.5	75	PVC	110	HDPE	Replacement
P-25	J-25	J-26	42.5	75	PVC	110	HDPE	Replacement
P-26	J-26	J-27	18	110	PVC	110	uPVC	Retained
P-27	J-27	J-28	6.5	75	PVC	110	HDPE	Replacement
P-28	J-26	J-29	23	110	PVC	110	uPVC	Retained
P-29	J-29	J-24	43	75	PVC	110	HDPE	Replacement
P-30	J-29	J-30	21.5	110	PVC	110	uPVC	Retained
P-31	J-30	J-23	44	75	PVC	110	HDPE	Replacement
P-32	J-30	J-31	31.5	110	PVC	110	uPVC	Retained
P-33	J-31	J-17	57	75	PVC	110	HDPE	Replacement
P-34	J-31	J-32	29.5	110	PVC	110	uPVC	Retained
P-35	J-32	J-16	56.5	75	PVC	110	HDPE	Replacement
P-36	J-32	J-33	10.5	75	PVC	110	HDPE	Replacement
P-37	J-33	J-34	9.5	75	PVC	110	HDPE	Replacement
P-38	J-34	J-35	71	75	PVC	110	HDPE	Replacement
P-39	J-35	J-36	30.5	75	PVC	110	HDPE	Replacement
P-40	J-36	J-13	25.5	75	PVC	110	HDPE	Replacement
P-41	J-34	J-37	6	75	PVC	110	HDPE	Replacement
P-42	J-37	J-38	24.5	75	PVC	110	HDPE	Replacement
P-43	J-38	J-39	71	75	PVC	110	HDPE	Replacement
P-44	J-39	J-35	29	160	PVC	160	uPVC	Retained
P-45	J-38	J-40	6	75	PVC	110	HDPE	Replacement
P-46	J-40	J-41	27	75	PVC	110	HDPE	Replacement
P-47	J-41	J-42	73	75	PVC	110	HDPE	Replacement
P-48	J-42	J-39	27	75	PVC	110	HDPE	Replacement
P-49	J-42	J-43	24	75	PVC	110	HDPE	Replacement
P-50	J-43	J-44	31.5	75	PVC	110	HDPE	Replacement
P-51	J-44	J-12	18.5	75	PVC	110	HDPE	Replacement
P-52	J-41	J-45	25	75	PVC	110	HDPE	Replacement
P-53	J-45	J-46	127.5	75	PVC	110	HDPE	Replacement
P-54	J-46	J-44	29	75	PVC	110	HDPE	Replacement
P-55	J-46	J-47	36.5	75	PVC	110	HDPE	Replacement
P-56	J-47	J-48	39.5	75	PVC	110	HDPE	Replacement
P-57	J-48	J-49	59.5	75	PVC	110	HDPE	Replacement
P-58	J-49	J-50	52	75	PVC	110	HDPE	Replacement
P-59	J-50	J-51	12.5	75	PVC	110	HDPE	Replacement

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-60	J-51	J-52	40	75	PVC	110	HDPE	Replacement
P-61	J-52	J-53	23	75	PVC	110	HDPE	Replacement
P-62	J-53	J-47	67	75	PVC	110	HDPE	Replacement
P-63	J-47	J-54	26	75	PVC	125	HDPE	Replacement
P-64	J-54	J-55	64.5	75	PVC	110	HDPE	Replacement
P-65	J-55	J-11	24	75	PVC	110	HDPE	Replacement
P-66	J-55	J-56	45.5	75	PVC	110	HDPE	Replacement
P-67	J-56	J-6	35.5	75	PVC	140	HDPE	Replacement
P-68	J-56	J-57	38	75	PVC	110	HDPE	Replacement
P-69	J-57	J-54	13.5	75	PVC	125	HDPE	Replacement
P-70	J-54	J-58	47.5	75	PVC	110	HDPE	Replacement
P-71	J-58	J-59	49.5	75	PVC	125	HDPE	Replacement
P-72	J-59	J-60	12	75	PVC	125	HDPE	Replacement
P-73	J-60	J-61	57	75	PVC	110	HDPE	Replacement
P-74	J-61	J-62	39.5	75	PVC	110	HDPE	Replacement
P-75	J-62	J-63	43.5	75	PVC	110	HDPE	Replacement
P-76	J-63	J-51	99.5	75	PVC	110	HDPE	Replacement
P-77	J-64	J-59	28.5	75	PVC	110	HDPE	Replacement
P-78	J-59	J-65	43.5	75	PVC	110	HDPE	Replacement
P-79	J-60	J-66	24	75	PVC	110	HDPE	Replacement
P-80	J-66	J-67	55.5	75	PVC	110	HDPE	Replacement
P-81	J-67	J-68	17	75	PVC	110	HDPE	Replacement
P-82	J-68	J-69	8.5	75	PVC	110	HDPE	Replacement
P-83	J-69	J-70	20.5	75	PVC	110	HDPE	Replacement
P-84	J-70	J-71	46	75	PVC	110	HDPE	Replacement
P-85	J-71	J-62	16.5	75	PVC	110	HDPE	Replacement
P-86	J-61	J-69	57	75	PVC	110	HDPE	Replacement
P-87	J-67	J-72	50	75	PVC	110	HDPE	Replacement
P-88	J-72	J-73	61.5	75	PVC	110	HDPE	Replacement
P-89	J-72	J-74	25.5	75	PVC	110	HDPE	Replacement
P-90	J-74	J-75	57.5	75	PVC	110	HDPE	Replacement
P-91	J-74	J-76	37	75	PVC	110	HDPE	Replacement
P-92	J-76	J-77	27.5	75	PVC	110	HDPE	Replacement
P-93	J-77	J-78	27	75	PVC	110	HDPE	Replacement
P-94	J-78	J-79	78.5	75	PVC	110	HDPE	Replacement
P-95	J-79	J-68	68.5	75	PVC	110	HDPE	Replacement
P-96	J-70	J-80	79	75	PVC	110	HDPE	Replacement
P-97	J-80	J-79	32	75	PVC	110	HDPE	Replacement
P-98	J-80	J-81	16.5	75	PVC	110	HDPE	Replacement
P-99	J-81	J-82	66.5	75	PVC	110	HDPE	Replacement
P-100	J-82	J-78	27.5	75	PVC	110	HDPE	Replacement
P-101	J-81	J-83	35.5	75	PVC	110	HDPE	Replacement
P-102	J-82	J-84	58.5	75	PVC	110	HDPE	Replacement
P-103	J-84	J-85	54	75	PVC	110	HDPE	Replacement
P-104	J-84	J-86	115	75	PVC	110	HDPE	Replacement
P-105	J-86	J-87	60.5	75	PVC	110	HDPE	Replacement
P-106	J-87	J-88	47.5	75	PVC	110	HDPE	Replacement
P-107	J-88	J-82	62.5	75	PVC	110	HDPE	Replacement
P-108	J-88	J-89	31.5	75	PVC	110	HDPE	Replacement
P-109	J-89	J-90	37.5	75	PVC	110	HDPE	Replacement
P-110	J-90	J-91	49.5	75	PVC	110	HDPE	Replacement
P-111	J-91	J-92	16	75	PVC	125	HDPE	Replacement
P-112	J-92	J-93	30.5	75	PVC	110	HDPE	Replacement
P-113	J-93	J-94	35.5	110	PVC	110	uPVC	Retained
P-114	J-94	J-77	15	75	PVC	110	HDPE	Replacement
P-115	J-76	J-95	35	75	PVC	125	HDPE	Replacement
P-116	J-95	J-96	28.5	75	PVC	125	HDPE	Replacement
P-117	J-96	J-97	17.5	75	PVC	110	HDPE	Replacement
P-118	J-97	J-98	47	75	PVC	110	HDPE	Replacement
P-119	J-98	J-93	44	110	PVC	125	HDPE	Replacement

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-120	J-99	J-95	25	75	PVC	110	HDPE	Replacement
P-121	J-100	J-96	21	75	PVC	110	HDPE	Replacement
P-122	J-96	J-101	48.5	75	PVC	110	HDPE	Replacement
P-123	J-101	J-102	37.5	75	PVC	110	HDPE	Replacement
P-124	J-102	J-103	39	75	PVC	125	HDPE	Replacement
P-125	J-103	J-104	31.5	75	PVC	125	HDPE	Replacement
P-126	J-104	J-105	39.5	75	PVC	110	HDPE	Replacement
P-127	J-105	J-102	35.5	75	PVC	110	HDPE	Replacement
P-128	J-57	J-106	7.5	75	PVC	110	HDPE	Replacement
P-129	J-106	J-107	13.5	75	PVC	110	HDPE	Replacement
P-130	J-106	J-108	18	75	PVC	110	HDPE	Replacement
P-131	J-108	J-104	33.5	75	PVC	110	HDPE	Replacement
P-132	J-105	J-109	33	75	PVC	110	HDPE	Replacement
P-133	J-109	J-108	38.5	75	PVC	110	HDPE	Replacement
P-134	J-109	J-58	37.5	75	PVC	110	HDPE	Replacement
P-135	J-49	J-110	60.5	75	PVC	110	HDPE	Replacement
P-136	J-50	J-111	18	75	PVC	110	HDPE	Replacement
P-137	J-111	J-112	33	75	PVC	110	HDPE	Replacement
P-138	J-111	J-113	25.5	75	PVC	110	HDPE	Replacement
P-139	J-113	J-114	108.5	75	PVC	110	HDPE	Replacement
P-140	J-114	J-45	7	75	PVC	110	HDPE	Replacement
P-141	J-114	J-115	24	75	PVC	110	HDPE	Replacement
P-142	J-115	J-116	46	75	PVC	110	HDPE	Replacement
P-143	J-116	J-117	19.5	75	PVC	110	HDPE	Replacement
P-144	J-117	J-41	57	75	PVC	110	HDPE	Replacement
P-145	J-117	J-118	30.5	75	PVC	110	HDPE	Replacement
P-146	J-118	J-40	53.5	75	PVC	110	HDPE	Replacement
P-147	J-118	J-119	30	75	PVC	110	HDPE	Replacement
P-148	J-119	J-37	52.5	75	PVC	110	HDPE	Replacement
P-149	J-119	J-120	14	75	PVC	110	HDPE	Replacement
P-150	J-120	J-121	28	75	PVC	140	HDPE	Replacement
P-151	J-121	J-122	52.5	75	PVC	140	HDPE	Replacement
P-152	J-122	J-123	42	75	PVC	110	HDPE	Replacement
P-153	J-123	J-124	126.5	75	PVC	110	HDPE	Replacement
P-154	J-126	J-127	66	75	PVC	110	HDPE	Replacement
P-155	J-127	J-128	106.5	75	PVC	110	HDPE	Replacement
P-156	J-128	J-129	59.5	110	PVC	110	uPVC	Retained
P-157	J-129	J-130	24.5	75	PVC	110	HDPE	Replacement
P-158	J-130	J-125	131	75	PVC	110	HDPE	Replacement
P-159	J-128	J-131	40	110	PVC	110	uPVC	Retained
P-160	J-131	J-132	103.5	75	PVC	110	HDPE	Replacement
P-161	J-132	J-127	40	75	PVC	110	HDPE	Replacement
P-162	J-133	J-132	84.5	75	PVC	110	HDPE	Replacement
P-163	J-132	J-134	43.5	75	PVC	110	HDPE	Replacement
P-164	J-134	J-135	105	75	PVC	110	HDPE	Replacement
P-165	J-135	J-136	35.5	110	PVC	110	uPVC	Retained
P-166	J-136	J-131	8	110	PVC	110	uPVC	Retained
P-167	J-134	J-137	70	75	PVC	110	HDPE	Replacement
P-168	J-129	J-138	41	110	PVC	110	uPVC	Retained
P-169	J-138	J-139	48.5	110	PVC	110	uPVC	Retained
P-170	J-139	J-140	49	110	PVC	110	uPVC	Retained
P-171	J-140	J-141	27	75	PVC	110	HDPE	Replacement
P-172	J-138	J-142	104.5	160	PVC	160	uPVC	Retained
P-173	J-142	J-136	56	160	PVC	160	uPVC	Retained
P-174	J-142	J-143	39	160	PVC	160	uPVC	Retained
P-175	J-143	J-135	59	110	PVC	110	uPVC	Retained
P-176	J-143	J-144	47.5	110	PVC	110	uPVC	Retained
P-177	J-144	J-145	39	160	PVC	160	uPVC	Retained
P-178	J-145	J-142	47.5	160	PVC	160	uPVC	Retained
P-179	J-139	J-145	102	110	PVC	110	uPVC	Retained

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-180	J-145	J-146	48.5	75	PVC	110	HDPE	Replacement
P-181	J-140	J-147	68	75	PVC	110	HDPE	Replacement
P-182	J-147	J-148	44.5	75	PVC	110	HDPE	Replacement
P-183	J-148	J-149	48	75	PVC	110	HDPE	Replacement
P-184	J-144	J-150	106	75	PVC	110	HDPE	Replacement
P-185	J-150	J-148	55.5	75	PVC	110	HDPE	Replacement
P-186	J-148	J-122	88.5	75	PVC	110	HDPE	Replacement
P-187	J-116	J-151	146	75	PVC	110	HDPE	Replacement
P-188	J-151	J-152	74.5	75	PVC	110	HDPE	Replacement
P-189	J-152	J-153	62.5	75	PVC	110	HDPE	Replacement
P-190	J-153	J-113	104	75	PVC	110	HDPE	Replacement
P-191	J-115	J-154	93.5	75	PVC	110	HDPE	Replacement
P-192	J-155	J-152	233	75	PVC	110	HDPE	Replacement
P-193	J-156	J-157	89	75	PVC	110	HDPE	Replacement
P-194	J-157	J-158	20	75	PVC	110	HDPE	Replacement
P-195	J-158	J-159	55.5	75	PVC	110	HDPE	Replacement
P-196	J-159	J-160	33	75	PVC	110	HDPE	Replacement
P-197	J-160	J-161	77	75	PVC	110	HDPE	Replacement
P-198	J-161	J-162	50	75	PVC	110	HDPE	Replacement
P-199	J-162	J-163	7.5	75	PVC	110	HDPE	Replacement
P-200	J-163	J-158	26	75	PVC	110	HDPE	Replacement
P-201	J-159	J-162	57.5	75	PVC	110	HDPE	Replacement
P-202	J-157	J-164	56.5	75	PVC	110	HDPE	Replacement
P-203	J-164	J-165	45	75	PVC	110	HDPE	Replacement
P-204	J-164	J-166	78.5	75	PVC	110	HDPE	Replacement
P-205	J-166	J-167	81	75	PVC	110	HDPE	Replacement
P-206	J-167	J-168	41.5	75	PVC	110	HDPE	Replacement
P-207	J-168	J-169	39.5	75	PVC	110	HDPE	Replacement
P-208	J-169	J-170	48	75	PVC	110	HDPE	Replacement
P-209	J-170	J-171	40	75	PVC	110	HDPE	Replacement
P-210	J-171	J-172	10	75	PVC	110	HDPE	Replacement
P-211	J-172	J-173	39.5	75	PVC	110	HDPE	Replacement
P-212	J-173	J-167	33.5	75	PVC	110	HDPE	Replacement
P-213	J-168	J-172	34.5	75	PVC	110	HDPE	Replacement
P-214	J-170	J-174	36.5	75	PVC	110	HDPE	Replacement
P-215	J-174	J-175	43.5	75	PVC	110	HDPE	Replacement
P-216	J-175	J-176	22.5	75	PVC	110	HDPE	Replacement
P-217	J-176	J-171	15	75	PVC	110	HDPE	Replacement
P-218	J-176	J-177	79.5	75	PVC	110	HDPE	Replacement
P-219	J-177	J-178	35	75	PVC	110	HDPE	Replacement
P-220	J-178	J-179	16	75	PVC	110	HDPE	Replacement
P-221	J-179	J-180	32.5	75	PVC	110	HDPE	Replacement
P-222	J-180	J-161	49	75	PVC	110	HDPE	Replacement
P-223	J-163	J-181	31.5	75	PVC	110	HDPE	Replacement
P-224	J-181	J-182	24	75	PVC	110	HDPE	Replacement
P-225	J-182	J-179	99	75	PVC	110	HDPE	Replacement
P-226	J-166	J-182	30.5	75	PVC	110	HDPE	Replacement
P-227	J-183	J-184	32.5	75	PVC	110	HDPE	Replacement
P-228	J-184	J-180	36.5	75	PVC	110	HDPE	Replacement
P-229	J-180	J-185	78	75	PVC	110	HDPE	Replacement
P-230	J-185	J-186	42.5	75	PVC	110	HDPE	Replacement
P-231	J-186	J-184	78.5	75	PVC	110	HDPE	Replacement
P-232	J-178	J-187	104.5	75	PVC	110	HDPE	Replacement
P-233	J-187	J-188	50	75	PVC	110	HDPE	Replacement
P-234	J-188	J-185	29.5	75	PVC	110	HDPE	Replacement
P-235	J-175	J-189	68	75	PVC	110	HDPE	Replacement
P-236	J-177	J-190	102.5	75	PVC	110	HDPE	Replacement
P-237	J-190	J-187	33	75	PVC	110	HDPE	Replacement
P-238	J-188	J-191	33	75	PVC	110	HDPE	Replacement
P-239	J-191	J-192	82	75	PVC	110	HDPE	Replacement

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-240	J-192	J-190	29	75	PVC	110	HDPE	Replacement
P-241	J-191	J-193	31	75	PVC	125	HDPE	Replacement
P-242	J-193	J-194	53.5	75	PVC	110	HDPE	Replacement
P-243	J-71	J-193	42	75	PVC	140	HDPE	Replacement
P-244	J-94	J-90	53	110	PVC	110	uPVC	Retained
P-245	J-90	J-195	40	110	PVC	110	uPVC	Retained
P-246	J-195	J-196	50.5	75	PVC	110	HDPE	Replacement
P-247	J-196	J-91	31.5	75	PVC	125	HDPE	Replacement
P-248	J-91	J-197	42	75	PVC	110	HDPE	Replacement
P-249	J-197	J-198	9	75	PVC	140	HDPE	Replacement
P-250	J-198	J-199	8.5	75	PVC	140	HDPE	Replacement
P-251	J-199	J-200	21.5	75	PVC	160	HDPE	Replacement
P-252	J-200	J-98	7	75	PVC	110	HDPE	Replacement
P-253	J-199	J-92	43	75	PVC	110	HDPE	Replacement
P-254	J-196	J-201	37	75	PVC	110	HDPE	Replacement
P-255	J-201	J-202	16	75	PVC	125	HDPE	Replacement
P-256	J-202	J-197	7	75	PVC	125	HDPE	Replacement
P-257	J-201	J-203	32.5	75	PVC	110	HDPE	Replacement
P-258	J-203	J-204	36	110	PVC	125	HDPE	Replacement
P-259	J-204	J-196	29.5	75	PVC	125	HDPE	Replacement
P-260	J-204	J-205	10	75	PVC	140	HDPE	Replacement
P-261	J-205	J-206	53.5	110	PVC	110	uPVC	Retained
P-262	J-206	J-207	12.5	110	PVC	125	HDPE	Replacement
P-263	J-207	J-195	29	110	PVC	110	uPVC	Retained
P-264	J-195	J-208	39.5	75	PVC	110	HDPE	Replacement
P-265	J-208	J-89	42.5	75	PVC	110	HDPE	Replacement
P-266	J-208	J-209	30	75	PVC	110	HDPE	Replacement
P-267	J-209	J-207	38.5	75	PVC	110	HDPE	Replacement
P-268	J-87	J-210	29.5	75	PVC	110	HDPE	Replacement
P-269	J-210	J-209	28.5	75	PVC	110	HDPE	Replacement
P-270	J-211	J-86	17.5	75	PVC	110	HDPE	Replacement
P-271	J-86	J-212	30	75	PVC	110	HDPE	Replacement
P-272	J-212	J-210	62	75	PVC	110	HDPE	Replacement
P-273	J-213	J-212	30	75	PVC	110	HDPE	Replacement
P-274	J-212	J-214	33.5	75	PVC	125	HDPE	Replacement
P-275	J-214	J-215	63	75	PVC	110	HDPE	Replacement
P-276	J-215	J-216	29	75	PVC	110	HDPE	Replacement
P-277	J-216	J-217	39	75	PVC	125	HDPE	Replacement
P-278	J-217	J-206	9	110	PVC	125	HDPE	Replacement
P-279	J-217	J-218	15	75	PVC	110	HDPE	Replacement
P-280	J-216	J-219	29.5	75	PVC	125	HDPE	Replacement
P-281	J-219	J-220	23	75	PVC	140	HDPE	Replacement
P-282	J-220	J-221	23.5	75	PVC	110	HDPE	Replacement
P-283	J-221	J-222	33	75	PVC	125	HDPE	Replacement
P-284	J-222	J-223	23.5	75	PVC	125	HDPE	Replacement
P-285	J-223	J-215	46	75	PVC	110	HDPE	Replacement
P-286	J-224	J-214	27	75	PVC	110	HDPE	Replacement
P-287	J-214	J-225	40	75	PVC	110	HDPE	Replacement
P-288	J-225	J-223	63	75	PVC	110	HDPE	Replacement
P-289	J-225	J-226	45.5	75	PVC	110	HDPE	Replacement
P-290	J-226	J-227	49.5	75	PVC	110	HDPE	Replacement
P-291	J-227	J-228	32.5	75	PVC	110	HDPE	Replacement
P-292	J-228	J-229	51	75	PVC	110	HDPE	Replacement
P-293	J-229	J-230	15	75	PVC	110	HDPE	Replacement
P-294	J-229	J-226	28.5	75	PVC	110	HDPE	Replacement
P-295	J-219	J-231	89.5	110	PVC	110	uPVC	Retained
P-296	J-231	J-232	14.5	75	PVC	200	HDPE	Replacement
P-297	J-232	J-205	15	75	PVC	160	HDPE	Replacement
P-298	J-231	J-233	21.5	75	PVC	180	HDPE	Replacement
P-299	J-233	J-234	84	160	PVC	160	uPVC	Retained

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-300	J-232	J-235	102	160	PVC	160	uPVC	Retained
P-301	J-203	J-236	60.5	75	PVC	110	HDPE	Replacement
P-302	J-236	J-237	30	75	PVC	125	HDPE	Replacement
P-303	J-238	J-239	51	110	PVC	110	uPVC	Retained
P-304	J-239	J-240	20.5	110	PVC	110	uPVC	Retained
P-305	J-240	J-241	21.5	110	PVC	110	uPVC	Retained
P-306	J-241	J-242	12	110	PVC	125	HDPE	Replacement
P-307	J-242	J-243	22	110	PVC	110	uPVC	Retained
P-308	J-243	J-244	29	110	PVC	110	uPVC	Retained
P-309	J-244	J-245	24	110	PVC	125	HDPE	Replacement
P-310	J-245	J-246	9	110	PVC	160	HDPE	Replacement
P-311	J-246	J-247	19.5	110	PVC	110	uPVC	Retained
P-312	J-247	J-248	40	75	PVC	110	HDPE	Replacement
P-313	J-248	J-249	29	75	PVC	110	HDPE	Replacement
P-314	J-249	J-250	22.5	75	PVC	110	HDPE	Replacement
P-315	J-250	J-251	22	75	PVC	110	HDPE	Replacement
P-316	J-251	J-243	45.5	75	PVC	110	HDPE	Replacement
P-317	J-238	J-252	59	110	PVC	110	uPVC	Retained
P-318	J-252	J-253	14.5	110	PVC	110	uPVC	Retained
P-319	J-253	J-254	27	110	PVC	110	uPVC	Retained
P-320	J-254	J-255	22.5	110	PVC	110	uPVC	Retained
P-321	J-255	J-239	97	75	PVC	110	HDPE	Replacement
P-322	J-255	J-256	77	110	PVC	110	uPVC	Retained
P-323	J-256	J-257	48.5	110	PVC	110	uPVC	Retained
P-324	J-257	J-258	32.5	110	PVC	110	uPVC	Retained
P-325	J-258	J-249	67	75	PVC	125	HDPE	Replacement
P-326	J-251	J-257	65.5	75	PVC	125	HDPE	Replacement
P-327	J-258	J-259	74	110	PVC	110	uPVC	Retained
P-328	J-259	J-260	93.5	110	PVC	110	uPVC	Retained
P-329	J-259	J-261	50	75	PVC	125	HDPE	Replacement
P-330	J-261	J-262	81.5	75	PVC	110	HDPE	Replacement
P-331	J-263	J-261	46.5	75	PVC	110	HDPE	Replacement
P-332	J-261	J-264	22.5	75	PVC	125	HDPE	Replacement
P-333	J-264	J-265	71.5	75	PVC	110	HDPE	Replacement
P-334	J-264	J-266	64	75	PVC	110	HDPE	Replacement
P-335	J-266	J-267	53	75	PVC	110	HDPE	Replacement
P-336	J-267	J-268	36.5	75	PVC	110	HDPE	Replacement
P-337	J-268	J-269	16.5	75	PVC	110	HDPE	Replacement
P-338	J-269	J-270	16.5	75	PVC	110	HDPE	Replacement
P-339	J-270	J-271	33	160	PVC	160	uPVC	Retained
P-340	J-271	J-272	8	160	PVC	160	uPVC	Retained
P-341	J-272	J-273	14	160	PVC	160	uPVC	Retained
P-342	J-273	J-274	36	160	PVC	160	uPVC	Retained
P-343	J-274	J-266	26.5	75	PVC	110	HDPE	Replacement
P-344	J-275	J-276	13.5	75	PVC	110	HDPE	Replacement
P-345	J-276	J-277	14.5	75	PVC	110	HDPE	Replacement
P-346	J-277	J-278	7.5	75	PVC	110	HDPE	Replacement
P-347	J-278	J-279	11.5	75	PVC	110	HDPE	Replacement
P-348	J-279	J-280	6.5	75	PVC	110	HDPE	Replacement
P-349	J-280	J-281	28.5	75	PVC	110	HDPE	Replacement
P-350	J-281	J-270	12	75	PVC	110	HDPE	Replacement
P-351	J-282	J-281	17	75	PVC	110	HDPE	Replacement
P-352	J-274	J-283	98	75	PVC	110	HDPE	Replacement
P-353	J-274	J-284	40	160	PVC	160	uPVC	Retained
P-354	J-284	J-285	90.5	75	PVC	110	HDPE	Replacement
P-355	J-284	J-286	39.5	160	PVC	160	uPVC	Retained
P-356	J-286	J-287	54	75	PVC	110	HDPE	Replacement
P-357	J-287	J-288	37	75	PVC	110	HDPE	Replacement
P-358	J-288	J-289	52.5	75	PVC	110	HDPE	Replacement
P-359	J-289	J-286	38	160	PVC	160	uPVC	Retained

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-360	J-290	J-287	15	75	PVC	110	HDPE	Replacement
P-361	J-289	J-291	40.5	160	PVC	160	uPVC	Retained
P-362	J-291	J-292	99	160	PVC	160	uPVC	Retained
P-363	J-292	J-293	47	75	PVC	125	HDPE	Replacement
P-364	J-293	J-294	127.5	110	PVC	110	uPVC	Retained
P-365	J-294	J-288	8.5	75	PVC	125	HDPE	Replacement
P-366	J-254	J-295	18	110	PVC	125	HDPE	Replacement
P-367	J-295	J-296	14.5	110	PVC	110	uPVC	Retained
P-368	J-296	J-297	28.5	110	PVC	125	HDPE	Replacement
P-369	J-297	J-298	34.5	75	PVC	110	HDPE	Replacement
P-370	J-298	J-278	99.5	75	PVC	110	HDPE	Replacement
P-371	J-297	J-299	64	110	PVC	110	uPVC	Retained
P-372	J-299	J-300	33.5	110	PVC	110	uPVC	Retained
P-373	J-300	J-301	48.5	110	PVC	110	uPVC	Retained
P-374	J-301	J-302	42.5	75	PVC	110	HDPE	Replacement
P-375	J-302	J-298	37.5	75	PVC	110	HDPE	Replacement
P-376	J-301	J-303	13	160	PVC	160	uPVC	Retained
P-377	J-303	J-304	4	75	PVC	110	HDPE	Replacement
P-378	J-304	J-305	18	75	PVC	110	HDPE	Replacement
P-379	J-305	J-306	20	75	PVC	110	HDPE	Replacement
P-380	J-303	J-307	44.5	160	PVC	160	uPVC	Retained
P-381	J-307	J-308	25	160	PVC	160	uPVC	Retained
P-382	J-308	J-309	39.5	75	PVC	110	HDPE	Replacement
P-383	J-309	J-310	31	75	PVC	110	HDPE	Replacement
P-384	J-310	J-311	45	75	PVC	110	HDPE	Replacement
P-385	J-311	J-308	26.5	160	PVC	160	uPVC	Retained
P-386	J-307	J-312	46.5			110	HDPE	Replacement
P-387	J-312	J-313	22	75	PVC	110	HDPE	Replacement
P-388	J-313	J-311	22.5	160	PVC	160	uPVC	Retained
P-389	J-310	J-314	23	75	PVC	110	HDPE	Replacement
P-390	J-314	J-313	48	75	PVC	110	HDPE	Replacement
P-391	J-313	J-315	23.5	160	PVC	160	uPVC	Retained
P-392	J-315	J-316	47.5	75	PVC	110	HDPE	Replacement
P-393	J-316	J-314	17	75	PVC	110	HDPE	Replacement
P-394	J-316	J-317	8	75	PVC	110	HDPE	Replacement
P-395	J-315	J-318	60.5	110	PVC	110	uPVC	Retained
P-396	J-318	J-319	21.5	75	PVC	110	HDPE	Replacement
P-397	J-300	J-320	7.5	110	PVC	110	uPVC	Retained
P-398	J-320	J-321	69	110	PVC	110	uPVC	Retained
P-399	J-321	J-318	45.5	110	PVC	110	uPVC	Retained
P-400	J-318	J-322	37	75	PVC	110	HDPE	Replacement
P-401	J-322	J-323	14	110	PVC	110	uPVC	Retained
P-402	J-323	J-324	44	110	PVC	110	uPVC	Retained
P-403	J-324	J-315	25.5	160	PVC	160	uPVC	Retained
P-404	J-321	J-325	44	75	PVC	110	HDPE	Replacement
P-405	J-325	J-322	46.5	110	PVC	110	uPVC	Retained
P-406	J-322	J-326	104	75	PVC	110	HDPE	Replacement
P-407	J-326	J-327	39.5	75	PVC	110	HDPE	Replacement
P-408	J-327	J-325	96.5	75	PVC	110	HDPE	Replacement
P-409	J-326	J-328	25.5	75	PVC	110	HDPE	Replacement
P-410	J-328	J-323	108	75	PVC	110	HDPE	Replacement
P-411	J-328	J-329	46	75	PVC	110	HDPE	Replacement
P-412	J-329	J-324	112.5	160	PVC	160	uPVC	Retained
P-413	J-324	J-330	52	75	PVC	110	HDPE	Replacement
P-414	J-330	J-331	107	75	PVC	110	HDPE	Replacement
P-415	J-331	J-329	45	75	PVC	110	HDPE	Replacement
P-416	J-332	J-330	9	75	PVC	110	HDPE	Replacement
P-417	J-331	J-292	88	75	PVC	110	HDPE	Replacement
P-418	J-293	J-333	21.5	75	PVC	125	HDPE	Replacement
P-419	J-333	J-334	46	75	PVC	125	HDPE	Replacement

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-420	J-334	J-335	75	110	PVC	110	uPVC	Retained
P-421	J-335	J-336	55.5	110	PVC	110	uPVC	Retained
P-422	J-337	J-338	62	110	PVC	110	uPVC	Retained
P-423	J-338	J-339	68	110	PVC	110	uPVC	Retained
P-424	J-339	J-334	34.5	75	PVC	125	HDPE	Replacement
P-425	J-339	J-340	38.5	75	PVC	125	HDPE	Replacement
P-426	J-340	J-341	57	110	PVC	110	uPVC	Retained
P-427	J-341	J-342	85.5	110	PVC	110	uPVC	Retained
P-428	J-338	J-341	35	75	PVC	125	HDPE	Replacement
P-429	J-341	J-343	34	75	PVC	110	HDPE	Replacement
P-430	J-343	J-344	49.5	110	PVC	110	uPVC	Retained
P-431	J-340	J-345	35	75	PVC	125	HDPE	Replacement
P-432	J-345	J-343	56	110	PVC	110	uPVC	Retained
P-433	J-345	J-346	48	75	PVC	160	HDPE	Replacement
P-434	J-346	J-347	53.5	110	PVC	110	uPVC	Retained
P-435	J-347	J-348	49	110	PVC	110	uPVC	Retained
P-436	J-346	J-349	162.5	160	PVC	160	uPVC	Retained
P-437	J-349	J-350	30.5	110	PVC	110	uPVC	Retained
P-438	J-350	J-347	140.5	110	PVC	110	uPVC	Retained
P-439	J-350	J-351	84.5	110	PVC	110	uPVC	Retained
P-440	J-351	J-352	23	110	PVC	110	uPVC	Retained
P-441	J-352	J-353	99.5	110	PVC	110	uPVC	Retained
P-442	J-354	J-355	22.5	75	PVC	110	HDPE	Replacement
P-443	J-355	J-356	36.5	75	PVC	110	HDPE	Replacement
P-444	J-356	J-357	62.5	75	PVC	125	HDPE	Replacement
P-445	J-357	J-358	55	75	PVC	110	HDPE	Replacement
P-446	J-359	J-360	47	75	PVC	110	HDPE	Replacement
P-447	J-360	J-361	35	75	PVC	110	HDPE	Replacement
P-448	J-361	J-362	18	75	PVC	125	HDPE	Replacement
P-449	J-362	J-363	6	75	PVC	110	HDPE	Replacement
P-450	J-363	J-364	23	75	PVC	110	HDPE	Replacement
P-451	J-364	J-365	28.5	75	PVC	125	HDPE	Replacement
P-452	J-365	J-366	53	75	PVC	110	HDPE	Replacement
P-453	J-366	J-367	57.5	75	PVC	110	HDPE	Replacement
P-454	J-367	J-368	46.5	75	PVC	110	HDPE	Replacement
P-455	J-366	J-369	57	75	PVC	140	HDPE	Replacement
P-456	J-369	J-370	25.5	75	PVC	160	HDPE	Replacement
P-457	J-370	J-371	32.5	75	PVC	160	HDPE	Replacement
P-458	J-370	J-372	52.5	75	PVC	125	HDPE	Replacement
P-459	J-372	J-373	31	75	PVC	110	HDPE	Replacement
P-460	J-373	J-374	18.5	75	PVC	140	HDPE	Replacement
P-461	J-374	J-365	38.5	75	PVC	125	HDPE	Replacement
P-462	J-365	J-375	61	75	PVC	110	HDPE	Replacement
P-463	J-375	J-376	39	75	PVC	110	HDPE	Replacement
P-464	J-376	J-374	62	75	PVC	110	HDPE	Replacement
P-465	J-372	J-377	61.5	75	PVC	125	HDPE	Replacement
P-466	J-377	J-376	50.5	75	PVC	110	HDPE	Replacement
P-467	J-376	J-378	65	75	PVC	110	HDPE	Replacement
P-468	J-378	J-379	47	75	PVC	110	HDPE	Replacement
P-469	J-379	J-377	67.5	75	PVC	110	HDPE	Replacement
P-470	J-379	J-380	26.5	75	PVC	110	HDPE	Replacement
P-471	J-375	J-381	63	75	PVC	110	HDPE	Replacement
P-472	J-381	J-378	41	75	PVC	110	HDPE	Replacement
P-473	J-364	J-382	60.5	75	PVC	110	HDPE	Replacement
P-474	J-382	J-375	29.5	75	PVC	110	HDPE	Replacement
P-475	J-363	J-383	61	75	PVC	110	HDPE	Replacement
P-476	J-383	J-382	21	75	PVC	110	HDPE	Replacement
P-477	J-361	J-384	40.5	75	PVC	110	HDPE	Replacement
P-478	J-384	J-385	18	75	PVC	110	HDPE	Replacement
P-479	J-385	J-383	22	75	PVC	110	HDPE	Replacement

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-480	J-383	J-386	61	75	PVC	110	HDPE	Replacement
P-481	J-386	J-381	53	75	PVC	110	HDPE	Replacement
P-482	J-385	J-387	63.5	75	PVC	110	HDPE	Replacement
P-483	J-387	J-388	34	75	PVC	125	HDPE	Replacement
P-484	J-388	J-389	61	75	PVC	140	HDPE	Replacement
P-485	J-389	J-390	30	75	PVC	110	HDPE	Replacement
P-486	J-390	J-391	47	75	PVC	110	HDPE	Replacement
P-487	J-391	J-392	22.5	75	PVC	125	HDPE	Replacement
P-1139	J-386	J-387	21.5	75	PVC	125	HDPE	Replacement
PP-488	J-373	J-369	50	#N/A	#N/A	110	HDPE	New
PP-489	T-1	PJ-393	22	#N/A	#N/A	400	HDPE	New
PP-490	PJ-393	J-1	80	#N/A	#N/A	400	HDPE	New
PP-491	J-1	J-4	35	#N/A	#N/A	280	HDPE	New
PP-492	J-4	PJ-394	44	#N/A	#N/A	280	HDPE	New
PP-493	PJ-394	PJ-395	45	#N/A	#N/A	250	HDPE	New
PP-494	PJ-395	J-7	35	#N/A	#N/A	200	HDPE	New
PP-495	J-7	PJ-396	13	#N/A	#N/A	200	HDPE	New
PP-496	PJ-396	J-8	19	#N/A	#N/A	200	HDPE	New
PP-497	J-8	J-15	38	#N/A	#N/A	140	HDPE	New
PP-498	J-15	PJ-397	8	#N/A	#N/A	140	HDPE	New
PP-499	PJ-397	PJ-398	25	#N/A	#N/A	125	HDPE	New
PP-500	PJ-398	PJ-399	23	#N/A	#N/A	110	HDPE	New
PP-501	PJ-399	PJ-400	9.5	#N/A	#N/A	125	HDPE	New
PP-502	PJ-400	PJ-401	21.5	#N/A	#N/A	110	HDPE	New
PP-503	PJ-401	PJ-402	31	#N/A	#N/A	110	HDPE	New
PP-504	PJ-402	PJ-403	24.5	#N/A	#N/A	110	HDPE	New
PP-505	PJ-403	PJ-404	22	#N/A	#N/A	110	HDPE	New
PP-506	PJ-404	PJ-405	17.5	#N/A	#N/A	110	HDPE	New
PP-507	PJ-405	PJ-406	21	#N/A	#N/A	110	HDPE	New
PP-508	PJ-406	PJ-407	35	#N/A	#N/A	110	HDPE	New
PP-509	PJ-407	PJ-408	86	#N/A	#N/A	110	HDPE	New
PP-510	PJ-408	PJ-409	61.5	#N/A	#N/A	110	HDPE	New
PP-511	PJ-409	PJ-410	76	#N/A	#N/A	110	HDPE	New
PP-512	PJ-410	PJ-411	129	#N/A	#N/A	110	HDPE	New
PP-513	PJ-411	PJ-412	37	#N/A	#N/A	110	HDPE	New
PP-514	PJ-412	PJ-413	35	#N/A	#N/A	110	HDPE	New
PP-515	PJ-413	J-124	73.5	#N/A	#N/A	110	HDPE	New
PP-516	J-124	PJ-414	241	#N/A	#N/A	110	HDPE	New
PP-517	PJ-414	PJ-415	43	#N/A	#N/A	110	HDPE	New
PP-518	PJ-415	PJ-416	79	#N/A	#N/A	110	HDPE	New
PP-519	PJ-416	PJ-417	76.5	#N/A	#N/A	110	HDPE	New
PP-520	PJ-416	PJ-418	86.5	#N/A	#N/A	110	HDPE	New
PP-521	PJ-418	PJ-419	144	#N/A	#N/A	110	HDPE	New
PP-522	PJ-418	PJ-420	98	#N/A	#N/A	110	HDPE	New
PP-523	PJ-420	PJ-415	98.5	#N/A	#N/A	110	HDPE	New
PP-524	PJ-421	PJ-422	102	#N/A	#N/A	110	HDPE	New
PP-525	PJ-422	PJ-414	9.5	#N/A	#N/A	110	HDPE	New
PP-526	PJ-422	J-130	67	#N/A	#N/A	110	HDPE	New
PP-527	PJ-413	PJ-423	33	#N/A	#N/A	110	HDPE	New
PP-528	PJ-412	PJ-424	123.5	#N/A	#N/A	110	HDPE	New
PP-529	PJ-424	PJ-425	46	#N/A	#N/A	110	HDPE	New
PP-530	PJ-424	J-123	107	#N/A	#N/A	110	HDPE	New
PP-531	J-123	J-147	89.5	#N/A	#N/A	110	HDPE	New
PP-532	PJ-411	PJ-426	75	#N/A	#N/A	110	HDPE	New
PP-533	PJ-426	PJ-409	107	#N/A	#N/A	110	HDPE	New
PP-534	PJ-426	PJ-427	59	#N/A	#N/A	110	HDPE	New
PP-535	PJ-427	PJ-408	86	#N/A	#N/A	110	HDPE	New
PP-536	PJ-427	PJ-428	77	#N/A	#N/A	110	HDPE	New
PP-537	PJ-428	PJ-429	31	#N/A	#N/A	110	HDPE	New
PP-538	PJ-429	PJ-406	35	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-539	PJ-407	PJ-428	52	#N/A	#N/A	110	HDPE	New
PP-540	PJ-428	J-121	146	#N/A	#N/A	110	HDPE	New
PP-541	J-121	PJ-430	25.5	#N/A	#N/A	110	HDPE	New
PP-542	J-120	PJ-431	39	#N/A	#N/A	110	HDPE	New
PP-543	PJ-431	PJ-432	97	#N/A	#N/A	110	HDPE	New
PP-544	PJ-432	PJ-429	8.5	#N/A	#N/A	110	HDPE	New
PP-545	PJ-432	PJ-433	16	#N/A	#N/A	110	HDPE	New
PP-546	PJ-433	J-27	31	#N/A	#N/A	110	HDPE	New
PP-547	J-120	PJ-434	20.5	#N/A	#N/A	110	HDPE	New
PP-548	PJ-434	J-33	31	#N/A	#N/A	110	HDPE	New
PP-549	PJ-431	PJ-435	19.5	#N/A	#N/A	110	HDPE	New
PP-550	PJ-435	PJ-434	41	#N/A	#N/A	110	HDPE	New
PP-551	PJ-435	PJ-433	94.5	#N/A	#N/A	110	HDPE	New
PP-552	PJ-433	PJ-405	33.5	#N/A	#N/A	110	HDPE	New
PP-553	PJ-405	PJ-436	77	#N/A	#N/A	110	HDPE	New
PP-554	PJ-436	PJ-437	16.5	#N/A	#N/A	110	HDPE	New
PP-555	PJ-437	PJ-438	41	#N/A	#N/A	110	HDPE	New
PP-556	PJ-438	PJ-439	16	#N/A	#N/A	110	HDPE	New
PP-557	PJ-439	PJ-440	29	#N/A	#N/A	110	HDPE	New
PP-558	PJ-440	PJ-441	7.5	#N/A	#N/A	110	HDPE	New
PP-559	PJ-441	PJ-403	61.5	#N/A	#N/A	110	HDPE	New
PP-560	PJ-403	J-28	8	#N/A	#N/A	110	HDPE	New
PP-561	PJ-404	PJ-442	56.5	#N/A	#N/A	110	HDPE	New
PP-562	PJ-442	PJ-440	17	#N/A	#N/A	110	HDPE	New
PP-563	PJ-436	PJ-439	38.5	#N/A	#N/A	110	HDPE	New
PP-564	PJ-438	PJ-443	58.5	#N/A	#N/A	110	HDPE	New
PP-565	PJ-441	PJ-444	32	#N/A	#N/A	110	HDPE	New
PP-566	PJ-444	PJ-402	76.5	#N/A	#N/A	110	HDPE	New
PP-567	PJ-444	PJ-445	17.5	#N/A	#N/A	110	HDPE	New
PP-568	PJ-445	PJ-446	29.5	#N/A	#N/A	110	HDPE	New
PP-569	PJ-446	PJ-401	65	#N/A	#N/A	110	HDPE	New
PP-570	PJ-399	PJ-447	43	#N/A	#N/A	110	HDPE	New
PP-571	PJ-447	PJ-448	40	#N/A	#N/A	110	HDPE	New
PP-572	PJ-448	PJ-446	23	#N/A	#N/A	110	HDPE	New
PP-573	PJ-447	PJ-449	17.5	#N/A	#N/A	110	HDPE	New
PP-574	PJ-449	PJ-398	53.5	#N/A	#N/A	110	HDPE	New
PP-575	PJ-448	PJ-450	20	#N/A	#N/A	110	HDPE	New
PP-576	PJ-450	PJ-449	41.5	#N/A	#N/A	110	HDPE	New
PP-577	PJ-445	PJ-451	21.5	#N/A	#N/A	110	HDPE	New
PP-578	PJ-451	PJ-448	30.5	#N/A	#N/A	110	HDPE	New
PP-579	PJ-451	PJ-452	20.5	#N/A	#N/A	110	HDPE	New
PP-580	PJ-452	PJ-450	30	#N/A	#N/A	110	HDPE	New
PP-581	PJ-450	PJ-453	33.5	#N/A	#N/A	110	HDPE	New
PP-582	PJ-453	PJ-454	33	#N/A	#N/A	110	HDPE	New
PP-583	PJ-454	PJ-452	37	#N/A	#N/A	110	HDPE	New
PP-584	PJ-455	PJ-456	42.5	#N/A	#N/A	110	HDPE	New
PP-585	PJ-456	PJ-454	32	#N/A	#N/A	110	HDPE	New
PP-586	PJ-457	PJ-458	13.5	#N/A	#N/A	110	HDPE	New
PP-587	PJ-458	PJ-456	10.5	#N/A	#N/A	110	HDPE	New
PP-588	PJ-453	PJ-459	55.5	#N/A	#N/A	110	HDPE	New
PP-589	PJ-459	PJ-397	52	#N/A	#N/A	110	HDPE	New
PP-590	PJ-459	PJ-460	41	#N/A	#N/A	125	HDPE	New
PP-591	PJ-460	PJ-461	131.5	#N/A	#N/A	110	HDPE	New
PP-592	PJ-461	PJ-458	44	#N/A	#N/A	110	HDPE	New
PP-593	PJ-462	PJ-461	14	#N/A	#N/A	110	HDPE	New
PP-594	J-8	PJ-460	72.5	#N/A	#N/A	110	HDPE	New
PP-595	PJ-460	PJ-463	19.5	#N/A	#N/A	140	HDPE	New
PP-596	PJ-463	PJ-464	39	#N/A	#N/A	110	HDPE	New
PP-597	PJ-464	PJ-465	58.5	#N/A	#N/A	110	HDPE	New
PP-598	PJ-465	PJ-466	35.5	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-599	PJ-466	PJ-463	57	#N/A	#N/A	110	HDPE	New
PP-600	PJ-463	PJ-396	81.5	#N/A	#N/A	110	HDPE	New
PP-601	PJ-466	PJ-395	102.5	#N/A	#N/A	125	HDPE	New
PP-602	PJ-395	PJ-467	37.5	#N/A	#N/A	110	HDPE	New
PP-603	J-43	J-36	54.5	#N/A	#N/A	110	HDPE	New
PP-604	PJ-468	PJ-394	42	#N/A	#N/A	110	HDPE	New
PP-605	PJ-394	PJ-469	72	#N/A	#N/A	110	HDPE	New
PP-606	PJ-469	J-4	48.5	#N/A	#N/A	110	HDPE	New
PP-607	PJ-469	PJ-470	47.5	#N/A	#N/A	110	HDPE	New
PP-608	PJ-470	PJ-471	72.5	#N/A	#N/A	110	HDPE	New
PP-609	PJ-472	PJ-470	77	#N/A	#N/A	110	HDPE	New
PP-610	PJ-473	PJ-393	116.5	#N/A	#N/A	110	HDPE	New
PP-611	J-1	PJ-474	40	#N/A	#N/A	355	HDPE	New
PP-612	PJ-474	PJ-475	55	#N/A	#N/A	110	HDPE	New
PP-613	J-5	J-103	48.5	#N/A	#N/A	250	HDPE	New
PP-614	J-103	PJ-476	41.5	#N/A	#N/A	160	HDPE	New
PP-615	PJ-476	PJ-477	55.5	#N/A	#N/A	110	HDPE	New
PP-616	PJ-477	PJ-474	74.5	#N/A	#N/A	160	HDPE	New
PP-617	PJ-474	PJ-478	27	#N/A	#N/A	355	HDPE	New
PP-618	PJ-478	PJ-479	62.5	#N/A	#N/A	110	HDPE	New
PP-619	PJ-476	PJ-480	30.5	#N/A	#N/A	160	HDPE	New
PP-620	PJ-480	J-97	32	#N/A	#N/A	140	HDPE	New
PP-621	PJ-480	PJ-481	53	#N/A	#N/A	110	HDPE	New
PP-622	PJ-481	PJ-477	33	#N/A	#N/A	160	HDPE	New
PP-623	PJ-481	J-200	36.5	#N/A	#N/A	180	HDPE	New
PP-624	J-198	PJ-482	122.5	#N/A	#N/A	110	HDPE	New
PP-625	J-202	PJ-483	65	#N/A	#N/A	110	HDPE	New
PP-626	PJ-483	PJ-484	48.5	#N/A	#N/A	110	HDPE	New
PP-627	PJ-483	J-236	45.5	#N/A	#N/A	110	HDPE	New
PP-628	PJ-478	PJ-485	15	#N/A	#N/A	355	HDPE	New
PP-629	PJ-485	J-237	40.5	#N/A	#N/A	280	HDPE	New
PP-630	J-237	J-235	30.5	#N/A	#N/A	315	HDPE	New
PP-631	J-235	J-234	40.5	#N/A	#N/A	250	HDPE	New
PP-632	J-234	PJ-486	52.5	#N/A	#N/A	225	HDPE	New
PP-633	PJ-486	PJ-487	24	#N/A	#N/A	200	HDPE	New
PP-634	PJ-487	PJ-488	31	#N/A	#N/A	200	HDPE	New
PP-635	PJ-488	PJ-489	23.5	#N/A	#N/A	180	HDPE	New
PP-636	PJ-489	PJ-490	41.5	#N/A	#N/A	180	HDPE	New
PP-637	PJ-490	PJ-491	19	#N/A	#N/A	200	HDPE	New
PP-638	PJ-491	PJ-492	18	#N/A	#N/A	225	HDPE	New
PP-639	PJ-492	PJ-493	25	#N/A	#N/A	200	HDPE	New
PP-640	PJ-493	PJ-494	7.5	#N/A	#N/A	200	HDPE	New
PP-641	PJ-494	PJ-495	34.5	#N/A	#N/A	180	HDPE	New
PP-642	PJ-495	PJ-496	7	#N/A	#N/A	200	HDPE	New
PP-643	PJ-496	J-368	33.5	#N/A	#N/A	180	HDPE	New
PP-644	J-368	J-358	53	#N/A	#N/A	140	HDPE	New
PP-645	J-358	J-359	23.5	#N/A	#N/A	125	HDPE	New
PP-646	J-359	PJ-497	58	#N/A	#N/A	140	HDPE	New
PP-647	PJ-497	PJ-498	27.5	#N/A	#N/A	160	HDPE	New
PP-648	PJ-498	PJ-499	13	#N/A	#N/A	160	HDPE	New
PP-649	PJ-499	PJ-500	17	#N/A	#N/A	160	HDPE	New
PP-650	PJ-500	J-392	40	#N/A	#N/A	125	HDPE	New
PP-651	J-392	PJ-501	11.5	#N/A	#N/A	180	HDPE	New
PP-652	PJ-501	PJ-502	83.5	#N/A	#N/A	225	HDPE	New
PP-653	PJ-502	PJ-503	23.5	#N/A	#N/A	200	HDPE	New
PP-654	PJ-503	PJ-504	282	#N/A	#N/A	200	HDPE	New
PP-655	PJ-504	PJ-505	107	#N/A	#N/A	200	HDPE	New
PP-656	PJ-505	PJ-506	44.5	#N/A	#N/A	180	HDPE	New
PP-657	PJ-506	PJ-507	35.5	#N/A	#N/A	180	HDPE	New
PP-658	PJ-507	PJ-508	38.5	#N/A	#N/A	180	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-65	PJ-508	PJ-509	98.5	#N/A	#N/A	125	HDPE	New
PP-66	PJ-509	PJ-510	44.5	#N/A	#N/A	110	HDPE	New
PP-66	PJ-510	PJ-511	268.5	#N/A	#N/A	125	HDPE	New
PP-66	PJ-511	PJ-512	38	#N/A	#N/A	140	HDPE	New
PP-66	PJ-512	J-349	135	#N/A	#N/A	140	HDPE	New
PP-66	PJ-512	PJ-513	35.5	#N/A	#N/A	110	HDPE	New
PP-66	PJ-514	PJ-511	88.5	#N/A	#N/A	110	HDPE	New
PP-66	J-352	PJ-515	106	#N/A	#N/A	110	HDPE	New
PP-66	J-351	PJ-516	108	#N/A	#N/A	110	HDPE	New
PP-66	J-351	PJ-517	25.5	#N/A	#N/A	110	HDPE	New
PP-66	PJ-508	PJ-518	123	#N/A	#N/A	110	HDPE	New
PP-67	PJ-506	PJ-519	117	#N/A	#N/A	110	HDPE	New
PP-67	PJ-507	PJ-520	127	#N/A	#N/A	110	HDPE	New
PP-67	PJ-508	PJ-521	140.5	#N/A	#N/A	140	HDPE	New
PP-67	PJ-521	PJ-522	112.5	#N/A	#N/A	140	HDPE	New
PP-67	PJ-522	PJ-505	145	#N/A	#N/A	140	HDPE	New
PP-67	PJ-509	PJ-523	137	#N/A	#N/A	110	HDPE	New
PP-67	PJ-523	PJ-521	102	#N/A	#N/A	110	HDPE	New
PP-67	PJ-521	PJ-524	232	#N/A	#N/A	140	HDPE	New
PP-67	PJ-524	PJ-525	88.5	#N/A	#N/A	110	HDPE	New
PP-67	PJ-525	PJ-526	79.5	#N/A	#N/A	110	HDPE	New
PP-68	PJ-526	PJ-527	39	#N/A	#N/A	125	HDPE	New
PP-68	PJ-527	PJ-528	55	#N/A	#N/A	110	HDPE	New
PP-68	PJ-522	PJ-529	77.5	#N/A	#N/A	110	HDPE	New
PP-68	PJ-523	PJ-530	141.5	#N/A	#N/A	125	HDPE	New
PP-68	PJ-530	PJ-527	18	#N/A	#N/A	125	HDPE	New
PP-68	PJ-530	PJ-531	100	#N/A	#N/A	110	HDPE	New
PP-68	PJ-524	PJ-532	97	#N/A	#N/A	110	HDPE	New
PP-68	PJ-532	PJ-533	79	#N/A	#N/A	110	HDPE	New
PP-68	PJ-533	PJ-534	33.5	#N/A	#N/A	110	HDPE	New
PP-68	PJ-535	PJ-533	44.5	#N/A	#N/A	110	HDPE	New
PP-69	PJ-524	PJ-536	41.5	#N/A	#N/A	110	HDPE	New
PP-69	PJ-536	PJ-537	59	#N/A	#N/A	110	HDPE	New
PP-69	PJ-536	PJ-538	49	#N/A	#N/A	110	HDPE	New
PP-69	PJ-538	PJ-539	22.5	#N/A	#N/A	110	HDPE	New
PP-69	PJ-539	PJ-540	29	#N/A	#N/A	110	HDPE	New
PP-69	PJ-540	PJ-541	34	#N/A	#N/A	110	HDPE	New
PP-69	PJ-541	PJ-542	67.5	#N/A	#N/A	110	HDPE	New
PP-69	PJ-542	PJ-543	25	#N/A	#N/A	110	HDPE	New
PP-69	PJ-543	PJ-544	28.5	#N/A	#N/A	110	HDPE	New
PP-69	PJ-538	PJ-545	52.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-545	PJ-539	70.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-526	PJ-546	42	#N/A	#N/A	110	HDPE	New
PP-70	PJ-546	PJ-525	39.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-546	PJ-547	67.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-547	PJ-540	41	#N/A	#N/A	110	HDPE	New
PP-70	PJ-547	PJ-548	27.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-548	PJ-541	42.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-541	PJ-549	23.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-549	PJ-550	13.5	#N/A	#N/A	110	HDPE	New
PP-70	PJ-550	PJ-551	30.5	#N/A	#N/A	110	HDPE	New
PP-71	PJ-551	PJ-548	26	#N/A	#N/A	110	HDPE	New
PP-71	PJ-549	PJ-552	48	#N/A	#N/A	110	HDPE	New
PP-71	PJ-552	PJ-542	29.5	#N/A	#N/A	110	HDPE	New
PP-71	PJ-551	PJ-553	83	#N/A	#N/A	110	HDPE	New
PP-71	PJ-553	PJ-554	34.5	#N/A	#N/A	110	HDPE	New
PP-71	PJ-554	PJ-550	84	#N/A	#N/A	110	HDPE	New
PP-71	PJ-554	PJ-555	16.5	#N/A	#N/A	110	HDPE	New
PP-71	PJ-555	PJ-552	94.5	#N/A	#N/A	110	HDPE	New
PP-71	PJ-510	PJ-556	225.5	#N/A	#N/A	125	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-719	PJ-556	PJ-557	142.5	#N/A	#N/A	110	HDPE	New
PP-720	PJ-557	PJ-558	62	#N/A	#N/A	110	HDPE	New
PP-721	PJ-558	PJ-559	55	#N/A	#N/A	110	HDPE	New
PP-722	PJ-559	PJ-560	34.5	#N/A	#N/A	110	HDPE	New
PP-723	PJ-560	PJ-561	29.5	#N/A	#N/A	110	HDPE	New
PP-724	PJ-561	PJ-562	6	#N/A	#N/A	110	HDPE	New
PP-725	PJ-562	PJ-563	45.5	#N/A	#N/A	110	HDPE	New
PP-726	PJ-563	PJ-564	67	#N/A	#N/A	110	HDPE	New
PP-727	PJ-564	PJ-565	42	#N/A	#N/A	110	HDPE	New
PP-728	PJ-565	PJ-526	40	#N/A	#N/A	110	HDPE	New
PP-729	PJ-546	PJ-566	39.5	#N/A	#N/A	110	HDPE	New
PP-730	PJ-566	PJ-565	42.5	#N/A	#N/A	110	HDPE	New
PP-731	PJ-566	PJ-567	43	#N/A	#N/A	110	HDPE	New
PP-732	PJ-567	PJ-564	41	#N/A	#N/A	110	HDPE	New
PP-733	PJ-567	PJ-568	62.5	#N/A	#N/A	110	HDPE	New
PP-734	PJ-568	PJ-563	41.5	#N/A	#N/A	110	HDPE	New
PP-735	PJ-568	PJ-569	63	#N/A	#N/A	110	HDPE	New
PP-736	PJ-569	PJ-562	43.5	#N/A	#N/A	110	HDPE	New
PP-737	PJ-557	PJ-570	16.5	#N/A	#N/A	110	HDPE	New
PP-738	PJ-570	PJ-571	31	#N/A	#N/A	110	HDPE	New
PP-739	PJ-571	PJ-559	56.5	#N/A	#N/A	110	HDPE	New
PP-740	PJ-571	PJ-572	30	#N/A	#N/A	110	HDPE	New
PP-741	PJ-572	PJ-561	36.5	#N/A	#N/A	110	HDPE	New
PP-742	PJ-573	PJ-560	21.5	#N/A	#N/A	110	HDPE	New
PP-743	PJ-572	PJ-574	66	#N/A	#N/A	110	HDPE	New
PP-744	PJ-574	PJ-575	21	#N/A	#N/A	110	HDPE	New
PP-745	PJ-575	PJ-569	45	#N/A	#N/A	110	HDPE	New
PP-746	PJ-575	PJ-576	69.5	#N/A	#N/A	110	HDPE	New
PP-747	PJ-576	PJ-577	39	#N/A	#N/A	110	HDPE	New
PP-748	PJ-577	PJ-578	5.5	#N/A	#N/A	110	HDPE	New
PP-749	PJ-578	PJ-579	20.5	#N/A	#N/A	110	HDPE	New
PP-750	PJ-579	PJ-580	19	#N/A	#N/A	110	HDPE	New
PP-751	PJ-580	PJ-581	16	#N/A	#N/A	110	HDPE	New
PP-752	PJ-581	PJ-582	36	#N/A	#N/A	110	HDPE	New
PP-753	PJ-582	PJ-583	13	#N/A	#N/A	110	HDPE	New
PP-754	PJ-583	PJ-584	30	#N/A	#N/A	110	HDPE	New
PP-755	PJ-584	PJ-585	132.5	#N/A	#N/A	110	HDPE	New
PP-756	PJ-585	PJ-556	102	#N/A	#N/A	110	HDPE	New
PP-757	PJ-570	PJ-584	116	#N/A	#N/A	110	HDPE	New
PP-758	PJ-584	PJ-586	32.5	#N/A	#N/A	110	HDPE	New
PP-759	PJ-571	PJ-583	117.5	#N/A	#N/A	110	HDPE	New
PP-760	PJ-582	PJ-587	34.5	#N/A	#N/A	110	HDPE	New
PP-761	PJ-588	PJ-581	33	#N/A	#N/A	110	HDPE	New
PP-762	PJ-589	PJ-580	54	#N/A	#N/A	110	HDPE	New
PP-763	PJ-590	PJ-578	53	#N/A	#N/A	110	HDPE	New
PP-764	PJ-579	PJ-591	93.5	#N/A	#N/A	110	HDPE	New
PP-765	PJ-591	PJ-592	31.5	#N/A	#N/A	110	HDPE	New
PP-766	PJ-592	PJ-577	92.5	#N/A	#N/A	110	HDPE	New
PP-767	PJ-576	PJ-593	97.5	#N/A	#N/A	110	HDPE	New
PP-768	PJ-593	PJ-592	57.5	#N/A	#N/A	110	HDPE	New
PP-769	PJ-591	PJ-594	148.5	#N/A	#N/A	110	HDPE	New
PP-770	PJ-594	PJ-595	75	#N/A	#N/A	110	HDPE	New
PP-771	PJ-595	PJ-596	12.5	#N/A	#N/A	110	HDPE	New
PP-772	PJ-596	PJ-585	154	#N/A	#N/A	110	HDPE	New
PP-773	PJ-591	PJ-597	127	#N/A	#N/A	110	HDPE	New
PP-774	PJ-593	PJ-598	208	#N/A	#N/A	110	HDPE	New
PP-775	PJ-553	PJ-599	23	#N/A	#N/A	110	HDPE	New
PP-776	PJ-599	PJ-600	13	#N/A	#N/A	110	HDPE	New
PP-777	PJ-600	PJ-601	30	#N/A	#N/A	110	HDPE	New
PP-778	PJ-601	PJ-602	41.5	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-779	PJ-599	PJ-603	53	#N/A	#N/A	110	HDPE	New
PP-780	PJ-600	PJ-604	72	#N/A	#N/A	110	HDPE	New
PP-781	PJ-604	PJ-605	62	#N/A	#N/A	110	HDPE	New
PP-782	PJ-605	PJ-606	31	#N/A	#N/A	110	HDPE	New
PP-783	PJ-606	PJ-607	49.5	#N/A	#N/A	110	HDPE	New
PP-784	PJ-607	PJ-604	30	#N/A	#N/A	110	HDPE	New
PP-785	PJ-601	PJ-608	24.5	#N/A	#N/A	110	HDPE	New
PP-786	PJ-608	PJ-609	116	#N/A	#N/A	110	HDPE	New
PP-787	PJ-609	PJ-610	69	#N/A	#N/A	110	HDPE	New
PP-788	PJ-610	PJ-606	45	#N/A	#N/A	110	HDPE	New
PP-789	PJ-608	PJ-611	41	#N/A	#N/A	110	HDPE	New
PP-790	PJ-611	PJ-612	117.5	#N/A	#N/A	110	HDPE	New
PP-791	PJ-612	PJ-609	43	#N/A	#N/A	110	HDPE	New
PP-792	PJ-612	PJ-613	19.5	#N/A	#N/A	110	HDPE	New
PP-793	PJ-611	PJ-614	84.5	#N/A	#N/A	110	HDPE	New
PP-794	PJ-605	PJ-555	75.5	#N/A	#N/A	110	HDPE	New
PP-795	PJ-615	PJ-502	182.5	#N/A	#N/A	110	HDPE	New
PP-796	PJ-503	PJ-616	81.5	#N/A	#N/A	110	HDPE	New
PP-797	PJ-501	PJ-617	52	#N/A	#N/A	140	HDPE	New
PP-798	PJ-617	PJ-618	26	#N/A	#N/A	110	HDPE	New
PP-799	PJ-618	PJ-619	30.5	#N/A	#N/A	110	HDPE	New
PP-800	PJ-619	J-354	54.5	#N/A	#N/A	110	HDPE	New
PP-801	J-354	PJ-620	23.5	#N/A	#N/A	110	HDPE	New
PP-802	PJ-620	PJ-621	22	#N/A	#N/A	125	HDPE	New
PP-803	PJ-621	PJ-622	20	#N/A	#N/A	110	HDPE	New
PP-804	PJ-622	PJ-623	25.5	#N/A	#N/A	110	HDPE	New
PP-805	PJ-623	PJ-624	19.5	#N/A	#N/A	110	HDPE	New
PP-806	PJ-624	PJ-621	27.5	#N/A	#N/A	110	HDPE	New
PP-807	PJ-623	PJ-625	74	#N/A	#N/A	125	HDPE	New
PP-808	PJ-625	PJ-626	6	#N/A	#N/A	110	HDPE	New
PP-809	PJ-626	PJ-627	21	#N/A	#N/A	125	HDPE	New
PP-810	PJ-627	J-357	10.5	#N/A	#N/A	140	HDPE	New
PP-811	J-357	PJ-628	15.5	#N/A	#N/A	125	HDPE	New
PP-812	PJ-628	PJ-629	38	#N/A	#N/A	125	HDPE	New
PP-813	PJ-629	PJ-630	46	#N/A	#N/A	125	HDPE	New
PP-814	PJ-630	PJ-631	37.5	#N/A	#N/A	110	HDPE	New
PP-815	PJ-631	PJ-617	43.5	#N/A	#N/A	110	HDPE	New
PP-816	PJ-631	PJ-499	36	#N/A	#N/A	110	HDPE	New
PP-817	PJ-500	J-391	30.5	#N/A	#N/A	110	HDPE	New
PP-818	PJ-630	PJ-632	27.5	#N/A	#N/A	110	HDPE	New
PP-819	PJ-632	PJ-618	47	#N/A	#N/A	110	HDPE	New
PP-820	PJ-619	PJ-633	23	#N/A	#N/A	110	HDPE	New
PP-821	PJ-633	PJ-632	17.5	#N/A	#N/A	110	HDPE	New
PP-822	PJ-632	J-356	57	#N/A	#N/A	110	HDPE	New
PP-823	J-355	PJ-633	55	#N/A	#N/A	110	HDPE	New
PP-824	PJ-501	PJ-634	77	#N/A	#N/A	110	HDPE	New
PP-825	PJ-634	PJ-635	40.5	#N/A	#N/A	110	HDPE	New
PP-826	PJ-635	J-389	29	#N/A	#N/A	110	HDPE	New
PP-827	J-389	PJ-636	58	#N/A	#N/A	110	HDPE	New
PP-828	PJ-636	PJ-498	54.5	#N/A	#N/A	110	HDPE	New
PP-829	PJ-637	J-390	43	#N/A	#N/A	110	HDPE	New
PP-830	PJ-638	PJ-634	18	#N/A	#N/A	110	HDPE	New
PP-831	PJ-497	PJ-639	99	#N/A	#N/A	110	HDPE	New
PP-832	PJ-639	J-384	26	#N/A	#N/A	125	HDPE	New
PP-833	PJ-639	J-388	79	#N/A	#N/A	110	HDPE	New
PP-834	PJ-636	PJ-640	52.5	#N/A	#N/A	110	HDPE	New
PP-835	J-360	PJ-641	37	#N/A	#N/A	110	HDPE	New
PP-836	J-367	J-362	51.5	#N/A	#N/A	110	HDPE	New
PP-837	J-368	PJ-627	82.5	#N/A	#N/A	110	HDPE	New
PP-838	PJ-626	PJ-496	104	#N/A	#N/A	125	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-839	PJ-494	PJ-642	70	#N/A	#N/A	125	HDPE	New
PP-840	PJ-642	PJ-643	59	#N/A	#N/A	140	HDPE	New
PP-841	PJ-643	PJ-625	24.5	#N/A	#N/A	125	HDPE	New
PP-842	PJ-492	PJ-644	89.5	#N/A	#N/A	125	HDPE	New
PP-843	PJ-644	PJ-642	32.5	#N/A	#N/A	110	HDPE	New
PP-844	PJ-644	PJ-645	61.5	#N/A	#N/A	160	HDPE	New
PP-845	PJ-645	PJ-646	29	#N/A	#N/A	110	HDPE	New
PP-846	PJ-646	PJ-643	9	#N/A	#N/A	110	HDPE	New
PP-847	PJ-485	PJ-647	7.5	#N/A	#N/A	250	HDPE	New
PP-848	PJ-647	PJ-648	26	#N/A	#N/A	200	HDPE	New
PP-849	PJ-648	PJ-649	102	#N/A	#N/A	200	HDPE	New
PP-850	PJ-649	PJ-650	127	#N/A	#N/A	200	HDPE	New
PP-851	PJ-650	PJ-651	32	#N/A	#N/A	110	HDPE	New
PP-852	PJ-652	PJ-647	103.5	#N/A	#N/A	200	HDPE	New
PP-854	PJ-651	PJ-653	60	#N/A	#N/A	200	HDPE	New
PP-855	PJ-653	PJ-652	65.5	#N/A	#N/A	200	HDPE	New
PP-856	PJ-486	PJ-653	90.5	#N/A	#N/A	110	HDPE	New
PP-857	PJ-489	PJ-654	81.5	#N/A	#N/A	110	HDPE	New
PP-858	PJ-654	PJ-655	14	#N/A	#N/A	110	HDPE	New
PP-859	PJ-655	PJ-651	41	#N/A	#N/A	160	HDPE	New
PP-860	PJ-651	PJ-656	20	#N/A	#N/A	180	HDPE	New
PP-861	PJ-656	PJ-657	42.5	#N/A	#N/A	140	HDPE	New
PP-862	PJ-657	PJ-655	20.5	#N/A	#N/A	160	HDPE	New
PP-863	PJ-490	PJ-657	103	#N/A	#N/A	110	HDPE	New
PP-864	PJ-657	PJ-658	21	#N/A	#N/A	180	HDPE	New
PP-865	PJ-658	PJ-659	10	#N/A	#N/A	160	HDPE	New
PP-866	PJ-659	PJ-660	35.5	#N/A	#N/A	125	HDPE	New
PP-867	PJ-660	PJ-661	32.5	#N/A	#N/A	110	HDPE	New
PP-868	PJ-661	PJ-491	37.5	#N/A	#N/A	125	HDPE	New
PP-869	PJ-491	PJ-662	29	#N/A	#N/A	160	HDPE	New
PP-870	PJ-662	PJ-663	43	#N/A	#N/A	200	HDPE	New
PP-871	PJ-663	PJ-488	37	#N/A	#N/A	110	HDPE	New
PP-872	PJ-663	PJ-664	26.5	#N/A	#N/A	250	HDPE	New
PP-873	PJ-664	PJ-487	49	#N/A	#N/A	110	HDPE	New
PP-874	J-233	PJ-665	5.5	#N/A	#N/A	225	HDPE	New
PP-875	PJ-665	PJ-666	21.5	#N/A	#N/A	200	HDPE	New
PP-876	PJ-666	PJ-486	63.5	#N/A	#N/A	110	HDPE	New
PP-877	PJ-666	PJ-664	24.5	#N/A	#N/A	225	HDPE	New
PP-878	PJ-664	PJ-667	43.5	#N/A	#N/A	180	HDPE	New
PP-879	PJ-667	J-221	23	#N/A	#N/A	160	HDPE	New
PP-880	J-220	PJ-668	30.5	#N/A	#N/A	125	HDPE	New
PP-881	PJ-668	PJ-665	49.5	#N/A	#N/A	110	HDPE	New
PP-882	PJ-666	PJ-669	46	#N/A	#N/A	125	HDPE	New
PP-883	PJ-669	PJ-668	9.5	#N/A	#N/A	140	HDPE	New
PP-884	PJ-669	PJ-667	21.5	#N/A	#N/A	125	HDPE	New
PP-885	PJ-663	PJ-670	121.5	#N/A	#N/A	180	HDPE	New
PP-886	PJ-670	PJ-671	192	#N/A	#N/A	140	HDPE	New
PP-887	PJ-671	PJ-672	28	#N/A	#N/A	110	HDPE	New
PP-888	PJ-671	PJ-673	43.5	#N/A	#N/A	140	HDPE	New
PP-889	PJ-673	PJ-674	35	#N/A	#N/A	125	HDPE	New
PP-890	PJ-674	PJ-675	65	#N/A	#N/A	140	HDPE	New
PP-891	PJ-675	PJ-676	80.5	#N/A	#N/A	160	HDPE	New
PP-892	PJ-676	PJ-677	12	#N/A	#N/A	125	HDPE	New
PP-893	PJ-677	PJ-662	104	#N/A	#N/A	160	HDPE	New
PP-894	PJ-670	PJ-676	37	#N/A	#N/A	140	HDPE	New
PP-895	PJ-677	PJ-644	31	#N/A	#N/A	125	HDPE	New
PP-896	PJ-673	PJ-678	52.5	#N/A	#N/A	180	HDPE	New
PP-897	PJ-678	PJ-679	38.5	#N/A	#N/A	180	HDPE	New
PP-898	PJ-679	PJ-680	36.5	#N/A	#N/A	140	HDPE	New
PP-899	PJ-680	PJ-674	19	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-900	PJ-675	PJ-681	24	#N/A	#N/A	110	HDPE	New
PP-901	PJ-681	PJ-645	30.5	#N/A	#N/A	125	HDPE	New
PP-902	PJ-646	PJ-682	30.5	#N/A	#N/A	125	HDPE	New
PP-903	PJ-682	PJ-681	31.5	#N/A	#N/A	110	HDPE	New
PP-904	PJ-681	PJ-680	65	#N/A	#N/A	125	HDPE	New
PP-905	PJ-679	PJ-682	66	#N/A	#N/A	140	HDPE	New
PP-906	PJ-622	PJ-679	35	#N/A	#N/A	110	HDPE	New
PP-907	PJ-678	PJ-683	40.5	#N/A	#N/A	110	HDPE	New
PP-908	PJ-683	PJ-620	35	#N/A	#N/A	140	HDPE	New
PP-909	PJ-678	PJ-684	47.5	#N/A	#N/A	225	HDPE	New
PP-910	PJ-684	PJ-685	46.5	#N/A	#N/A	160	HDPE	New
PP-911	PJ-685	PJ-683	38	#N/A	#N/A	160	HDPE	New
PP-912	PJ-684	PJ-686	57	#N/A	#N/A	180	HDPE	New
PP-913	PJ-686	PJ-687	91	#N/A	#N/A	125	HDPE	New
PP-914	PJ-687	PJ-688	99	#N/A	#N/A	110	HDPE	New
PP-915	PJ-688	J-238	29.5	#N/A	#N/A	110	HDPE	New
PP-916	PJ-689	J-252	39.5	#N/A	#N/A	110	HDPE	New
PP-917	J-242	PJ-687	24.5	#N/A	#N/A	110	HDPE	New
PP-918	PJ-690	J-240	56	#N/A	#N/A	110	HDPE	New
PP-919	J-241	PJ-691	23.5	#N/A	#N/A	110	HDPE	New
PP-920	J-244	J-250	45.5	#N/A	#N/A	110	HDPE	New
PP-921	J-245	J-249	42.5	#N/A	#N/A	110	HDPE	New
PP-922	PJ-686	J-246	31	#N/A	#N/A	180	HDPE	New
PP-923	J-247	PJ-692	40	#N/A	#N/A	140	HDPE	New
PP-924	PJ-692	PJ-684	36.5	#N/A	#N/A	200	HDPE	New
PP-925	J-256	PJ-693	80	#N/A	#N/A	110	HDPE	New
PP-926	PJ-692	PJ-694	14	#N/A	#N/A	180	HDPE	New
PP-927	PJ-694	PJ-695	66.5	#N/A	#N/A	140	HDPE	New
PP-928	PJ-695	PJ-696	38	#N/A	#N/A	110	HDPE	New
PP-929	J-259	PJ-695	30.5	#N/A	#N/A	140	HDPE	New
PP-930	PJ-695	PJ-697	30.5	#N/A	#N/A	110	HDPE	New
PP-931	PJ-697	PJ-698	65	#N/A	#N/A	110	HDPE	New
PP-932	PJ-698	PJ-694	27	#N/A	#N/A	140	HDPE	New
PP-933	PJ-698	PJ-699	24.5	#N/A	#N/A	110	HDPE	New
PP-934	PJ-699	PJ-700	56	#N/A	#N/A	110	HDPE	New
PP-935	PJ-699	PJ-701	26	#N/A	#N/A	110	HDPE	New
PP-936	PJ-701	PJ-702	16	#N/A	#N/A	110	HDPE	New
PP-937	PJ-702	PJ-703	26.5	#N/A	#N/A	110	HDPE	New
PP-938	PJ-703	PJ-697	22.5	#N/A	#N/A	110	HDPE	New
PP-939	PJ-701	PJ-704	21.5	#N/A	#N/A	110	HDPE	New
PP-940	PJ-702	PJ-705	72	#N/A	#N/A	110	HDPE	New
PP-941	PJ-705	PJ-706	25	#N/A	#N/A	110	HDPE	New
PP-942	PJ-706	PJ-703	56.5	#N/A	#N/A	110	HDPE	New
PP-943	PJ-707	PJ-705	16	#N/A	#N/A	110	HDPE	New
PP-944	PJ-706	J-260	30.5	#N/A	#N/A	125	HDPE	New
PP-945	J-260	J-262	43.5	#N/A	#N/A	125	HDPE	New
PP-946	J-262	J-265	45.5	#N/A	#N/A	125	HDPE	New
PP-947	J-265	J-283	31.5	#N/A	#N/A	125	HDPE	New
PP-948	J-283	J-285	37	#N/A	#N/A	110	HDPE	New
PP-949	J-285	PJ-708	89.5	#N/A	#N/A	110	HDPE	New
PP-950	PJ-708	J-294	17.5	#N/A	#N/A	110	HDPE	New
PP-951	PJ-708	PJ-709	48	#N/A	#N/A	125	HDPE	New
PP-952	PJ-709	J-333	80.5	#N/A	#N/A	110	HDPE	New
PP-953	J-338	J-335	36.5	#N/A	#N/A	110	HDPE	New
PP-954	J-335	PJ-709	52.5	#N/A	#N/A	125	HDPE	New
PP-955	PJ-710	J-291	40	#N/A	#N/A	110	HDPE	New
PP-956	J-291	PJ-711	19.5	#N/A	#N/A	110	HDPE	New
PP-957	J-314	J-289	89	#N/A	#N/A	110	HDPE	New
PP-958	J-310	PJ-712	28	#N/A	#N/A	110	HDPE	New
PP-959	J-304	PJ-713	27	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-96	J-305	J-282	95.5	#N/A	#N/A	110	HDPE	New
PP-96	J-282	PJ-714	5.5	#N/A	#N/A	110	HDPE	New
PP-96	PJ-714	J-309	29.5	#N/A	#N/A	110	HDPE	New
PP-96	PJ-714	PJ-715	30.5	#N/A	#N/A	110	HDPE	New
PP-96	PJ-715	PJ-716	31	#N/A	#N/A	110	HDPE	New
PP-96	PJ-716	J-284	24	#N/A	#N/A	110	HDPE	New
PP-96	PJ-717	PJ-718	21	#N/A	#N/A	110	HDPE	New
PP-96	PJ-718	PJ-716	38.5	#N/A	#N/A	110	HDPE	New
PP-96	J-286	PJ-718	23.5	#N/A	#N/A	110	HDPE	New
PP-96	PJ-715	J-271	35.5	#N/A	#N/A	110	HDPE	New
PP-97	J-273	PJ-719	22	#N/A	#N/A	110	HDPE	New
PP-97	J-272	J-267	33	#N/A	#N/A	110	HDPE	New
PP-97	J-267	J-258	98.5	#N/A	#N/A	125	HDPE	New
PP-97	J-269	J-277	17	#N/A	#N/A	110	HDPE	New
PP-97	J-270	J-279	20.5	#N/A	#N/A	110	HDPE	New
PP-97	J-280	J-306	74.5	#N/A	#N/A	110	HDPE	New
PP-97	J-306	J-302	14	#N/A	#N/A	110	HDPE	New
PP-97	J-296	PJ-720	82.5	#N/A	#N/A	110	HDPE	New
PP-97	PJ-720	PJ-721	50.5	#N/A	#N/A	125	HDPE	New
PP-97	PJ-721	J-256	10	#N/A	#N/A	110	HDPE	New
PP-98	PJ-720	J-276	55.5	#N/A	#N/A	110	HDPE	New
PP-98	PJ-721	PJ-722	48.5	#N/A	#N/A	110	HDPE	New
PP-98	PJ-722	J-257	28	#N/A	#N/A	110	HDPE	New
PP-98	PJ-722	PJ-723	28.5	#N/A	#N/A	110	HDPE	New
PP-98	J-295	PJ-724	45	#N/A	#N/A	110	HDPE	New
PP-98	PJ-724	PJ-725	115	#N/A	#N/A	110	HDPE	New
PP-98	PJ-725	PJ-726	10.5	#N/A	#N/A	110	HDPE	New
PP-98	PJ-726	J-299	27	#N/A	#N/A	110	HDPE	New
PP-98	J-320	PJ-727	33	#N/A	#N/A	110	HDPE	New
PP-98	PJ-727	PJ-726	45	#N/A	#N/A	110	HDPE	New
PP-99	PJ-727	PJ-728	117	#N/A	#N/A	110	HDPE	New
PP-99	PJ-725	PJ-729	100	#N/A	#N/A	110	HDPE	New
PP-99	PJ-729	PJ-730	33	#N/A	#N/A	110	HDPE	New
PP-99	PJ-729	PJ-731	58.5	#N/A	#N/A	110	HDPE	New
PP-99	J-66	PJ-732	50.5	#N/A	#N/A	110	HDPE	New
PP-99	PJ-650	PJ-733	21	#N/A	#N/A	180	HDPE	New
PP-99	PJ-733	PJ-734	31	#N/A	#N/A	125	HDPE	New
PP-99	PJ-734	PJ-735	31	#N/A	#N/A	110	HDPE	New
PP-99	PJ-734	PJ-736	25.5	#N/A	#N/A	125	HDPE	New
PP-99	PJ-736	PJ-737	101	#N/A	#N/A	110	HDPE	New
PP-10	PJ-737	PJ-738	22	#N/A	#N/A	110	HDPE	New
PP-10	PJ-738	PJ-739	110	#N/A	#N/A	110	HDPE	New
PP-10	PJ-739	PJ-740	59	#N/A	#N/A	110	HDPE	New
PP-10	PJ-740	PJ-741	23.5	#N/A	#N/A	110	HDPE	New
PP-10	PJ-741	PJ-742	16.5	#N/A	#N/A	110	HDPE	New
PP-10	PJ-742	PJ-743	18	#N/A	#N/A	110	HDPE	New
PP-10	PJ-743	PJ-744	20.5	#N/A	#N/A	110	HDPE	New
PP-10	PJ-744	PJ-745	31.5	#N/A	#N/A	125	HDPE	New
PP-10	PJ-745	PJ-738	57	#N/A	#N/A	110	HDPE	New
PP-10	PJ-737	PJ-746	33	#N/A	#N/A	110	HDPE	New
PP-10	PJ-746	PJ-747	23.5	#N/A	#N/A	110	HDPE	New
PP-10	PJ-747	PJ-748	15	#N/A	#N/A	110	HDPE	New
PP-10	PJ-748	PJ-745	6	#N/A	#N/A	125	HDPE	New
PP-10	PJ-736	PJ-749	32.5	#N/A	#N/A	110	HDPE	New
PP-10	PJ-749	PJ-746	100	#N/A	#N/A	110	HDPE	New
PP-10	PJ-747	PJ-750	55	#N/A	#N/A	110	HDPE	New
PP-10	PJ-750	PJ-751	32	#N/A	#N/A	110	HDPE	New
PP-10	PJ-751	PJ-752	14	#N/A	#N/A	125	HDPE	New
PP-10	PJ-752	PJ-749	23	#N/A	#N/A	125	HDPE	New
PP-10	PJ-749	PJ-753	54	#N/A	#N/A	125	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-102	PJ-753	PJ-733	21.5	#N/A	#N/A	160	HDPE	New
PP-102	PJ-656	PJ-753	52.5	#N/A	#N/A	140	HDPE	New
PP-102	PJ-753	PJ-754	23	#N/A	#N/A	160	HDPE	New
PP-102	PJ-754	PJ-755	22.5	#N/A	#N/A	125	HDPE	New
PP-102	PJ-755	PJ-752	34.5	#N/A	#N/A	110	HDPE	New
PP-102	PJ-658	PJ-756	22	#N/A	#N/A	125	HDPE	New
PP-102	PJ-756	PJ-757	18	#N/A	#N/A	110	HDPE	New
PP-102	PJ-757	PJ-758	36	#N/A	#N/A	110	HDPE	New
PP-102	PJ-758	PJ-754	17.5	#N/A	#N/A	125	HDPE	New
PP-102	PJ-755	PJ-759	46.5	#N/A	#N/A	110	HDPE	New
PP-103	PJ-759	PJ-760	27	#N/A	#N/A	125	HDPE	New
PP-103	PJ-760	PJ-758	48.5	#N/A	#N/A	110	HDPE	New
PP-103	PJ-757	PJ-761	50	#N/A	#N/A	110	HDPE	New
PP-103	PJ-761	PJ-760	35	#N/A	#N/A	110	HDPE	New
PP-103	PJ-760	PJ-762	38.5	#N/A	#N/A	140	HDPE	New
PP-103	PJ-762	PJ-763	49.5	#N/A	#N/A	125	HDPE	New
PP-103	PJ-763	J-372	84	#N/A	#N/A	125	HDPE	New
PP-103	PJ-762	J-370	86.5	#N/A	#N/A	125	HDPE	New
PP-103	PJ-761	PJ-764	22.5	#N/A	#N/A	110	HDPE	New
PP-103	PJ-764	J-371	29	#N/A	#N/A	125	HDPE	New
PP-104	J-371	PJ-659	54	#N/A	#N/A	125	HDPE	New
PP-104	PJ-756	PJ-764	51	#N/A	#N/A	110	HDPE	New
PP-104	PJ-660	PJ-765	53.5	#N/A	#N/A	110	HDPE	New
PP-104	PJ-765	J-371	37	#N/A	#N/A	110	HDPE	New
PP-104	PJ-661	PJ-766	25.5	#N/A	#N/A	125	HDPE	New
PP-104	PJ-766	PJ-767	30.5	#N/A	#N/A	110	HDPE	New
PP-104	PJ-767	PJ-765	30.5	#N/A	#N/A	110	HDPE	New
PP-104	PJ-493	PJ-766	70.5	#N/A	#N/A	110	HDPE	New
PP-104	PJ-767	PJ-495	92	#N/A	#N/A	125	HDPE	New
PP-104	J-377	PJ-768	27	#N/A	#N/A	110	HDPE	New
PP-105	PJ-759	PJ-769	59.5	#N/A	#N/A	110	HDPE	New
PP-105	PJ-769	PJ-770	29.5	#N/A	#N/A	110	HDPE	New
PP-105	PJ-770	PJ-750	47	#N/A	#N/A	110	HDPE	New
PP-105	PJ-751	PJ-769	47	#N/A	#N/A	110	HDPE	New
PP-105	PJ-770	PJ-771	77	#N/A	#N/A	110	HDPE	New
PP-105	PJ-771	PJ-748	48	#N/A	#N/A	110	HDPE	New
PP-105	J-378	PJ-772	21	#N/A	#N/A	110	HDPE	New
PP-105	PJ-772	PJ-773	17.5	#N/A	#N/A	110	HDPE	New
PP-105	PJ-773	PJ-774	48.5	#N/A	#N/A	110	HDPE	New
PP-105	PJ-774	PJ-775	20.5	#N/A	#N/A	110	HDPE	New
PP-106	PJ-775	J-379	17.5	#N/A	#N/A	110	HDPE	New
PP-106	PJ-772	PJ-775	48	#N/A	#N/A	110	HDPE	New
PP-106	PJ-775	PJ-776	46	#N/A	#N/A	110	HDPE	New
PP-106	PJ-777	PJ-774	45.5	#N/A	#N/A	110	HDPE	New
PP-106	PJ-774	PJ-778	24	#N/A	#N/A	110	HDPE	New
PP-106	PJ-778	PJ-779	42.5	#N/A	#N/A	110	HDPE	New
PP-106	PJ-741	PJ-780	65	#N/A	#N/A	110	HDPE	New
PP-106	PJ-780	PJ-781	13.5	#N/A	#N/A	110	HDPE	New
PP-106	PJ-781	PJ-782	20.5	#N/A	#N/A	110	HDPE	New
PP-106	PJ-782	PJ-783	14	#N/A	#N/A	110	HDPE	New
PP-107	PJ-783	PJ-784	49	#N/A	#N/A	110	HDPE	New
PP-107	PJ-784	PJ-785	20	#N/A	#N/A	110	HDPE	New
PP-107	PJ-785	PJ-786	16.5	#N/A	#N/A	110	HDPE	New
PP-107	PJ-786	PJ-787	9.5	#N/A	#N/A	110	HDPE	New
PP-107	PJ-787	PJ-744	66	#N/A	#N/A	110	HDPE	New
PP-107	PJ-743	PJ-788	65.5	#N/A	#N/A	110	HDPE	New
PP-107	PJ-788	PJ-789	19.5	#N/A	#N/A	110	HDPE	New
PP-107	PJ-789	PJ-780	14	#N/A	#N/A	110	HDPE	New
PP-107	PJ-742	PJ-789	65.5	#N/A	#N/A	110	HDPE	New
PP-107	PJ-786	PJ-781	51.5	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-108	PJ-782	PJ-785	51.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-783	PJ-790	29.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-790	PJ-791	42.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-791	PJ-792	26.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-792	PJ-793	24.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-793	PJ-794	42.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-794	PJ-795	24.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-795	PJ-792	42.5	#N/A	#N/A	110	HDPE	New
PP-108	PJ-792	PJ-796	13	#N/A	#N/A	110	HDPE	New
PP-108	PJ-797	PJ-791	7.5	#N/A	#N/A	110	HDPE	New
PP-109	PJ-793	PJ-798	52	#N/A	#N/A	110	HDPE	New
PP-109	PJ-794	PJ-799	29.5	#N/A	#N/A	110	HDPE	New
PP-109	PJ-799	PJ-800	28	#N/A	#N/A	110	HDPE	New
PP-109	PJ-800	PJ-801	27.5	#N/A	#N/A	110	HDPE	New
PP-109	PJ-799	PJ-802	106.5	#N/A	#N/A	110	HDPE	New
PP-109	PJ-802	PJ-803	26	#N/A	#N/A	110	HDPE	New
PP-109	PJ-803	PJ-800	107	#N/A	#N/A	110	HDPE	New
PP-109	PJ-801	PJ-804	49	#N/A	#N/A	110	HDPE	New
PP-109	PJ-801	PJ-805	40.5	#N/A	#N/A	110	HDPE	New
PP-109	PJ-805	PJ-806	59.5	#N/A	#N/A	110	HDPE	New
PP-110	PJ-805	PJ-807	51	#N/A	#N/A	110	HDPE	New
PP-110	PJ-807	PJ-808	42	#N/A	#N/A	110	HDPE	New
PP-110	PJ-807	PJ-809	49.5	#N/A	#N/A	110	HDPE	New
PP-110	PJ-809	PJ-810	65	#N/A	#N/A	110	HDPE	New
PP-110	PJ-811	PJ-812	93	#N/A	#N/A	110	HDPE	New
PP-110	PJ-812	PJ-813	92.5	#N/A	#N/A	110	HDPE	New
PP-110	PJ-813	PJ-814	86.5	#N/A	#N/A	110	HDPE	New
PP-110	PJ-814	PJ-815	43.5	#N/A	#N/A	110	HDPE	New
PP-110	PJ-816	PJ-817	100.5	#N/A	#N/A	110	HDPE	New
PP-110	PJ-817	PJ-818	89	#N/A	#N/A	110	HDPE	New
PP-111	PJ-818	PJ-819	89	#N/A	#N/A	110	HDPE	New
PP-111	PJ-819	PJ-814	33	#N/A	#N/A	110	HDPE	New
PP-111	PJ-820	PJ-821	42	#N/A	#N/A	110	HDPE	New
PP-111	PJ-821	PJ-822	89.5	#N/A	#N/A	110	HDPE	New
PP-111	PJ-822	PJ-823	89.5	#N/A	#N/A	110	HDPE	New
PP-111	PJ-823	PJ-819	26.5	#N/A	#N/A	110	HDPE	New
PP-111	PJ-824	PJ-825	40.5	#N/A	#N/A	110	HDPE	New
PP-111	PJ-825	PJ-826	90.5	#N/A	#N/A	110	HDPE	New
PP-111	PJ-826	PJ-739	32	#N/A	#N/A	110	HDPE	New
PP-111	PJ-827	PJ-812	33.5	#N/A	#N/A	110	HDPE	New
PP-112	PJ-812	PJ-817	36	#N/A	#N/A	110	HDPE	New
PP-112	PJ-817	PJ-821	28	#N/A	#N/A	110	HDPE	New
PP-112	PJ-821	PJ-825	32.5	#N/A	#N/A	110	HDPE	New
PP-112	PJ-813	PJ-818	35	#N/A	#N/A	110	HDPE	New
PP-112	PJ-818	PJ-822	25.5	#N/A	#N/A	110	HDPE	New
PP-112	PJ-822	PJ-826	32	#N/A	#N/A	110	HDPE	New
PP-112	PJ-543	PJ-828	62.5	#N/A	#N/A	110	HDPE	New
PP-112	PJ-828	PJ-829	217.5	#N/A	#N/A	110	HDPE	New
PP-112	PJ-829	PJ-830	44	#N/A	#N/A	110	HDPE	New
PP-112	PJ-830	PJ-831	55.5	#N/A	#N/A	110	HDPE	New
PP-113	PJ-831	PJ-832	43.5	#N/A	#N/A	110	HDPE	New
PP-113	PJ-832	PJ-833	27.5	#N/A	#N/A	110	HDPE	New
PP-113	PJ-834	PJ-833	71	#N/A	#N/A	110	HDPE	New
PP-113	PJ-835	PJ-832	53	#N/A	#N/A	110	HDPE	New
PP-113	PJ-836	PJ-831	74	#N/A	#N/A	110	HDPE	New
PP-113	PJ-837	PJ-830	43.5	#N/A	#N/A	110	HDPE	New
PP-113	PJ-829	PJ-838	40.5	#N/A	#N/A	110	HDPE	New
PP-113	PJ-828	PJ-839	19.5	#N/A	#N/A	110	HDPE	New
PP-113	PJ-839	PJ-840	22	#N/A	#N/A	110	HDPE	New
PP-114	PJ-400	J-22	33	#N/A	#N/A	110	HDPE	New

BOQ for Z17								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
PP-114	PJ-558	PJ-841	94	#N/A	#N/A	110	HDPE	New
			53967.50					

Zone -18

Distribution Network Design Output: Zone 18

Label	Length (m)	Upstream Calculated Pressure (m H2O)	Downstream Calculated Pressure (m H2O)	Discharge (l/s)	From Node	To Node	From Elevation (m)	From X (m)	From Y (m)	Diameter (mm)	Velocity (m/s)	Headloss Gradient (m/km)	Q (Absolute Value) (l/s)	Material	Hazen-Williams C	Pressure Pipe Headloss (m)
P-1	8	1.796	21.828	107.0008	T-1	J-1	232.5	-8,084.38	8,595.32	315	1.37	4.69	107.00075	HDPE	145	0.04
P-10	72.5	21.28	20.681	14.02789	J-8	J-7	232.26	-8,035.49	8,772.58	140	0.91	5.66	14.02789	HDPE	145	0.41
P-100	53.5	19.302	18.75	0.57565	J-57	J-72	232.15	-9,078.72	8,899.21	110	0.06	0.05	0.57565	uPVC	145	0
P-101	27.5	18.75	19	-0.25195	J-72	J-73	232.7	-9,069.30	8,846.58	110	0.03	0.01	0.25195	uPVC	145	0
P-102	22	19	19.043	-1.06029	J-73	J-74	232.45	-9,063.67	8,819.91	110	0.11	0.15	1.06029	uPVC	145	0
P-103	81	19.043	19.006	-0.42679	J-74	J-56	232.41	-9,042.34	8,825.24	110	0.04	0.03	0.42679	uPVC	145	0
P-104	60	19.309	19.406	1.59072	J-55	J-75	232.15	-9,039.15	8,909.62	160	0.08	0.05	1.59072	uPVC	145	0
P-105	22.5	19.406	19.046	0.97374	J-75	J-76	232.05	-9,026.64	8,851.02	160	0.05	0.02	0.97374	uPVC	145	0
P-106	20	19.046	19.043	0.987	J-76	J-74	232.41	-9,022.49	8,829.09	110	0.1	0.13	0.987	uPVC	145	0
P-107	42.5	19.406	19.046	0.25774	J-75	J-76	232.05	-9,026.64	8,851.02	110	0.03	0.01	0.25774	uPVC	145	0
P-108	25	18.75	18.999	0.52287	J-72	J-77	232.7	-9,069.30	8,846.58	110	0.06	0.04	0.52287	uPVC	145	0
P-109	26.5	18.999	19.398	-0.09589	J-77	J-78	232.45	-9,093.22	8,839.35	110	0.01	0	0.09589	uPVC	145	0
P-11	119.5	21.28	21.107	6.50489	J-8	J-9	232.26	-8,035.49	8,772.58	125	0.53	2.37	6.50489	HDPE	145	0.28
P-110	28.5	19.398	19.041	-0.72587	J-78	J-71	232.05	-9,098.85	8,865.43	110	0.08	0.08	0.72587	uPVC	145	0
P-111	38	19.398	19.048	0.36254	J-78	J-79	232.05	-9,098.85	8,865.43	110	0.04	0.02	0.36254	uPVC	145	0
P-112	29.5	19.048	19.397	0.01349	J-79	J-80	232.4	-9,135.60	8,856.54	110	0	0	0.01349	uPVC	145	0
P-113	26.5	19.397	18.75	-0.58651	J-80	J-70	232.05	-9,164.63	8,850.61	110	0.06	0.05	0.58651	uPVC	145	0
P-114	51	19.397	18.997	0.29241	J-80	J-81	232.05	-9,164.63	8,850.61	110	0.03	0.01	0.29241	uPVC	145	0
P-115	26	18.997	19.397	-0.34861	J-81	J-82	232.45	-9,150.71	8,801.72	110	0.04	0.02	0.34861	uPVC	145	0
P-116	63	19.397	19	-0.48496	J-82	J-73	232.05	-9,125.23	8,807.06	110	0.05	0.04	0.48496	uPVC	145	0
P-117	24.5	19.048	19.048	0.08448	J-79	J-83	232.4	-9,135.60	8,856.54	110	0.01	0	0.08448	uPVC	145	0
P-118	37.5	19.048	18.999	-0.3628	J-83	J-77	232.4	-9,129.97	8,832.54	110	0.04	0.02	0.3628	uPVC	145	0
P-119	26	19.397	19.048	-0.19419	J-82	J-83	232.05	-9,125.23	8,807.06	110	0.02	0.01	0.19419	uPVC	145	0
P-12	214.5	21.107	20.165	5.54609	J-9	J-10	232.15	-7,984.84	8,858.94	110	0.58	3.28	5.54609	uPVC	145	0.7
P-120	64.5	21.449	21.458	32.32329	J-2	J-84	232.36	-8,116.72	8,525.76	200	1.03	4.67	32.32329	HDPE	145	0.3
P-121	276.5	21.458	21.074	0.79385	J-84	J-85	232.05	-8,136.52	8,464.51	110	0.08	0.09	0.79385	HDPE	145	0.02
P-122	24	21.458	21.088	30.4817	J-84	J-86	232.05	-8,136.52	8,464.51	200	0.97	4.19	30.4817	HDPE	145	0.1
P-123	111	21.088	20.649	22.256	J-86	J-87	232.32	-8,159.76	8,470.03	200	0.71	2.34	22.256	HDPE	145	0.26
P-124	64	20.649	20.821	-25.47172	J-87	J-4	232.5	-8,265.32	8,504.10	200	0.81	3.01	25.47172	HDPE	145	0.19

P-125	62.5	21.088	21.278	7.65848	J-86	J-88	232.32	-8,159.76	8,470.03	125	0.62	3.2	7.65848	HDPE	145	0.2
P-126	58	21.278	20.722	3.63351	J-88	J-89	231.93	-8,178.48	8,410.14	110	0.38	1.5	3.63351	HDPE	145	0.09
P-127	52	20.722	20.649	0.57703	J-89	J-90	232.4	-8,234.03	8,427.27	110	0.06	0.05	0.57703	HDPE	145	0
P-128	62.5	20.649	20.649	-2.74823	J-90	J-87	232.47	-8,283.11	8,443.94	125	0.22	0.48	2.74823	HDPE	145	0.03
P-129	14.5	20.649	20.571	44.25591	J-87	J-91	232.5	-8,265.32	8,504.10	225	1.11	4.71	44.25591	HDPE	145	0.07
P-13	274	20.165	20.144	2.84269	J-10	J-11	232.39	-8,188.07	8,927.21	110	0.3	0.95	2.84269	uPVC	145	0.26
P-130	106.5	20.571	20.298	20.45844	J-91	J-92	232.51	-8,279.41	8,507.37	200	0.65	2	20.45844	uPVC	145	0.21
P-131	49	20.298	20.221	15.25776	J-92	J-93	232.57	-8,244.68	8,608.30	200	0.49	1.16	15.25776	uPVC	145	0.06
P-132	48.5	20.221	20.157	11.81022	J-93	J-94	232.59	-8,230.79	8,655.06	200	0.38	0.72	11.81022	uPVC	145	0.04
P-133	222	20.157	20.185	11.03358	J-94	J-95	232.62	-8,217.83	8,701.82	200	0.35	0.64	11.03358	uPVC	145	0.14
P-134	43	20.185	19.359	11.02938	J-95	J-96	232.45	-8,428.49	8,772.66	200	0.35	0.64	11.02938	uPVC	145	0.03
P-135	23.5	19.359	19.628	6.40481	J-96	J-97	233.25	-8,468.77	8,787.47	110	0.67	4.29	6.40481	uPVC	145	0.1
P-136	105.5	19.628	19.979	9.05333	J-97	J-98	232.88	-8,491.45	8,793.95	180	0.36	0.74	9.05333	uPVC	145	0.08
P-137	48.5	19.979	19.159	6.84477	J-98	J-99	232.45	-8,590.53	8,829.60	180	0.27	0.44	6.84477	uPVC	145	0.02
P-138	196.5	19.159	19.287	3.25333	J-99	J-100	233.25	-8,636.83	8,844.42	180	0.13	0.11	3.25333	uPVC	145	0.02
P-139	50	19.287	19.468	2.54554	J-100	J-101	233.1	-8,824.34	8,903.68	110	0.27	0.78	2.54554	uPVC	145	0.04
P-14	238.5	20.144	19.724	2.02517	J-11	J-12	232.15	-8,447.75	9,014.79	110	0.21	0.51	2.02517	uPVC	145	0.12
P-140	47.5	19.468	19.889	1.09477	J-101	J-102	232.88	-8,840.54	8,856.46	110	0.12	0.16	1.09477	uPVC	145	0.01
P-141	44.5	19.889	19.241	0.17913	J-102	J-103	232.45	-8,795.17	8,842.57	110	0.02	0.01	0.17913	uPVC	145	0
P-142	51.5	19.241	19.204	-0.71616	J-103	J-104	233.1	-8,753.04	8,827.75	110	0.08	0.07	0.71616	uPVC	145	0
P-143	57.5	19.204	19.264	-1.62066	J-104	J-105	233.14	-8,703.96	8,812.47	110	0.17	0.34	1.62066	uPVC	145	0.02
P-144	51	19.264	19.159	-2.74165	J-105	J-99	233.1	-8,649.33	8,794.88	110	0.29	0.89	2.74165	uPVC	145	0.05
P-145	81.5	19.468	19.887	0.93661	J-101	J-106	232.88	-8,840.54	8,856.46	110	0.1	0.12	0.93661	uPVC	145	0.01
P-146	49	19.887	19.199	-0.048	J-106	J-107	232.45	-8,867.86	8,779.60	110	0.01	0	0.048	uPVC	145	0
P-147	83	19.199	19.889	-0.41297	J-107	J-102	233.14	-8,821.56	8,763.86	110	0.04	0.03	0.41297	uPVC	145	0
P-148	44.5	19.199	19.458	-0.14201	J-107	J-108	233.14	-8,821.56	8,763.86	110	0.01	0	0.14201	uPVC	145	0
P-149	82	19.458	19.241	-0.38401	J-108	J-103	232.88	-8,779.43	8,749.97	110	0.04	0.02	0.38401	uPVC	145	0
P-15	14	19.724	20.015	2.16802	J-12	J-13	232.45	-8,671.72	9,090.61	110	0.23	0.58	2.16802	uPVC	145	0.01
P-150	60	19.887	19.197	0.43748	J-106	J-109	232.45	-8,867.86	8,779.60	110	0.05	0.03	0.43748	uPVC	145	0
P-151	76	19.197	19.888	-1.20405	J-109	J-110	233.14	-8,866.47	8,732.38	160	0.06	0.03	1.20405	uPVC	145	0
P-152	44	19.888	19.458	0.24776	J-110	J-108	232.45	-8,794.24	8,708.77	110	0.03	0.01	0.24776	uPVC	145	0
P-153	53.5	19.888	19.463	-1.95019	J-110	J-111	232.45	-8,794.24	8,708.77	160	0.1	0.08	1.95019	uPVC	145	0
P-154	54.5	19.463	19.26	-4.1152	J-111	J-112	232.88	-8,743.31	8,691.64	160	0.2	0.3	4.1152	uPVC	145	0.02
P-155	129	19.26	19.264	-0.43902	J-112	J-105	233.1	-8,691.92	8,673.12	110	0.05	0.03	0.43902	uPVC	145	0
P-156	127	19.204	19.463	0.22683	J-104	J-111	233.14	-8,703.96	8,812.47	110	0.02	0.01	0.22683	uPVC	145	0
P-157	45.5	19.463	19.189	1.58651	J-111	J-113	232.88	-8,743.31	8,691.64	110	0.17	0.32	1.58651	uPVC	145	0.01

P-158	92	19.189	19.058	0.27901	J-113	J-114	233.14	-8,758.59	8,648.58	110	0.03	0.01	0.27901	uPVC	145	0
P-159	59.5	19.058	19.197	-1.08005	J-114	J-109	233.27	-8,846.10	8,676.36	110	0.11	0.16	1.08005	uPVC	145	0.01
P-16	249	20.015	19.962	1.26414	J-13	J-14	232.15	-8,685.03	9,094.66	110	0.13	0.21	1.26414	uPVC	145	0.05
P-160	60.5	19.058	19.123	0.75024	J-114	J-115	233.27	-8,846.10	8,676.36	110	0.08	0.08	0.75024	uPVC	145	0
P-161	53.5	19.123	19.195	-0.50142	J-115	J-116	233.2	-8,822.02	8,620.80	110	0.05	0.04	0.50142	uPVC	145	0
P-162	46.5	19.195	19.189	-0.779	J-116	J-113	233.13	-8,771.56	8,603.67	110	0.08	0.09	0.779	uPVC	145	0
P-163	51.5	19.195	19.265	-0.15768	J-116	J-117	233.13	-8,771.56	8,603.67	110	0.02	0	0.15768	uPVC	145	0
P-164	92.5	19.265	19.26	-1.72985	J-117	J-112	233.06	-8,722.94	8,586.08	110	0.18	0.38	1.72985	uPVC	145	0.04
P-165	49	19.26	19.353	-6.33902	J-112	J-118	233.1	-8,691.92	8,673.12	160	0.32	0.68	6.33902	uPVC	145	0.03
P-166	180	19.353	19.979	-1.24976	J-118	J-98	233.04	-8,645.16	8,658.30	110	0.13	0.21	1.24976	uPVC	145	0.04
P-167	45.5	19.123	19.149	0.79346	J-115	J-119	233.2	-8,822.02	8,620.80	110	0.08	0.09	0.79346	uPVC	145	0
P-168	55.5	19.149	19.208	0.30965	J-119	J-120	233.17	-8,833.60	8,576.82	110	0.03	0.02	0.30965	uPVC	145	0
P-169	70	19.208	19.297	-0.05102	J-120	J-121	233.11	-8,816.00	8,524.04	110	0.01	0	0.05102	uPVC	145	0
P-17	115.5	19.962	19.719	0.4613	J-14	J-15	232.15	-8,921.73	9,172.21	110	0.05	0.03	0.4613	uPVC	145	0
P-170	45.5	19.297	19.279	-0.383	J-121	J-122	233.02	-8,749.33	8,503.20	110	0.04	0.02	0.383	uPVC	145	0
P-171	41.5	19.279	19.265	-1.03938	J-122	J-117	233.04	-8,733.59	8,545.80	110	0.11	0.15	1.03938	uPVC	145	0.01
P-172	104.5	19.149	19.279	-0.10636	J-119	J-122	233.17	-8,833.60	8,576.82	110	0.01	0	0.10636	uPVC	145	0
P-173	162.5	19.353	19.539	-6.21302	J-118	J-123	233.04	-8,645.16	8,658.30	160	0.31	0.65	6.21302	uPVC	145	0.11
P-174	84.5	19.539	19.716	-6.92225	J-123	J-124	232.96	-8,695.76	8,503.81	160	0.34	0.8	6.92225	uPVC	145	0.07
P-175	49.5	19.716	19.703	-1.64338	J-124	J-125	232.85	-8,615.32	8,477.19	110	0.17	0.35	1.64338	uPVC	145	0.02
P-176	44	19.703	19.686	-0.64166	J-125	J-126	232.88	-8,599.69	8,524.07	110	0.07	0.06	0.64166	uPVC	145	0
P-177	49.5	19.686	19.666	-0.11679	J-126	J-127	232.9	-8,587.54	8,566.32	110	0.01	0	0.11679	uPVC	145	0
P-178	161	19.666	19.695	0.66806	J-127	J-128	232.92	-8,571.91	8,613.19	110	0.07	0.07	0.66806	uPVC	145	0.01
P-179	57.5	19.695	19.628	3.18419	J-128	J-97	232.88	-8,510.57	8,739.93	110	0.34	1.18	3.18419	uPVC	145	0.07
P-18	60	19.719	19.958	-0.04281	J-15	J-16	232.39	-9,032.27	9,205.77	110	0	0	0.04281	uPVC	145	0
P-180	22.5	19.695	19.902	-3.20814	J-128	J-129	232.88	-8,510.57	8,739.93	110	0.34	1.19	3.20814	uPVC	145	0.03
P-181	58	19.902	19.359	-4.26677	J-129	J-96	232.7	-8,489.15	8,732.99	200	0.14	0.11	4.26677	uPVC	145	0.01
P-182	141.5	19.902	19.728	0.42113	J-129	J-130	232.7	-8,489.15	8,732.99	110	0.04	0.03	0.42113	uPVC	145	0
P-183	42	19.728	19.666	1.50985	J-130	J-127	232.87	-8,532.56	8,598.15	110	0.16	0.29	1.50985	uPVC	145	0.01
P-184	131.5	19.716	19.967	-6.04117	J-124	J-131	232.85	-8,615.32	8,477.19	160	0.3	0.62	6.04117	uPVC	145	0.08
P-185	76.5	19.967	20.104	-10.82899	J-131	J-132	232.68	-8,491.47	8,433.21	200	0.34	0.62	10.82899	uPVC	145	0.05
P-186	52.5	20.104	20.062	1.79559	J-132	J-133	232.59	-8,417.97	8,411.22	110	0.19	0.41	1.79559	uPVC	145	0.02
P-187	207	20.062	19.703	1.86442	J-133	J-125	232.61	-8,402.34	8,461.57	110	0.2	0.44	1.86442	uPVC	145	0.09
P-188	43.5	20.062	20.008	2.58293	J-133	J-134	232.61	-8,402.34	8,461.57	110	0.27	0.8	2.58293	uPVC	145	0.03
P-189	208.5	20.008	19.686	1.39188	J-134	J-126	232.63	-8,389.03	8,503.23	110	0.15	0.25	1.39188	uPVC	145	0.05
P-19	119	19.958	19.665	-0.55696	J-16	J-17	232.15	-9,052.52	9,149.06	110	0.06	0.05	0.55696	uPVC	145	0.01

P-190	51.5	20.008	19.977	0.31974	J-134	J-135	232.63	-8,389.03	8,503.23	110	0.03	0.02	0.31974	uPVC	145	0
P-191	121	19.977	19.805	1.16763	J-135	J-136	232.66	-8,373.41	8,552.43	110	0.12	0.18	1.16763	uPVC	145	0.02
P-192	45	19.805	19.728	1.74488	J-136	J-130	232.81	-8,489.15	8,587.15	110	0.18	0.39	1.74488	uPVC	145	0.02
P-193	97	19.805	19.788	-1.33237	J-136	J-137	232.81	-8,489.15	8,587.15	110	0.14	0.23	1.33237	uPVC	145	0.02
P-194	47.5	19.788	20.59	-0.70154	J-137	J-138	232.85	-8,456.75	8,678.59	110	0.07	0.07	0.70154	uPVC	145	0
P-195	50.5	20.59	20.185	0.90154	J-138	J-95	232.05	-8,443.43	8,724.31	110	0.09	0.11	0.90154	uPVC	145	0.01
P-196	223.5	20.59	20.221	-2.52603	J-138	J-93	232.05	-8,443.43	8,724.31	110	0.27	0.77	2.52603	uPVC	145	0.17
P-197	120	19.788	19.968	-1.39026	J-137	J-139	232.85	-8,456.75	8,678.59	110	0.15	0.25	1.39026	uPVC	145	0.03
P-198	54	19.968	20.124	-3.76705	J-139	J-140	232.7	-8,342.74	8,640.39	110	0.4	1.6	3.76705	uPVC	145	0.09
P-199	49	20.124	20.298	-4.61338	J-140	J-92	232.63	-8,291.23	8,624.19	110	0.49	2.34	4.61338	uPVC	145	0.11
P-2	76	21.828	21.449	84.62207	J-1	J-2	232.39	-8,091.87	8,597.82	280	1.37	5.39	84.62207	HDPE	145	0.41
P-20	63	19.665	19.962	0.42419	J-17	J-14	232.45	-8,939.67	9,112.02	110	0.04	0.03	0.42419	uPVC	145	0
P-200	93	19.977	19.968	-1.61019	J-135	J-139	232.66	-8,373.41	8,552.43	110	0.17	0.33	1.61019	uPVC	145	0.03
P-201	189	20.124	20.214	0.00801	J-140	J-141	232.63	-8,291.23	8,624.19	110	0	0	0.00801	uPVC	145	0
P-202	53	20.214	20.403	-4.51547	J-141	J-142	232.54	-8,351.42	8,444.78	110	0.48	2.24	4.51547	uPVC	145	0.12
P-203	82.5	20.403	20.571	-23.21304	J-142	J-91	232.47	-8,301.07	8,428.00	200	0.74	2.53	23.21304	uPVC	145	0.21
P-204	53.5	20.214	20.062	3.67511	J-141	J-133	232.54	-8,351.42	8,444.78	110	0.39	1.53	3.67511	uPVC	145	0.08
P-205	52	20.403	20.339	18.15903	J-142	J-143	232.47	-8,301.07	8,428.00	200	0.58	1.61	18.15903	uPVC	145	0.08
P-206	106.5	20.339	20.104	13.30082	J-143	J-132	232.45	-8,316.69	8,378.23	200	0.42	0.9	13.30082	uPVC	145	0.1
P-207	220.5	19.59	19.948	-1.98629	J-144	J-145	232.93	-8,694.60	8,468.51	110	0.21	0.49	1.98629	uPVC	145	0.11
P-208	10	19.948	19.967	-4.16179	J-145	J-131	232.68	-8,493.20	8,423.37	110	0.44	1.93	4.16179	uPVC	145	0.02
P-209	181	19.948	20.318	-2.55392	J-145	J-146	232.68	-8,493.20	8,423.37	110	0.27	0.78	2.55392	uPVC	145	0.14
P-21	53	19.665	19.969	-0.86642	J-17	J-18	232.45	-8,939.67	9,112.02	110	0.09	0.11	0.86642	uPVC	145	0.01
P-210	10	20.318	20.339	-4.37419	J-146	J-143	232.45	-8,320.74	8,368.97	110	0.46	2.12	4.37419	uPVC	145	0.02
P-211	48	20.318	20.34	1.134	J-146	J-147	232.45	-8,320.74	8,368.97	110	0.12	0.17	1.134	uPVC	145	0.01
P-212	48	20.34	20.151	5.1894	J-147	J-148	232.42	-8,335.79	8,323.25	110	0.55	2.9	5.1894	uPVC	145	0.14
P-213	134.5	20.151	19.905	1.81602	J-148	J-149	232.47	-8,381.51	8,337.72	110	0.19	0.42	1.81602	uPVC	145	0.06
P-214	46.5	19.905	19.948	-3.41489	J-149	J-145	232.66	-8,509.41	8,379.97	110	0.36	1.34	3.41489	uPVC	145	0.06
P-215	44	19.905	19.815	2.80621	J-149	J-150	232.66	-8,509.41	8,379.97	110	0.3	0.93	2.80621	uPVC	145	0.04
P-216	47	19.815	19.745	1.28507	J-150	J-151	232.71	-8,551.66	8,392.12	110	0.14	0.22	1.28507	uPVC	145	0.01
P-217	37.5	19.745	19.692	0.65606	J-151	J-152	232.77	-8,596.80	8,405.43	110	0.07	0.06	0.65606	uPVC	145	0
P-218	39.5	19.692	19.642	0.11081	J-152	J-153	232.82	-8,632.68	8,416.43	110	0.01	0	0.11081	uPVC	145	0
P-219	31	19.642	19.604	-0.53576	J-153	J-154	232.87	-8,670.87	8,427.42	110	0.06	0.04	0.53576	uPVC	145	0
P-22	44.5	19.969	19.677	-1.07283	J-18	J-19	232.15	-8,888.74	9,096.97	110	0.11	0.16	1.07283	uPVC	145	0.01
P-220	30	19.604	19.59	-1.26702	J-154	J-144	232.91	-8,699.81	8,439.00	110	0.13	0.21	1.26702	uPVC	145	0.01
P-221	67	19.604	19.632	0.36342	J-154	J-155	232.91	-8,699.81	8,439.00	110	0.04	0.02	0.36342	uPVC	145	0

P-222	33.5	19.632	19.672	0.07447	J-155	J-156	232.88	-8,722.38	8,375.91	110	0.01	0	0.07447	uPVC	145	0
P-223	47	19.672	19.742	-0.14948	J-156	J-157	232.84	-8,695.76	8,355.66	110	0.02	0	0.14948	uPVC	145	0
P-224	41	19.742	19.794	-0.62392	J-157	J-158	232.77	-8,659.88	8,325.57	110	0.07	0.06	0.62392	uPVC	145	0
P-225	47	19.794	19.872	-1.12217	J-158	J-159	232.72	-8,628.05	8,300.10	110	0.12	0.17	1.12217	uPVC	145	0.01
P-226	46	19.872	19.937	-0.86744	J-159	J-160	232.65	-8,592.17	8,270.01	110	0.09	0.11	0.86744	uPVC	145	0
P-227	101.5	19.937	19.919	-1.29122	J-160	J-161	232.59	-8,556.86	8,240.49	110	0.14	0.22	1.29122	uPVC	145	0.02
P-228	46	19.919	19.905	-1.64662	J-161	J-149	232.63	-8,520.41	8,335.40	110	0.17	0.35	1.64662	uPVC	145	0.02
P-229	76	19.672	19.642	-0.22565	J-156	J-153	232.84	-8,695.76	8,355.66	160	0.01	0	0.22565	uPVC	145	0
P-23	52	19.677	19.995	-1.66396	J-19	J-20	232.45	-8,847.07	9,081.93	110	0.18	0.35	1.66396	uPVC	145	0.02
P-230	95	19.692	19.742	0.05118	J-152	J-157	232.82	-8,632.68	8,416.43	160	0	0	0.05118	uPVC	145	0
P-231	110	19.794	19.745	-0.0704	J-158	J-151	232.72	-8,628.05	8,300.10	160	0	0	0.0704	uPVC	145	0
P-232	128.5	19.815	19.872	0.89081	J-150	J-159	232.71	-8,551.66	8,392.12	160	0.04	0.02	0.89081	uPVC	145	0
P-233	44.5	19.919	19.98	-0.19605	J-161	J-162	232.63	-8,520.41	8,335.40	110	0.02	0.01	0.19605	uPVC	145	0
P-234	41	19.98	20.055	-0.9843	J-162	J-163	232.57	-8,479.32	8,318.62	110	0.1	0.13	0.9843	uPVC	145	0.01
P-235	46	20.055	20.131	-2.16802	J-163	J-164	232.5	-8,439.96	8,307.05	110	0.23	0.58	2.16802	uPVC	145	0.03
P-236	45	20.131	20.151	-2.7201	J-164	J-148	232.45	-8,395.40	8,294.89	110	0.29	0.88	2.7201	uPVC	145	0.04
P-237	107.5	19.98	20.038	0.23394	J-162	J-165	232.57	-8,479.32	8,318.62	110	0.02	0.01	0.23394	uPVC	145	0
P-238	42.5	20.038	20.109	-0.19702	J-165	J-166	232.51	-8,514.04	8,216.77	110	0.02	0.01	0.19702	uPVC	145	0
P-239	107	20.109	20.055	-0.62654	J-166	J-163	232.44	-8,472.95	8,205.19	110	0.07	0.06	0.62654	uPVC	145	0.01
P-24	49	19.995	19.769	-1.4839	J-20	J-21	232.15	-8,797.30	9,066.88	110	0.16	0.29	1.4839	uPVC	145	0.01
P-240	50.5	20.131	20.151	0.14551	J-164	J-167	232.45	-8,395.40	8,294.89	110	0.02	0	0.14551	uPVC	145	0
P-241	82.5	20.34	20.888	-4.56811	J-147	J-168	232.42	-8,335.79	8,323.25	110	0.48	2.29	4.56811	uPVC	145	0.19
P-242	8	20.888	20.904	-4.89069	J-168	J-169	232.06	-8,353.73	8,248.60	140	0.32	0.8	4.89069	HDPE	145	0.01
P-243	53.5	20.904	20.689	-3.7055	J-169	J-170	232.05	-8,345.63	8,247.44	125	0.3	0.83	3.7055	HDPE	145	0.04
P-244	153	20.689	20.649	-2.55723	J-170	J-90	232.31	-8,330.00	8,298.37	110	0.27	0.78	2.55723	uPVC	145	0.12
P-245	53.5	20.689	21.013	-1.89479	J-170	J-171	232.31	-8,330.00	8,298.37	110	0.2	0.45	1.89479	uPVC	145	0.02
P-246	152.5	21.013	20.722	-2.30278	J-171	J-89	232.01	-8,279.08	8,281.58	110	0.24	0.64	2.30278	uPVC	145	0.1
P-247	151.5	21.278	21.044	3.24403	J-88	J-172	231.93	-8,178.48	8,410.14	110	0.34	1.22	3.24403	uPVC	145	0.18
P-248	56.5	21.044	21.013	0.3457	J-172	J-171	231.98	-8,224.68	8,265.96	110	0.04	0.02	0.3457	uPVC	145	0
P-249	107.5	20.904	21.062	-1.67065	J-169	J-173	232.05	-8,345.63	8,247.44	110	0.18	0.36	1.67065	uPVC	145	0.04
P-25	49.5	19.769	19.845	-0.94916	J-21	J-22	232.39	-8,751.00	9,050.10	110	0.1	0.13	0.94916	uPVC	145	0.01
P-250	56	21.062	21.044	-2.14033	J-173	J-172	231.93	-8,243.77	8,213.29	110	0.23	0.56	2.14033	uPVC	145	0.03
P-251	57	19.378	19.709	-12.81602	J-174	J-175	232.28	-7,859.00	8,814.91	160	0.64	2.5	12.81602	uPVC	145	0.14
P-252	229	19.709	20.364	-15.3224	J-175	J-176	232.09	-7,877.89	8,760.98	160	0.76	3.48	15.3224	uPVC	145	0.8
P-253	41	20.364	20.51	-50.3241	J-176	J-177	232.23	-7,951.98	8,544.23	250	1.03	3.58	50.3241	HDPE	145	0.15
P-254	149	20.51	19.63	10.33854	J-177	J-178	232.23	-7,964.17	8,505.28	125	0.84	5.58	10.33854	HDPE	145	0.83

P-255	3	19.63	19.615	9.90185	J-178	J-179	232.28	-7,823.03	8,457.84	125	0.81	5.15	9.90185	HDPE	145	0.02
P-256	90	19.615	20.268	-7.3244	J-179	J-180	232.28	-7,824.09	8,454.80	110	0.77	5.5	7.3244	uPVC	145	0.49
P-257	2.5	20.51	20.499	23.93888	J-177	J-181	232.23	-7,964.17	8,505.28	180	0.94	4.48	23.93888	HDPE	145	0.01
P-258	59	20.499	20.268	20.17803	J-181	J-180	232.23	-7,965.25	8,502.75	160	1	5.79	20.17803	HDPE	145	0.34
P-259	47	20.268	20.1	12.29071	J-180	J-182	232.12	-7,909.20	8,483.63	140	0.8	4.43	12.29071	HDPE	145	0.21
P-26	62	19.845	20.015	0.02911	J-22	J-13	232.32	-8,703.55	9,035.63	110	0	0	0.02911	uPVC	145	0
P-260	95	20.1	19.495	9.4254	J-182	J-183	232.08	-7,924.18	8,439.28	125	0.77	4.7	9.4254	HDPE	145	0.45
P-261	42	19.495	19.619	-4.26755	J-183	J-184	232.24	-7,833.91	8,408.94	110	0.45	2.02	4.26755	uPVC	145	0.08
P-262	96.5	19.619	20.123	-5.71314	J-184	J-185	232.2	-7,847.57	8,369.30	110	0.6	3.47	5.71314	uPVC	145	0.33
P-263	41	20.123	20.1	-2.33968	J-185	J-182	232.03	-7,938.59	8,401.16	110	0.25	0.66	2.33968	uPVC	145	0.03
P-264	72	20.123	20.32	-3.9751	J-185	J-186	232.03	-7,938.59	8,401.16	110	0.42	1.77	3.9751	uPVC	145	0.13
P-268	4	20.597	20.591	-15.1166	J-189	J-190	231.95	-8,019.00	8,351.29	160	0.75	3.39	15.1166	HDPE	145	0.01
P-269	41.5	20.591	20.613	-15.24777	J-190	J-191	231.97	-8,022.60	8,352.99	160	0.76	3.45	15.24777	HDPE	145	0.14
P-27	96.5	19.724	20.04	-1.14469	J-12	J-23	232.45	-8,671.72	9,090.61	110	0.12	0.18	1.14469	uPVC	145	0.02
P-270	79.5	20.613	20.759	-15.59553	J-191	J-192	232.09	-8,008.19	8,391.87	160	0.78	3.59	15.59553	HDPE	145	0.29
P-271	45.5	20.759	20.51	85.28493	J-192	J-177	232.23	-7,980.92	8,466.44	280	1.39	5.47	85.28493	HDPE	145	0.25
P-272	160.5	20.499	20.597	3.12335	J-181	J-189	232.23	-7,965.25	8,502.75	110	0.33	1.13	3.12335	uPVC	145	0.18
P-273	59.5	20.597	20.32	17.59671	J-189	J-186	231.95	-8,019.00	8,351.29	160	0.88	4.49	17.59671	HDPE	145	0.27
P-274	96	20.32	19.682	12.96832	J-186	J-193	231.96	-7,962.30	8,333.27	140	0.84	4.89	12.96832	HDPE	145	0.47
P-277	71.5	19.682	19.619	-0.84251	J-193	J-184	232.13	-7,871.54	8,301.81	110	0.09	0.1	0.84251	uPVC	145	0.01
P-279	115.5	19.264	19.191	-0.64491	J-195	J-196	232.24	-7,812.60	8,283.57	110	0.07	0.06	0.64491	uPVC	145	0.01
P-28	114.5	20.04	19.775	-1.53065	J-23	J-24	232.15	-8,701.23	8,998.59	110	0.16	0.3	1.53065	uPVC	145	0.03
P-280	44.5	19.191	19.495	-13.17163	J-196	J-183	232.32	-7,791.86	8,394.69	140	0.86	5.03	13.17163	HDPE	145	0.22
P-281	68.5	19.191	18.788	11.87056	J-196	J-197	232.32	-7,791.86	8,394.69	140	0.77	4.15	11.87056	HDPE	145	0.28
P-282	67	18.788	18.842	6.37882	J-197	J-198	232.44	-7,726.67	8,373.95	200	0.2	0.23	6.37882	uPVC	145	0.02
P-283	43	18.842	18.894	-7.158	J-198	J-199	232.37	-7,749.09	8,310.66	200	0.23	0.29	7.158	uPVC	145	0.01
P-284	5	18.894	18.931	-7.29634	J-199	J-200	232.33	-7,763.29	8,270.24	110	0.77	5.46	7.29634	uPVC	145	0.03
P-288	50.5	19.264	18.931	13.14488	J-195	J-200	232.24	-7,812.60	8,283.57	140	0.85	5.02	13.14488	HDPE	145	0.25
P-29	58.5	19.775	20.092	-24.01248	J-24	J-25	232.45	-8,736.54	8,889.79	315	0.31	0.29	24.01248	uPVC	145	0.02
P-290	61.5	19.682	19.264	13.15325	J-193	J-195	232.13	-7,871.54	8,301.81	140	0.85	5.02	13.15325	HDPE	145	0.31
P-291	45.5	18.788	18.851	4.97185	J-197	J-203	232.44	-7,726.67	8,373.95	200	0.16	0.15	4.97185	uPVC	145	0.01
P-292	17.5	18.851	18.905	-17.22235	J-203	J-204	232.37	-7,710.93	8,416.90	140	1.12	8.27	17.22235	HDPE	145	0.14
P-293	35	18.905	19.162	-19.90497	J-204	J-205	232.46	-7,727.82	8,421.05	160	0.99	5.64	19.90497	HDPE	145	0.2
P-294	43.5	19.162	19.477	-19.45503	J-205	J-206	232.4	-7,760.71	8,433.20	160	0.97	5.41	19.45503	HDPE	145	0.24
P-295	23.5	19.477	19.615	-16.8914	J-206	J-179	232.32	-7,801.60	8,447.72	160	0.84	4.16	16.8914	uPVC	145	0.1
P-296	45	19.477	19.471	-2.88557	J-206	J-207	232.32	-7,801.60	8,447.72	110	0.3	0.98	2.88557	uPVC	145	0.04

P-297	120	19.471	20.156	-8.59991	J-207	J-208	232.37	-7,786.79	8,490.09	125	0.7	3.97	8.59991	HDPE	145	0.48
P-298	54	20.156	20.364	-34.07159	J-208	J-176	232.16	-7,900.57	8,527.72	200	1.08	5.15	34.07159	uPVC	145	0.28
P-299	42.5	20.156	19.913	24.84995	J-208	J-209	232.16	-7,900.57	8,527.72	180	0.98	4.8	24.84995	HDPE	145	0.2
P-3	72	21.449	21.089	51.68853	J-2	J-3	232.36	-8,116.72	8,525.76	250	1.05	3.76	51.68853	HDPE	145	0.27
P-30	56	20.092	19.816	2.32249	J-25	J-26	232.15	-8,680.98	8,870.69	110	0.24	0.66	2.32249	uPVC	145	0.04
P-300	135.5	19.913	19.642	12.24792	J-209	J-210	232.2	-7,887.29	8,568.09	160	0.61	2.3	12.24792	uPVC	145	0.31
P-301	52.5	19.642	19.504	4.48164	J-210	J-211	232.16	-7,843.92	8,696.46	160	0.22	0.36	4.48164	uPVC	145	0.02
P-302	51.5	19.504	19.709	-1.53753	J-211	J-175	232.28	-7,828.30	8,746.81	110	0.16	0.31	1.53753	uPVC	145	0.02
P-303	273	19.378	18.618	11.86868	J-174	J-212	232.28	-7,859.00	8,814.91	160	0.59	2.17	11.86868	uPVC	145	0.59
P-304	54	18.618	19.018	-10.95259	J-212	J-213	232.45	-7,600.28	8,728.29	160	0.54	1.87	10.95259	uPVC	145	0.1
P-305	220.5	19.018	19.504	-5.08761	J-213	J-211	232.15	-7,618.80	8,677.37	110	0.54	2.8	5.08761	uPVC	145	0.62
P-306	44.5	19.642	19.399	7.09865	J-210	J-214	232.16	-7,843.92	8,696.46	125	0.58	2.78	7.09865	HDPE	145	0.12
P-307	174	19.399	18.76	4.99473	J-214	J-215	232.28	-7,801.68	8,682.57	110	0.53	2.71	4.99473	uPVC	145	0.47
P-308	53.5	18.76	19.018	6.80657	J-215	J-213	232.45	-7,636.74	8,627.02	160	0.34	0.77	6.80657	uPVC	145	0.04
P-309	42.5	19.399	19.519	1.35454	J-214	J-216	232.28	-7,801.68	8,682.57	110	0.14	0.24	1.35454	uPVC	145	0.01
P-31	57	19.816	19.742	1.36017	J-26	J-27	232.39	-8,663.62	8,923.93	110	0.14	0.24	1.36017	uPVC	145	0.01
P-310	92	19.519	19.642	-5.04608	J-216	J-217	232.15	-7,814.99	8,642.06	110	0.53	2.76	5.04608	uPVC	145	0.25
P-311	45.5	19.642	19.913	-11.96022	J-217	J-209	232.28	-7,843.92	8,554.68	140	0.78	4.21	11.96022	HDPE	145	0.19
P-312	45	19.642	19.37	6.38995	J-217	J-218	232.28	-7,843.92	8,554.68	110	0.67	4.27	6.38995	uPVC	145	0.19
P-313	92	19.37	19.221	4.78632	J-218	J-219	232.36	-7,801.10	8,540.21	110	0.5	2.5	4.78632	uPVC	145	0.23
P-314	46	19.221	19.519	-5.88217	J-219	J-216	232.28	-7,771.58	8,627.60	110	0.62	3.66	5.88217	uPVC	145	0.17
P-315	71.5	19.221	19.236	10.06684	J-219	J-220	232.28	-7,771.58	8,627.60	160	0.5	1.6	10.06684	uPVC	145	0.11
P-316	39	19.236	18.825	13.84997	J-220	J-221	232.15	-7,704.45	8,603.29	160	0.69	2.88	13.84997	uPVC	145	0.11
P-317	17.5	18.825	18.745	15.18299	J-221	J-222	232.45	-7,667.41	8,591.14	160	0.76	3.42	15.18299	uPVC	145	0.06
P-318	43	18.745	18.76	2.58848	J-222	J-215	232.47	-7,650.63	8,586.51	160	0.13	0.13	2.58848	uPVC	145	0.01
P-319	30	19.37	19.575	1.1239	J-218	J-223	232.36	-7,801.10	8,540.21	110	0.12	0.17	1.1239	uPVC	145	0.01
P-32	57.5	19.742	20.04	0.38494	J-27	J-23	232.45	-8,647.41	8,978.33	110	0.04	0.02	0.38494	uPVC	145	0
P-320	41	19.575	19.471	-5.12273	J-223	J-207	232.15	-7,773.32	8,528.63	110	0.54	2.83	5.12273	uPVC	145	0.12
P-321	41	19.575	19.124	5.92469	J-223	J-224	232.15	-7,773.32	8,528.63	110	0.62	3.71	5.92469	uPVC	145	0.15
P-322	89	19.124	19.236	4.35608	J-224	J-220	232.45	-7,733.39	8,519.37	110	0.46	2.1	4.35608	uPVC	145	0.19
P-323	90.5	19.124	19.162	0.93541	J-224	J-205	232.45	-7,733.39	8,519.37	110	0.1	0.12	0.93541	uPVC	145	0.01
P-324	180.5	18.905	18.825	2.01356	J-204	J-221	232.46	-7,727.82	8,421.05	110	0.21	0.5	2.01356	uPVC	145	0.09
P-325	57.5	18.851	18.941	21.84788	J-203	J-225	232.37	-7,710.93	8,416.90	200	0.7	2.26	21.84788	uPVC	145	0.13
P-326	64	18.941	18.731	5.2143	J-225	J-226	232.15	-7,691.14	8,470.76	200	0.17	0.16	5.2143	uPVC	145	0.01
P-327	58.5	18.731	18.745	-12.25249	J-226	J-222	232.35	-7,670.31	8,531.53	160	0.61	2.3	12.25249	uPVC	145	0.13
P-328	56	18.842	18.465	13.05997	J-198	J-227	232.37	-7,749.09	8,310.66	140	0.85	4.96	13.05997	HDPE	145	0.28

P-329	43.5	18.465	18.178	9.74613	J-227	J-228	232.47	-7,695.66	8,293.38	125	0.79	5.01	9.74613	HDPE	145	0.22
P-33	112.5	19.742	19.8	0.32338	J-27	J-28	232.45	-8,647.41	8,978.33	110	0.03	0.02	0.32338	uPVC	145	0
P-331	45.5	18.357	18.385	-5.10813	J-229	J-230	232.35	-7,616.25	8,388.79	110	0.54	2.82	5.10813	uPVC	145	0.13
P-332	116	18.385	18.465	-2.69498	J-230	J-227	232.45	-7,659.22	8,403.31	110	0.28	0.86	2.69498	uPVC	145	0.1
P-333	52	18.385	18.341	-3.02626	J-230	J-231	232.45	-7,659.22	8,403.31	110	0.32	1.07	3.02626	uPVC	145	0.06
P-334	52.5	18.341	18.941	-16.13377	J-231	J-225	232.55	-7,642.03	8,452.50	160	0.8	3.83	16.13377	uPVC	145	0.2
P-335	51.5	18.731	18.515	16.96698	J-226	J-232	232.35	-7,670.31	8,531.53	160	0.84	4.2	16.96698	uPVC	145	0.22
P-336	44.5	18.515	18.313	12.23863	J-232	J-233	232.35	-7,620.99	8,515.91	160	0.61	2.29	12.23863	uPVC	145	0.1
P-337	141	18.313	18.472	7.81851	J-233	J-234	232.45	-7,578.32	8,502.87	160	0.39	1	7.81851	uPVC	145	0.14
P-338	64.5	18.472	17.912	4.78482	J-234	J-235	232.15	-7,444.69	8,458.13	110	0.5	2.5	4.78482	uPVC	145	0.16
P-339	186.5	17.912	18.341	-12.27206	J-235	J-231	232.55	-7,464.24	8,396.50	160	0.61	2.3	12.27206	uPVC	145	0.43
P-34	111	19.816	20.053	0.31907	J-26	J-29	232.39	-8,663.62	8,923.93	110	0.03	0.02	0.31907	uPVC	145	0
P-340	109	18.515	18.382	4.13961	J-232	J-236	232.35	-7,620.99	8,515.91	160	0.21	0.31	4.13961	uPVC	145	0.03
P-341	46	18.382	18.284	-0.58043	J-236	J-237	232.45	-7,583.93	8,618.50	110	0.06	0.05	0.58043	uPVC	145	0
P-342	53	18.284	18.51	-5.39676	J-237	J-238	232.55	-7,567.04	8,661.46	160	0.27	0.5	5.39676	uPVC	145	0.03
P-343	55.5	18.51	18.618	-21.72333	J-238	J-212	232.35	-7,547.78	8,710.95	180	0.85	3.74	21.72333	HDPE	145	0.21
P-344	247	18.51	17.855	15.30608	J-238	J-239	232.35	-7,547.78	8,710.95	160	0.76	3.47	15.30608	uPVC	145	0.86
P-345	50.5	17.855	17.618	-3.29193	J-239	J-240	232.15	-7,312.94	8,634.41	110	0.35	1.25	3.29193	uPVC	145	0.06
P-346	106.5	17.618	17.141	8.09419	J-240	J-241	232.45	-7,328.31	8,586.49	125	0.66	3.55	8.09419	HDPE	145	0.38
P-347	120	17.141	17.88	-9.20438	J-241	J-242	232.55	-7,366.24	8,486.82	125	0.75	4.5	9.20438	HDPE	145	0.54
P-348	12	17.88	18.138	-12.92559	J-242	J-243	232.35	-7,411.31	8,375.85	140	0.84	4.86	12.92559	HDPE	145	0.06
P-349	148	18.138	17.711	2.69276	J-243	J-244	232.15	-7,421.73	8,381.64	110	0.28	0.86	2.69276	uPVC	145	0.13
P-35	150	19.845	19.772	-1.72909	J-22	J-30	232.32	-8,703.55	9,035.63	110	0.18	0.38	1.72909	uPVC	145	0.06
P-350	71.5	17.711	17.973	2.06243	J-244	J-245	232.45	-7,375.43	8,522.27	110	0.22	0.53	2.06243	uPVC	145	0.04
P-351	25.5	17.973	17.618	11.91031	J-245	J-240	232.15	-7,353.44	8,590.56	160	0.59	2.18	11.91031	uPVC	145	0.06
P-352	45.5	18.472	18.243	2.313	J-234	J-246	232.15	-7,444.69	8,458.13	110	0.24	0.65	2.313	uPVC	145	0.03
P-353	109.5	18.243	17.926	4.22283	J-246	J-247	232.35	-7,430.99	8,501.44	110	0.44	1.98	4.22283	uPVC	145	0.22
P-354	46	17.926	17.973	10.25876	J-247	J-245	232.45	-7,396.84	8,605.61	125	0.84	5.5	10.25876	HDPE	145	0.25
P-355	45.5	18.243	18.476	-2.48566	J-246	J-248	232.35	-7,430.99	8,501.44	110	0.26	0.74	2.48566	uPVC	145	0.03
P-356	95.5	18.476	18.402	-3.37941	J-248	J-249	232.15	-7,473.23	8,518.22	110	0.36	1.31	3.37941	uPVC	145	0.13
P-357	44.5	18.402	18.313	-3.75966	J-249	J-233	232.35	-7,564.67	8,545.42	160	0.19	0.26	3.75966	uPVC	145	0.01
P-358	63	18.402	18.302	-0.20276	J-249	J-250	232.35	-7,564.67	8,545.42	160	0.01	0	0.20276	uPVC	145	0
P-359	41.5	18.302	18.382	-4.15569	J-250	J-236	232.45	-7,544.42	8,605.03	110	0.44	1.92	4.15569	uPVC	145	0.08
P-36	11.5	19.772	19.775	-21.9519	J-30	J-24	232.45	-8,747.68	8,892.52	315	0.28	0.25	21.9519	uPVC	145	0
P-360	96.5	18.302	18.076	3.37567	J-250	J-251	232.45	-7,544.42	8,605.03	110	0.36	1.31	3.37567	uPVC	145	0.13
P-361	61.5	18.076	18.476	-0.31219	J-251	J-248	232.55	-7,452.40	8,576.09	110	0.03	0.02	0.31219	uPVC	145	0

P-362	135	18.284	18.226	4.1444	J-237	J-252	232.55	-7,567.04	8,661.46	110	0.44	1.91	4.1444	uPVC	145	0.26
P-363	44	18.226	17.926	6.60888	J-252	J-247	232.35	-7,439.09	8,618.34	110	0.7	4.54	6.60888	uPVC	145	0.2
P-364	44.5	18.226	18.076	-3.10629	J-252	J-251	232.35	-7,439.09	8,618.34	110	0.33	1.12	3.10629	uPVC	145	0.05
P-365	55	18.357	18.504	2.85755	J-229	J-253	232.35	-7,616.25	8,388.79	110	0.3	0.96	2.85755	uPVC	145	0.05
P-366	43	18.504	18.156	3.11556	J-253	J-254	232.15	-7,564.03	8,372.17	110	0.33	1.13	3.11556	uPVC	145	0.05
P-367	41.5	18.156	18.146	4.93446	J-254	J-255	232.45	-7,523.28	8,359.21	110	0.52	2.64	4.93446	uPVC	145	0.11
P-368	58	18.146	17.622	7.40439	J-255	J-256	232.35	-7,484.39	8,345.13	110	0.78	5.61	7.40439	uPVC	145	0.33
P-369	49.5	17.622	17.88	-3.19989	J-256	J-242	232.55	-7,428.47	8,329.21	110	0.34	1.19	3.19989	uPVC	145	0.06
P-37	52	19.772	19.8	19.60969	J-30	J-31	232.45	-8,747.68	8,892.52	250	0.4	0.62	19.60969	uPVC	145	0.03
P-370	45	17.912	18.138	16.20709	J-235	J-243	232.55	-7,464.24	8,396.50	160	0.81	3.86	16.20709	uPVC	145	0.17
P-371	97.5	18.178	18.353	6.26694	J-228	J-257	232.54	-7,654.18	8,280.05	160	0.31	0.66	6.26694	uPVC	145	0.06
P-372	42	18.353	18.204	-0.22593	J-257	J-258	232.3	-7,562.17	8,248.09	110	0.02	0.01	0.22593	uPVC	145	0
P-373	75.5	18.204	18.156	2.27854	J-258	J-254	232.45	-7,549.21	8,288.09	110	0.24	0.63	2.27854	uPVC	145	0.05
P-374	39	18.178	18.078	2.96217	J-228	J-259	232.54	-7,654.18	8,280.05	110	0.31	1.03	2.96217	uPVC	145	0.04
P-375	76.5	18.078	18.357	-1.74216	J-259	J-229	232.6	-7,641.07	8,316.61	110	0.18	0.38	1.74216	uPVC	145	0.03
P-376	54	18.078	18.111	4.21743	J-259	J-260	232.6	-7,641.07	8,316.61	160	0.21	0.32	4.21743	uPVC	145	0.02
P-377	76	18.111	18.504	0.75782	J-260	J-253	232.55	-7,589.58	8,300.69	110	0.08	0.08	0.75782	uPVC	145	0.01
P-378	42.5	18.111	18.204	2.96412	J-260	J-258	232.55	-7,589.58	8,300.69	160	0.15	0.17	2.96412	uPVC	145	0.01
P-379	44.5	18.353	18.176	5.96438	J-257	J-261	232.3	-7,562.17	8,248.09	160	0.3	0.61	5.96438	uPVC	145	0.03
P-38	57.5	19.8	19.71	17.62494	J-31	J-32	232.39	-8,796.87	8,908.73	250	0.36	0.51	17.62494	uPVC	145	0.03
P-380	117	18.176	18.146	3.09165	J-261	J-255	232.45	-7,520.32	8,233.65	110	0.33	1.11	3.09165	uPVC	145	0.13
P-381	46	18.176	17.998	2.27681	J-261	J-262	232.45	-7,520.32	8,233.65	110	0.24	0.63	2.27681	uPVC	145	0.03
P-382	242.5	17.998	18.931	-4.993	J-262	J-200	232.6	-7,535.14	8,189.94	110	0.53	2.7	4.993	uPVC	145	0.66
P-383	56.5	17.998	17.814	6.27945	J-262	J-263	232.6	-7,535.14	8,189.94	110	0.66	4.13	6.27945	uPVC	145	0.23
P-384	123	17.814	17.481	5.76387	J-263	J-264	232.55	-7,481.89	8,170.66	110	0.61	3.53	5.76387	uPVC	145	0.43
P-385	44.5	17.481	17.622	-10.16759	J-264	J-256	232.45	-7,445.43	8,288.14	125	0.83	5.41	10.16759	HDPE	145	0.24
P-386	99.5	17.481	16.733	15.16485	J-264	J-265	232.45	-7,445.43	8,288.14	140	0.99	6.54	15.16485	HDPE	145	0.65
P-387	122	16.733	16.615	5.71075	J-265	J-266	232.55	-7,352.84	8,252.26	160	0.28	0.56	5.71075	uPVC	145	0.07
P-388	93	16.615	16.861	-2.98004	J-266	J-267	232.6	-7,308.85	8,366.27	110	0.31	1.04	2.98004	uPVC	145	0.1
P-389	97	16.861	17.141	-16.36988	J-267	J-241	232.45	-7,275.29	8,453.08	160	0.81	3.93	16.36988	uPVC	145	0.38
P-39	141	19.71	19.995	0.87495	J-32	J-20	232.45	-8,840.85	8,933.03	110	0.09	0.11	0.87495	uPVC	145	0.02
P-390	127	16.733	16.776	3.79164	J-265	J-268	232.55	-7,352.84	8,252.26	110	0.4	1.62	3.79164	uPVC	145	0.21
P-391	190	16.776	16.741	2.8816	J-268	J-269	232.3	-7,397.98	8,133.62	110	0.3	0.98	2.8816	uPVC	145	0.19
P-392	128	16.741	16.38	1.96869	J-269	J-270	232.15	-7,220.31	8,067.65	110	0.21	0.48	1.96869	uPVC	145	0.06
P-393	95.5	16.38	16.786	-4.97978	J-270	J-271	232.45	-7,176.32	8,188.02	110	0.52	2.69	4.97978	uPVC	145	0.26
P-394	92	16.786	16.733	-4.39814	J-271	J-265	232.3	-7,266.60	8,219.85	110	0.46	2.14	4.39814	uPVC	145	0.2

Distribution Network Design Output: Zone 18

P-395	95	16.615	16.969	7.80083	J-266	J-272	232.6	-7,308.85	8,366.27	160	0.39	1	7.80083	uPVC	145	0.09
P-396	121	16.969	16.786	1.46729	J-272	J-271	232.15	-7,220.31	8,331.55	110	0.15	0.28	1.46729	uPVC	145	0.03
P-397	91.5	16.969	16.379	5.45075	J-272	J-273	232.15	-7,220.31	8,331.55	110	0.57	3.18	5.45075	uPVC	145	0.29
P-398	120	16.379	16.38	-0.09739	J-273	J-270	232.45	-7,134.08	8,300.30	110	0.01	0	0.09739	uPVC	145	0
P-399	321.5	16.38	15.828	4.94271	J-270	J-274	232.45	-7,176.32	8,188.02	110	0.52	2.65	4.94271	uPVC	145	0.85
P-4	63.5	21.089	20.821	46.82739	J-3	J-4	232.45	-8,185.17	8,547.76	250	0.95	3.13	46.82739	HDPE	145	0.2
P-40	148.5	19.769	19.8	-1.24396	J-21	J-31	232.39	-8,751.00	9,050.10	110	0.13	0.21	1.24396	uPVC	145	0.03
P-400	121	15.828	15.801	-4.53308	J-274	J-275	232.15	-6,875.39	8,074.59	110	0.48	2.26	4.53308	uPVC	145	0.27
P-401	319.5	15.801	16.379	-4.02419	J-275	J-273	232.45	-6,834.87	8,188.60	110	0.42	1.81	4.02419	uPVC	145	0.58
P-402	504	16.861	16	11.39828	J-267	J-276	232.45	-7,275.29	8,453.08	160	0.57	2.01	11.39828	uPVC	145	1.01
P-403	94	16	15.801	2.04288	J-276	J-275	232.3	-6,803.04	8,277.15	110	0.21	0.52	2.04288	uPVC	145	0.05
P-404	195	15.828	14.37	7.64631	J-274	J-277	232.15	-6,875.39	8,074.59	110	0.8	5.95	7.64631	uPVC	145	1.16
P-405	108	14.37	14.519	0.21949	J-277	J-278	232.45	-6,692.51	8,006.88	110	0.02	0.01	0.21949	uPVC	145	0
P-406	111.5	14.519	15.112	-6.15688	J-278	J-279	232.3	-6,651.42	8,107.00	110	0.65	3.99	6.15688	uPVC	145	0.44
P-407	202.5	15.112	16	-7.05831	J-279	J-276	232.15	-6,611.49	8,211.17	110	0.74	5.13	7.05831	uPVC	145	1.04
P-408	16	14.519	14.314	5.70013	J-278	J-280	232.3	-6,651.42	8,107.00	110	0.6	3.46	5.70013	uPVC	145	0.06
P-409	111	14.314	14.612	0.27796	J-280	J-281	232.45	-6,636.95	8,100.63	110	0.03	0.01	0.27796	uPVC	145	0
P-41	48	19.71	19.75	16.04221	J-32	J-33	232.45	-8,840.85	8,933.03	250	0.33	0.43	16.04221	uPVC	145	0.02
P-410	13	14.612	14.37	-6.51965	J-281	J-277	232.15	-6,682.09	7,999.36	110	0.69	4.43	6.51965	uPVC	145	0.06
P-411	69	14.612	14.181	6.2433	J-281	J-282	232.15	-6,682.09	7,999.36	110	0.66	4.09	6.2433	uPVC	145	0.28
P-412	44	14.181	14.022	3.35787	J-282	J-283	232.3	-6,616.69	7,976.79	160	0.17	0.21	3.35787	uPVC	145	0.01
P-413	68.5	14.022	14.321	0.13413	J-283	J-284	232.45	-6,599.33	8,017.30	160	0.01	0	0.13413	uPVC	145	0
P-414	64	14.321	14.314	-6.6336	J-284	J-280	232.15	-6,575.60	8,081.54	110	0.7	4.58	6.6336	uPVC	145	0.29
P-415	285	14.314	14.69	-2.5776	J-280	J-285	232.45	-6,636.95	8,100.63	110	0.27	0.79	2.5776	uPVC	145	0.23
P-416	482	14.69	15.976	-14.11429	J-285	J-286	232.3	-6,524.68	8,362.80	160	0.7	2.99	14.11429	uPVC	145	1.44
P-417	391.5	15.976	17.855	-16.6208	J-286	J-239	232.45	-6,981.87	8,515.00	160	0.83	4.04	16.6208	uPVC	145	1.58
P-418	71.5	14.69	14.523	9.13059	J-285	J-287	232.3	-6,524.68	8,362.80	125	0.74	4.44	9.13059	HDPE	145	0.32
P-419	279	14.523	14.102	2.87633	J-287	J-288	232.15	-6,456.47	8,341.78	110	0.3	0.97	2.87633	uPVC	145	0.27
P-42	51.5	19.75	19.976	1.3836	J-33	J-34	232.39	-8,885.99	8,948.66	110	0.15	0.25	1.3836	uPVC	145	0.01
P-420	67	14.102	13.923	1.8831	J-288	J-289	232.3	-6,193.11	8,249.09	110	0.2	0.44	1.8831	uPVC	145	0.03
P-421	68.5	13.923	14.22	0.42171	J-289	J-290	232.45	-6,188.59	8,182.40	110	0.04	0.03	0.42171	uPVC	145	0
P-422	59.5	14.22	14.077	-0.92192	J-290	J-291	232.15	-6,254.14	8,202.75	110	0.1	0.12	0.92192	uPVC	145	0.01
P-423	183	14.077	14.029	-2.12713	J-291	J-292	232.3	-6,310.66	8,220.84	110	0.22	0.56	2.12713	uPVC	145	0.1
P-424	70.5	14.029	14.523	-5.04586	J-292	J-287	232.45	-6,484.73	8,277.35	110	0.53	2.76	5.04586	uPVC	145	0.19
P-425	58.5	14.029	14.788	2.02304	J-292	J-293	232.45	-6,484.73	8,277.35	110	0.21	0.51	2.02304	uPVC	145	0.03
P-426	98	14.788	14.007	-0.72162	J-293	J-294	231.66	-6,508.10	8,223.49	110	0.08	0.08	0.72162	uPVC	145	0.01

P-427	59	14.007	14.321	-3.67001	J-294	J-284	232.45	-6,547.92	8,133.67	160	0.18	0.25	3.67001	uPVC	145	0.01
P-428	137.5	14.321	14.732	2.15326	J-284	J-295	232.15	-6,575.60	8,081.54	110	0.23	0.57	2.15326	uPVC	145	0.08
P-429	63.5	14.732	14.245	-0.51484	J-295	J-296	231.66	-6,446.53	8,034.59	110	0.05	0.04	0.51484	uPVC	145	0
P-43	87	19.976	19.677	-0.06408	J-34	J-19	232.15	-8,870.37	8,997.85	110	0.01	0	0.06408	uPVC	145	0
P-430	60.5	14.245	13.964	-1.5129	J-296	J-297	232.15	-6,426.16	8,094.78	110	0.16	0.3	1.5129	uPVC	145	0.02
P-431	67	13.964	14.007	-2.30514	J-297	J-294	232.45	-6,484.49	8,111.45	110	0.24	0.65	2.30514	uPVC	145	0.04
P-432	98.5	13.964	14.263	0.14326	J-297	J-298	232.45	-6,484.49	8,111.45	110	0.02	0	0.14326	uPVC	145	0
P-433	66.5	14.263	14.788	-2.10428	J-298	J-293	232.15	-6,445.14	8,201.73	110	0.22	0.55	2.10428	uPVC	145	0.04
P-434	59.5	14.263	14.732	1.60286	J-298	J-299	232.15	-6,445.14	8,201.73	110	0.17	0.33	1.60286	uPVC	145	0.02
P-435	95	14.732	14.245	-0.36916	J-299	J-296	231.66	-6,388.65	8,182.29	110	0.04	0.02	0.36916	uPVC	145	0
P-436	77	14.732	13.927	1.30727	J-299	J-300	231.66	-6,388.65	8,182.29	110	0.14	0.23	1.30727	uPVC	145	0.02
P-437	63	13.927	14.077	-0.32816	J-300	J-291	232.45	-6,315.50	8,158.21	110	0.03	0.02	0.32816	uPVC	145	0
P-438	87	13.927	14.214	0.98358	J-300	J-301	232.45	-6,315.50	8,158.21	110	0.1	0.13	0.98358	uPVC	145	0.01
P-439	59.5	14.214	14.702	0.36205	J-301	J-302	232.15	-6,319.67	8,071.17	110	0.04	0.02	0.36205	uPVC	145	0
P-44	54	19.665	19.671	-0.94445	J-17	J-35	232.45	-8,939.67	9,112.02	110	0.1	0.12	0.94445	uPVC	145	0.01
P-440	138.5	14.702	14.22	-0.57846	J-302	J-290	231.66	-6,260.41	8,064.23	110	0.06	0.05	0.57846	uPVC	145	0.01
P-441	65.5	14.702	13.913	0.18396	J-302	J-303	231.66	-6,260.41	8,064.23	110	0.02	0.01	0.18396	uPVC	145	0
P-442	127	13.913	13.923	-0.7077	J-303	J-289	232.45	-6,195.59	8,055.43	110	0.07	0.07	0.7077	uPVC	145	0.01
P-443	52.5	14.732	14.707	1.94023	J-295	J-304	231.66	-6,446.53	8,034.59	110	0.2	0.47	1.94023	uPVC	145	0.02
P-444	76.5	14.707	14.214	1.56209	J-304	J-305	231.66	-6,396.99	8,017.46	160	0.08	0.05	1.56209	uPVC	145	0
P-445	62	14.214	14.214	-0.02276	J-305	J-301	232.15	-6,322.45	8,009.13	110	0	0	0.02276	uPVC	145	0
P-446	126.5	14.214	13.913	0.82398	J-305	J-306	232.15	-6,322.45	8,009.13	160	0.04	0.02	0.82398	uPVC	145	0
P-447	52	13.913	13.913	-0.1896	J-306	J-303	232.45	-6,196.05	8,003.57	110	0.02	0.01	0.1896	uPVC	145	0
P-448	41	14.181	14.001	2.443	J-282	J-307	232.3	-6,616.69	7,976.79	110	0.26	0.72	2.443	uPVC	145	0.03
P-449	71.5	14.001	14.75	2.11963	J-307	J-308	232.45	-6,632.65	7,938.76	110	0.22	0.55	2.11963	uPVC	145	0.04
P-45	39.5	19.671	19.731	1.07631	J-35	J-36	232.45	-8,956.02	9,060.35	250	0.02	0	1.07631	uPVC	145	0
P-450	83	14.75	14.262	-0.23056	J-308	J-309	231.66	-6,564.59	7,917.46	110	0.02	0.01	0.23056	uPVC	145	0
P-451	68	14.262	14.022	-2.70528	J-309	J-283	232.15	-6,534.96	7,994.78	110	0.28	0.87	2.70528	uPVC	145	0.06
P-452	87	14.262	13.928	1.79131	J-309	J-310	232.15	-6,534.96	7,994.78	110	0.19	0.41	1.79131	uPVC	145	0.04
P-453	73.5	13.928	14.716	0.12724	J-310	J-311	232.45	-6,453.01	7,965.61	110	0.01	0	0.12724	uPVC	145	0
P-454	105	14.716	14.75	-1.60511	J-311	J-308	231.66	-6,462.27	7,892.92	110	0.17	0.33	1.60511	uPVC	145	0.03
P-455	61.5	14.716	13.918	1.0432	J-311	J-312	231.66	-6,462.27	7,892.92	110	0.11	0.15	1.0432	uPVC	145	0.01
P-456	61	13.918	14.219	-0.33482	J-312	J-313	232.45	-6,400.69	7,889.68	110	0.04	0.02	0.33482	HDPE	145	0
P-457	55.5	14.219	13.928	-1.04378	J-313	J-310	232.15	-6,399.77	7,950.79	110	0.11	0.15	1.04378	uPVC	145	0.01
P-458	66.5	14.707	14.219	-0.18334	J-304	J-313	231.66	-6,396.99	8,017.46	110	0.02	0.01	0.18334	uPVC	145	0
P-459	203.5	13.918	13.912	0.44216	J-312	J-314	232.45	-6,400.69	7,889.68	110	0.05	0.03	0.44216	uPVC	145	0.01

Distribution Network Design Output: Zone 18

P-46	98	19.731	19.97	0.28178	J-36	J-37	232.39	-8,994.21	9,071.35	250	0.01	0	0.28178	uPVC	145	0
P-460	62.5	13.912	13.913	-0.32157	J-314	J-306	232.45	-6,204.85	7,941.54	110	0.03	0.02	0.32157	uPVC	145	0
P-47	49.5	19.73	19.671	-0.14264	J-38	J-39	232.39	-9,057.30	9,045.31	110	0.02	0	0.14264	uPVC	145	0
P-48	43.5	19.671	19.731	-0.27465	J-39	J-36	232.45	-9,009.84	9,030.84	110	0.03	0.01	0.27465	uPVC	145	0
P-49	85.5	19.671	19.972	-0.38071	J-39	J-40	232.45	-9,009.84	9,030.84	110	0.04	0.02	0.38071	uPVC	145	0
P-5	150	20.821	19.844	20.55895	J-4	J-5	232.52	-8,246.14	8,564.92	160	1.02	5.99	20.55895	HDPE	145	0.9
P-50	57.5	19.972	19.731	2.72801	J-40	J-41	232.15	-8,982.64	8,977.02	250	0.06	0.02	2.72801	uPVC	145	0
P-51	30	19.731	19.671	2.37569	J-41	J-35	232.39	-8,964.70	9,031.42	250	0.05	0.01	2.37569	uPVC	145	0
P-52	54	19.731	19.672	-0.05425	J-41	J-42	232.39	-8,964.70	9,031.42	110	0.01	0	0.05425	uPVC	145	0
P-53	46	19.672	19.976	-0.91774	J-42	J-34	232.45	-8,913.77	9,012.90	110	0.1	0.12	0.91774	uPVC	145	0.01
P-54	87.5	19.969	19.672	-0.32496	J-18	J-42	232.15	-8,888.74	9,096.97	110	0.03	0.02	0.32496	uPVC	145	0
P-55	55	19.972	19.425	-3.67737	J-40	J-43	232.15	-8,982.64	8,977.02	250	0.07	0.03	3.67737	uPVC	145	0
P-56	46	19.425	19.75	-14.24057	J-43	J-33	232.7	-8,930.55	8,959.66	250	0.29	0.35	14.24057	uPVC	145	0.02
P-57	98	20.144	20.156	-0.9345	J-11	J-44	232.15	-8,447.75	9,014.79	110	0.1	0.12	0.9345	uPVC	145	0.01
P-58	65.5	20.156	19.856	0.18854	J-44	J-45	232.15	-8,478.38	8,921.47	110	0.02	0.01	0.18854	uPVC	145	0
P-59	68	19.608	19.858	-0.19572	J-46	J-47	232.7	-8,557.65	8,882.21	110	0.02	0.01	0.19572	uPVC	145	0
P-6	114	19.844	20.615	-8.38537	J-5	J-6	232.6	-8,198.91	8,707.52	125	0.68	3.79	8.38537	HDPE	145	0.43
P-60	60.5	19.858	20.156	0.43611	J-47	J-44	232.45	-8,492.46	8,862.58	110	0.05	0.03	0.43611	uPVC	145	0
P-61	218.5	20.156	20.26	-1.957	J-44	J-48	232.15	-8,478.38	8,921.47	110	0.21	0.48	1.957	uPVC	145	0.1
P-62	55.5	20.26	19.842	-4.63817	J-48	J-49	232.15	-8,271.71	8,851.10	110	0.49	2.36	4.63817	uPVC	145	0.13
P-63	97.5	19.842	20.165	-1.02166	J-49	J-10	232.7	-8,218.74	8,834.43	110	0.11	0.14	1.02166	uPVC	145	0.01
P-64	57.5	20.615	19.842	7.55409	J-6	J-49	232.26	-8,164.19	8,816.32	110	0.79	5.82	7.55409	uPVC	145	0.33
P-65	113.5	19.842	19.971	3.00746	J-49	J-50	232.7	-8,218.74	8,834.43	110	0.32	1.06	3.00746	uPVC	145	0.12
P-66	58	19.971	19.844	-28.01993	J-50	J-5	232.45	-8,253.89	8,726.50	315	0.36	0.39	28.01993	uPVC	145	0.02
P-67	55.5	20.26	19.69	1.73528	J-48	J-51	232.15	-8,271.71	8,851.10	110	0.18	0.38	1.73528	uPVC	145	0.02
P-68	56.5	19.69	20.245	-0.93066	J-51	J-52	232.7	-8,288.61	8,798.26	110	0.1	0.12	0.93066	uPVC	145	0.01
P-69	55.5	20.245	19.971	-30.37554	J-52	J-50	232.15	-8,306.20	8,744.56	315	0.39	0.46	30.37554	uPVC	145	0.03
P-7	63.5	20.615	20.681	-16.61426	J-6	J-7	232.26	-8,164.19	8,816.32	160	0.83	4.04	16.61426	HDPE	145	0.26
P-70	214	19.69	19.858	1.73008	J-51	J-47	232.7	-8,288.61	8,798.26	110	0.18	0.38	1.73008	uPVC	145	0.08
P-71	53	19.858	19.858	-0.03699	J-47	J-53	232.45	-8,492.46	8,862.58	110	0	0	0.03699	uPVC	145	0
P-72	178	19.858	20.092	27.17472	J-53	J-25	232.45	-8,512.69	8,813.54	315	0.35	0.37	27.17472	uPVC	145	0.07
P-73	217.5	19.858	20.245	-28.49899	J-53	J-52	232.45	-8,512.69	8,813.54	315	0.37	0.4	28.49899	uPVC	145	0.09
P-74	9	18.763	19.309	7.7747	J-54	J-55	232.7	-9,030.27	8,911.75	200	0.25	0.33	7.7747	uPVC	145	0
P-75	20	19.309	19.006	5.92802	J-55	J-56	232.15	-9,039.15	8,909.62	200	0.19	0.2	5.92802	uPVC	145	0
P-76	21	19.006	19.302	5.1506	J-56	J-57	232.45	-9,058.57	8,904.42	200	0.16	0.16	5.1506	uPVC	145	0
P-77	28.5	19.302	18.747	1.22675	J-57	J-58	232.15	-9,078.72	8,899.21	110	0.13	0.2	1.22675	uPVC	145	0.01

Distribution Network Design Output: Zone 18

P-78	23.5	18.747	18.998	-0.57561	J-58	J-59	232.7	-9,084.79	8,927.09	110	0.06	0.05	0.57561	uPVC	145	0
P-79	45	18.998	18.763	-1.60528	J-59	J-54	232.45	-9,062.04	8,932.59	110	0.17	0.33	1.60528	uPVC	145	0.01
P-8	260.5	20.681	21.089	-3.72447	J-7	J-3	232.45	-8,104.47	8,795.48	110	0.39	1.57	3.72447	uPVC	145	0.41
P-80	84	18.998	18.744	0.59155	J-59	J-60	232.45	-9,062.04	8,932.59	110	0.06	0.05	0.59155	uPVC	145	0
P-81	64.5	18.744	19.043	0.13601	J-60	J-61	232.7	-9,097.77	8,987.19	110	0.01	0	0.13601	uPVC	145	0
P-82	23	19.043	18.993	-0.11565	J-61	J-62	232.4	-9,145.41	8,997.62	110	0.01	0	0.11565	uPVC	145	0
P-83	52.5	18.993	18.744	-0.14719	J-62	J-60	232.45	-9,148.97	8,975.11	110	0.02	0	0.14719	uPVC	145	0
P-85	18.5	18.747	18.746	0.7933	J-58	J-63	232.7	-9,084.79	8,927.09	110	0.08	0.09	0.7933	uPVC	145	0
P-86	21	18.746	19.044	0.57233	J-63	J-64	232.7	-9,102.98	8,923.43	110	0.06	0.05	0.57233	uPVC	145	0
P-87	20.5	19.044	18.744	0.26917	J-64	J-65	232.4	-9,108.67	8,943.58	110	0.03	0.01	0.26917	uPVC	145	0
P-88	19.5	18.744	18.994	-0.32486	J-60	J-66	232.7	-9,097.77	8,987.19	110	0.03	0.02	0.32486	uPVC	145	0
P-89	42	18.994	18.747	-0.68569	J-66	J-58	232.45	-9,093.50	8,967.99	110	0.07	0.07	0.68569	uPVC	145	0
P-9	183.5	21.828	21.28	21.61065	J-1	J-8	232.39	-8,091.87	8,597.82	180	0.85	3.7	21.61065	HDPE	145	0.68
P-90	21	18.744	18.994	-0.12352	J-65	J-66	232.7	-9,114.12	8,963.49	110	0.01	0	0.12352	uPVC	145	0
P-91	20.5	18.993	18.744	-0.2445	J-62	J-67	232.45	-9,148.97	8,975.11	110	0.03	0.01	0.2445	uPVC	145	0
P-92	40	18.744	18.744	-0.15824	J-67	J-65	232.7	-9,153.24	8,955.19	110	0.02	0	0.15824	uPVC	145	0
P-93	23.5	18.744	19.044	-0.32787	J-67	J-68	232.7	-9,153.24	8,955.19	110	0.03	0.02	0.32787	uPVC	145	0
P-94	23	19.044	18.995	-0.56532	J-68	J-69	232.4	-9,157.50	8,932.20	110	0.06	0.05	0.56532	uPVC	145	0
P-95	60.5	18.995	18.746	0.06655	J-69	J-63	232.45	-9,161.77	8,909.68	110	0.01	0	0.06655	uPVC	145	0
P-96	50	19.044	19.044	-0.04003	J-68	J-64	232.4	-9,157.50	8,932.20	110	0	0	0.04003	uPVC	145	0
P-97	33	18.995	18.75	-0.96672	J-69	J-70	232.45	-9,161.77	8,909.68	110	0.1	0.13	0.96672	uPVC	145	0
P-98	64.5	18.75	19.041	-1.9096	J-70	J-71	232.7	-9,166.85	8,877.21	200	0.06	0.02	1.9096	uPVC	145	0
P-99	26	19.041	19.302	-2.97749	J-71	J-57	232.41	-9,104.33	8,893.51	200	0.09	0.06	2.97749	uPVC	145	0
PP-461	62.5	1.796	21.714	108.2743	T-1	PJ-315	232.5	-8,084.38	8,595.32	280	1.76	8.51	108.27425	HDPE	145	0.53
PP-463	377	21.04	21.593	3.86981	PJ-316	PJ-317	232.15	-8,131.30	8,346.76	140	0.25	0.52	3.86981	HDPE	145	0.2
PP-464	250.5	21.593	20.953	2.06902	PJ-317	PJ-318	231.4	-8,146.57	7,980.54	140	0.13	0.16	2.06902	HDPE	145	0.04
PP-465	91.5	20.953	20.739	1.08727	PJ-318	PJ-319	232	-8,371.58	8,090.27	140	0.07	0.05	1.08727	HDPE	145	0
PP-466	154.5	20.739	20.888	0.38091	PJ-319	J-168	232.21	-8,451.68	8,134.25	140	0.02	0.01	0.38091	HDPE	145	0
PP-467	73	18.997	18.997	0.21006	J-81	PJ-320	232.45	-9,150.71	8,801.72	110	0.02	0.01	0.21006	HDPE	145	0
PP-468	128.5	18.763	19.425	-9.90417	J-54	J-43	232.7	-9,030.27	8,911.75	125	0.81	5.16	9.90417	HDPE	145	0.66
PP-469	78	21.714	21.693	107.8706	PJ-315	PJ-321	232.01	-8,027.59	8,569.46	315	1.38	4.76	107.87055	HDPE	145	0.37
PP-470	167.5	21.693	21.04	5.4325	PJ-321	PJ-316	231.66	-8,060.47	8,498.51	140	0.35	0.98	5.4325	HDPE	145	0.16
PP-471	86	20.759	21.693	-101.4864	J-192	PJ-321	232.23	-7,980.92	8,466.44	315	1.3	4.25	101.48642	HDPE	145	0.37
	37520.5															

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-1	T-1	J-1	8	110	PVC	315	HDPE	Replacement
P-10	J-8	J-7	72.5	110	PVC	140	HDPE	Replacement
P-100	J-57	J-72	53.5	110	PVC	110	uPVC	Retained
P-101	J-72	J-73	27.5	110	PVC	110	uPVC	Retained
P-102	J-73	J-74	22	110	PVC	110	uPVC	Retained
P-103	J-74	J-56	81	110	PVC	110	uPVC	Retained
P-104	J-55	J-75	60	160	PVC	160	uPVC	Retained
P-105	J-75	J-76	22.5	160	PVC	160	uPVC	Retained
P-106	J-76	J-74	20	110	PVC	110	uPVC	Retained
P-107	J-75	J-76	42.5	110	PVC	110	uPVC	Retained
P-108	J-72	J-77	25	110	PVC	110	uPVC	Retained
P-109	J-77	J-78	26.5	110	PVC	110	uPVC	Retained
P-11	J-8	J-9	119.5	110	PVC	125	HDPE	Replacement
P-110	J-78	J-71	28.5	110	PVC	110	uPVC	Retained
P-111	J-78	J-79	38	110	PVC	110	uPVC	Retained
P-112	J-79	J-80	29.5	110	PVC	110	uPVC	Retained
P-113	J-80	J-70	26.5	110	PVC	110	uPVC	Retained
P-114	J-80	J-81	51	110	PVC	110	uPVC	Retained
P-115	J-81	J-82	26	110	PVC	110	uPVC	Retained
P-116	J-82	J-73	63	110	PVC	110	uPVC	Retained
P-117	J-79	J-83	24.5	110	PVC	110	uPVC	Retained
P-118	J-83	J-77	37.5	110	PVC	110	uPVC	Retained
P-119	J-82	J-83	26	110	PVC	110	uPVC	Retained
P-12	J-9	J-10	214.5	110	PVC	110	uPVC	Retained
P-120	J-2	J-84	64.5	110	PVC	200	HDPE	Replacement
P-121	J-84	J-85	276.5	355	PVC	110	HDPE	Replacement
P-122	J-84	J-86	24	355	PVC	200	HDPE	Replacement
P-123	J-86	J-87	111	355	PVC	200	HDPE	Replacement
P-124	J-87	J-4	64	110	PVC	200	HDPE	Replacement
P-125	J-86	J-88	62.5	110	PVC	125	HDPE	Replacement
P-126	J-88	J-89	58	110	PVC	110	uPVC	Retained
P-127	J-89	J-90	52	110	PVC	110	uPVC	Retained
P-128	J-90	J-87	62.5	110	PVC	125	HDPE	Replacement
P-129	J-87	J-91	14.5	110	PVC	225	HDPE	Replacement
P-13	J-10	J-11	274	110	PVC	110	uPVC	Retained
P-130	J-91	J-92	106.5	200	PVC	200	uPVC	Retained
P-131	J-92	J-93	49	200	PVC	200	uPVC	Retained
P-132	J-93	J-94	48.5	200	PVC	200	uPVC	Retained
P-133	J-94	J-95	222	200	PVC	200	uPVC	Retained
P-134	J-95	J-96	43	200	PVC	200	uPVC	Retained
P-135	J-96	J-97	23.5	110	PVC	110	uPVC	Retained
P-136	J-97	J-98	105.5	180	PVC	180	uPVC	Retained
P-137	J-98	J-99	48.5	180	PVC	180	uPVC	Retained
P-138	J-99	J-100	196.5	180	PVC	180	uPVC	Retained
P-139	J-100	J-101	50	110	PVC	110	uPVC	Retained
P-14	J-11	J-12	238.5	110	PVC	110	uPVC	Retained
P-140	J-101	J-102	47.5	110	PVC	110	uPVC	Retained
P-141	J-102	J-103	44.5	110	PVC	110	uPVC	Retained
P-142	J-103	J-104	51.5	110	PVC	110	uPVC	Retained
P-143	J-104	J-105	57.5	110	PVC	110	uPVC	Retained
P-144	J-105	J-99	51	110	PVC	110	uPVC	Retained
P-145	J-101	J-106	81.5	110	PVC	110	uPVC	Retained
P-146	J-106	J-107	49	110	PVC	110	uPVC	Retained
P-147	J-107	J-102	83	110	PVC	110	uPVC	Retained
P-148	J-107	J-108	44.5	110	PVC	110	uPVC	Retained
P-149	J-108	J-103	82	110	PVC	110	uPVC	Retained
P-15	J-12	J-13	14	110	PVC	110	uPVC	Retained
P-150	J-106	J-109	60	110	PVC	110	uPVC	Retained
P-151	J-109	J-110	76	160	PVC	160	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-152	J-110	J-108	44	110	PVC	110	uPVC	Retained
P-153	J-110	J-111	53.5	160	PVC	160	uPVC	Retained
P-154	J-111	J-112	54.5	160	PVC	160	uPVC	Retained
P-155	J-112	J-105	129	110	PVC	110	uPVC	Retained
P-156	J-104	J-111	127	110	PVC	110	uPVC	Retained
P-157	J-111	J-113	45.5	110	PVC	110	uPVC	Retained
P-158	J-113	J-114	92	110	PVC	110	uPVC	Retained
P-159	J-114	J-109	59.5	110	PVC	110	uPVC	Retained
P-16	J-13	J-14	249	110	PVC	110	uPVC	Retained
P-160	J-114	J-115	60.5	110	PVC	110	uPVC	Retained
P-161	J-115	J-116	53.5	110	PVC	110	uPVC	Retained
P-162	J-116	J-113	46.5	110	PVC	110	uPVC	Retained
P-163	J-116	J-117	51.5	110	PVC	110	uPVC	Retained
P-164	J-117	J-112	92.5	110	PVC	110	uPVC	Retained
P-165	J-112	J-118	49	160	PVC	160	uPVC	Retained
P-166	J-118	J-98	180	110	PVC	110	uPVC	Retained
P-167	J-115	J-119	45.5	110	PVC	110	uPVC	Retained
P-168	J-119	J-120	55.5	110	PVC	110	uPVC	Retained
P-169	J-120	J-121	70	110	PVC	110	uPVC	Retained
P-17	J-14	J-15	115.5	110	PVC	110	uPVC	Retained
P-170	J-121	J-122	45.5	110	PVC	110	uPVC	Retained
P-171	J-122	J-117	41.5	110	PVC	110	uPVC	Retained
P-172	J-119	J-122	104.5	110	PVC	110	uPVC	Retained
P-173	J-118	J-123	162.5	160	PVC	160	uPVC	Retained
P-174	J-123	J-124	84.5	160	PVC	160	uPVC	Retained
P-175	J-124	J-125	49.5	110	PVC	110	uPVC	Retained
P-176	J-125	J-126	44	110	PVC	110	uPVC	Retained
P-177	J-126	J-127	49.5	110	PVC	110	uPVC	Retained
P-178	J-127	J-128	161	110	PVC	110	uPVC	Retained
P-179	J-128	J-97	57.5	110	PVC	110	uPVC	Retained
P-18	J-15	J-16	60	110	PVC	110	uPVC	Retained
P-180	J-128	J-129	22.5	110	PVC	110	uPVC	Retained
P-181	J-129	J-96	58	200	PVC	200	uPVC	Retained
P-182	J-129	J-130	141.5	110	PVC	110	uPVC	Retained
P-183	J-130	J-127	42	110	PVC	110	uPVC	Retained
P-184	J-124	J-131	131.5	160	PVC	160	uPVC	Retained
P-185	J-131	J-132	76.5	200	PVC	200	uPVC	Retained
P-186	J-132	J-133	52.5	110	PVC	110	uPVC	Retained
P-187	J-133	J-125	207	110	PVC	110	uPVC	Retained
P-188	J-133	J-134	43.5	110	PVC	110	uPVC	Retained
P-189	J-134	J-126	208.5	110	PVC	110	uPVC	Retained
P-19	J-16	J-17	119	110	PVC	110	uPVC	Retained
P-190	J-134	J-135	51.5	110	PVC	110	uPVC	Retained
P-191	J-135	J-136	121	110	PVC	110	uPVC	Retained
P-192	J-136	J-130	45	110	PVC	110	uPVC	Retained
P-193	J-136	J-137	97	110	PVC	110	uPVC	Retained
P-194	J-137	J-138	47.5	110	PVC	110	uPVC	Retained
P-195	J-138	J-95	50.5	110	PVC	110	uPVC	Retained
P-196	J-138	J-93	223.5	110	PVC	110	uPVC	Retained
P-197	J-137	J-139	120	110	PVC	110	uPVC	Retained
P-198	J-139	J-140	54	110	PVC	110	uPVC	Retained
P-199	J-140	J-92	49	110	PVC	110	uPVC	Retained
P-2	J-1	J-2	76	110	PVC	280	HDPE	Replacement
P-20	J-17	J-14	63	110	PVC	110	uPVC	Retained
P-200	J-135	J-139	93	110	PVC	110	uPVC	Retained
P-201	J-140	J-141	189	110	PVC	110	uPVC	Retained
P-202	J-141	J-142	53	110	PVC	110	uPVC	Retained
P-203	J-142	J-91	82.5	200	PVC	200	uPVC	Retained
P-204	J-141	J-133	53.5	110	PVC	110	uPVC	Retained
P-205	J-142	J-143	52	200	PVC	200	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-206	J-143	J-132	106.5	200	PVC	200	uPVC	Retained
P-207	J-144	J-145	220.5	110	PVC	110	uPVC	Retained
P-208	J-145	J-131	10	110	PVC	110	uPVC	Retained
P-209	J-145	J-146	181	110	PVC	110	uPVC	Retained
P-21	J-17	J-18	53	110	PVC	110	uPVC	Retained
P-210	J-146	J-143	10	110	PVC	110	uPVC	Retained
P-211	J-146	J-147	48	110	PVC	110	uPVC	Retained
P-212	J-147	J-148	48	110	PVC	110	uPVC	Retained
P-213	J-148	J-149	134.5	110	PVC	110	uPVC	Retained
P-214	J-149	J-145	46.5	110	PVC	110	uPVC	Retained
P-215	J-149	J-150	44	110	PVC	110	uPVC	Retained
P-216	J-150	J-151	47	110	PVC	110	uPVC	Retained
P-217	J-151	J-152	37.5	110	PVC	110	uPVC	Retained
P-218	J-152	J-153	39.5	110	PVC	110	uPVC	Retained
P-219	J-153	J-154	31	110	PVC	110	uPVC	Retained
P-22	J-18	J-19	44.5	110	PVC	110	uPVC	Retained
P-220	J-154	J-144	30	110	PVC	110	uPVC	Retained
P-221	J-154	J-155	67	110	PVC	110	uPVC	Retained
P-222	J-155	J-156	33.5	110	PVC	110	uPVC	Retained
P-223	J-156	J-157	47	110	PVC	110	uPVC	Retained
P-224	J-157	J-158	41	110	PVC	110	uPVC	Retained
P-225	J-158	J-159	47	110	PVC	110	uPVC	Retained
P-226	J-159	J-160	46	110	PVC	110	uPVC	Retained
P-227	J-160	J-161	101.5	110	PVC	110	uPVC	Retained
P-228	J-161	J-149	46	110	PVC	110	uPVC	Retained
P-229	J-156	J-153	76	160	PVC	160	uPVC	Retained
P-23	J-19	J-20	52	110	PVC	110	uPVC	Retained
P-230	J-152	J-157	95	160	PVC	160	uPVC	Retained
P-231	J-158	J-151	110	160	PVC	160	uPVC	Retained
P-232	J-150	J-159	128.5	160	PVC	160	uPVC	Retained
P-233	J-161	J-162	44.5	110	PVC	110	uPVC	Retained
P-234	J-162	J-163	41	110	PVC	110	uPVC	Retained
P-235	J-163	J-164	46	110	PVC	110	uPVC	Retained
P-236	J-164	J-148	45	110	PVC	110	uPVC	Retained
P-237	J-162	J-165	107.5	110	PVC	110	uPVC	Retained
P-238	J-165	J-166	42.5	110	PVC	110	uPVC	Retained
P-239	J-166	J-163	107	110	PVC	110	uPVC	Retained
P-24	J-20	J-21	49	110	PVC	110	uPVC	Retained
P-240	J-164	J-167	50.5	110	PVC	110	uPVC	Retained
P-241	J-147	J-168	82.5	110	PVC	110	uPVC	Retained
P-242	J-168	J-169	8	110	PVC	140	HDPE	Replacement
P-243	J-169	J-170	53.5	110	PVC	125	HDPE	Replacement
P-244	J-170	J-90	153	110	PVC	110	uPVC	Retained
P-245	J-170	J-171	53.5	110	PVC	110	uPVC	Retained
P-246	J-171	J-89	152.5	110	PVC	110	uPVC	Retained
P-247	J-88	J-172	151.5	110	PVC	110	uPVC	Retained
P-248	J-172	J-171	56.5	110	PVC	110	uPVC	Retained
P-249	J-169	J-173	107.5	110	PVC	110	uPVC	Retained
P-25	J-21	J-22	49.5	110	PVC	110	uPVC	Retained
P-250	J-173	J-172	56	110	PVC	110	uPVC	Retained
P-251	J-174	J-175	57	160	PVC	160	uPVC	Retained
P-252	J-175	J-176	229	160	PVC	160	uPVC	Retained
P-253	J-176	J-177	41	200	PVC	250	HDPE	Replacement
P-254	J-177	J-178	149	110	PVC	125	HDPE	Replacement
P-255	J-178	J-179	3	110	PVC	125	HDPE	Replacement
P-256	J-179	J-180	90	110	PVC	110	uPVC	Retained
P-257	J-177	J-181	2.5	110	PVC	180	HDPE	Replacement
P-258	J-181	J-180	59	110	PVC	160	HDPE	Replacement
P-259	J-180	J-182	47	110	PVC	140	HDPE	Replacement
P-26	J-22	J-13	62	110	PVC	110	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-260	J-182	J-183	95	110	PVC	125	HDPE	Replacement
P-261	J-183	J-184	42	110	PVC	110	uPVC	Retained
P-262	J-184	J-185	96.5	110	PVC	110	uPVC	Retained
P-263	J-185	J-182	41	110	PVC	110	uPVC	Retained
P-264	J-185	J-186	72	110	PVC	110	uPVC	Retained
P-268	J-189	J-190	4	110	PVC	160	HDPE	Replacement
P-269	J-190	J-191	41.5	110	PVC	160	HDPE	Replacement
P-27	J-12	J-23	96.5	110	PVC	110	uPVC	Retained
P-270	J-191	J-192	79.5	110	PVC	160	HDPE	Replacement
P-271	J-192	J-177	45.5	110	PVC	280	HDPE	Replacement
P-272	J-181	J-189	160.5	110	PVC	110	uPVC	Retained
P-273	J-189	J-186	59.5	110	PVC	160	HDPE	Replacement
P-274	J-186	J-193	96	110	PVC	140	HDPE	Replacement
P-277	J-193	J-184	71.5	110	PVC	110	uPVC	Retained
P-279	J-195	J-196	115.5	110	PVC	110	uPVC	Retained
P-28	J-23	J-24	114.5	110	PVC	110	uPVC	Retained
P-280	J-196	J-183	44.5	110	PVC	140	HDPE	Replacement
P-281	J-196	J-197	68.5	110	PVC	140	HDPE	Replacement
P-282	J-197	J-198	67	200	PVC	200	uPVC	Retained
P-283	J-198	J-199	43	200	PVC	200	uPVC	Retained
P-284	J-199	J-200	5	110	PVC	110	uPVC	Retained
P-288	J-195	J-200	50.5	110	PVC	140	HDPE	Replacement
P-29	J-24	J-25	58.5	315	PVC	315	uPVC	Retained
P-290	J-193	J-195	61.5	110	PVC	140	HDPE	Replacement
P-291	J-197	J-203	45.5	200	PVC	200	uPVC	Retained
P-292	J-203	J-204	17.5	110	PVC	140	HDPE	Replacement
P-293	J-204	J-205	35	110	PVC	160	HDPE	Replacement
P-294	J-205	J-206	43.5	110	PVC	160	HDPE	Replacement
P-295	J-206	J-179	23.5	110	PVC	160	HDPE	Replacement
P-296	J-206	J-207	45	110	PVC	110	uPVC	Retained
P-297	J-207	J-208	120	110	PVC	125	HDPE	Replacement
P-298	J-208	J-176	54	200	PVC	200	uPVC	Retained
P-299	J-208	J-209	42.5	160	PVC	180	HDPE	Replacement
P-3	J-2	J-3	72	110	PVC	250	HDPE	Replacement
P-30	J-25	J-26	56	110	PVC	110	uPVC	Retained
P-300	J-209	J-210	135.5	160	PVC	160	uPVC	Retained
P-301	J-210	J-211	52.5	160	PVC	160	uPVC	Retained
P-302	J-211	J-175	51.5	110	PVC	110	uPVC	Retained
P-303	J-174	J-212	273	160	PVC	160	uPVC	Retained
P-304	J-212	J-213	54	160	PVC	160	uPVC	Retained
P-305	J-213	J-211	220.5	110	PVC	110	uPVC	Retained
P-306	J-210	J-214	44.5	110	PVC	125	HDPE	Replacement
P-307	J-214	J-215	174	110	PVC	110	uPVC	Retained
P-308	J-215	J-213	53.5	160	PVC	160	uPVC	Retained
P-309	J-214	J-216	42.5	110	PVC	110	uPVC	Retained
P-31	J-26	J-27	57	110	PVC	110	uPVC	Retained
P-310	J-216	J-217	92	110	PVC	110	uPVC	Retained
P-311	J-217	J-209	45.5	110	PVC	140	HDPE	Replacement
P-312	J-217	J-218	45	110	PVC	110	uPVC	Retained
P-313	J-218	J-219	92	110	PVC	110	uPVC	Retained
P-314	J-219	J-216	46	110	PVC	110	uPVC	Retained
P-315	J-219	J-220	71.5	160	PVC	160	uPVC	Retained
P-316	J-220	J-221	39	160	PVC	160	uPVC	Retained
P-317	J-221	J-222	17.5	160	PVC	160	uPVC	Retained
P-318	J-222	J-215	43	160	PVC	160	uPVC	Retained
P-319	J-218	J-223	30	110	PVC	110	uPVC	Retained
P-32	J-27	J-23	57.5	110	PVC	110	uPVC	Retained
P-320	J-223	J-207	41	110	PVC	110	uPVC	Retained
P-321	J-223	J-224	41	110	PVC	110	uPVC	Retained
P-322	J-224	J-220	89	110	PVC	110	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-323	J-224	J-205	90.5	110	PVC	110	uPVC	Retained
P-324	J-204	J-221	180.5	110	PVC	110	uPVC	Retained
P-325	J-203	J-225	57.5	200	PVC	200	uPVC	Retained
P-326	J-225	J-226	64	200	PVC	200	uPVC	Retained
P-327	J-226	J-222	58.5	160	PVC	160	uPVC	Retained
P-328	J-198	J-227	56	110	PVC	140	HDPE	Replacement
P-329	J-227	J-228	43.5	110	PVC	125	HDPE	Replacement
P-33	J-27	J-28	112.5	110	PVC	110	uPVC	Retained
P-331	J-229	J-230	45.5	110	PVC	110	uPVC	Retained
P-332	J-230	J-227	116	110	PVC	110	uPVC	Retained
P-333	J-230	J-231	52	110	PVC	110	uPVC	Retained
P-334	J-231	J-225	52.5	160	PVC	160	uPVC	Retained
P-335	J-226	J-232	51.5	160	PVC	160	uPVC	Retained
P-336	J-232	J-233	44.5	160	PVC	160	uPVC	Retained
P-337	J-233	J-234	141	160	PVC	160	uPVC	Retained
P-338	J-234	J-235	64.5	110	PVC	110	uPVC	Retained
P-339	J-235	J-231	186.5	160	PVC	160	uPVC	Retained
P-34	J-26	J-29	111	110	PVC	110	uPVC	Retained
P-340	J-232	J-236	109	160	PVC	160	uPVC	Retained
P-341	J-236	J-237	46	110	PVC	110	uPVC	Retained
P-342	J-237	J-238	53	160	PVC	160	uPVC	Retained
P-343	J-238	J-212	55.5	160	PVC	180	HDPE	Replacement
P-344	J-238	J-239	247	160	PVC	160	uPVC	Retained
P-345	J-239	J-240	50.5	110	PVC	110	uPVC	Retained
P-346	J-240	J-241	106.5	110	PVC	125	HDPE	Replacement
P-347	J-241	J-242	120	110	PVC	125	HDPE	Replacement
P-348	J-242	J-243	12	110	PVC	140	HDPE	Replacement
P-349	J-243	J-244	148	110	PVC	110	uPVC	Retained
P-35	J-22	J-30	150	110	PVC	110	uPVC	Retained
P-350	J-244	J-245	71.5	110	PVC	110	uPVC	Retained
P-351	J-245	J-240	25.5	160	PVC	160	uPVC	Retained
P-352	J-234	J-246	45.5	110	PVC	110	uPVC	Retained
P-353	J-246	J-247	109.5	110	PVC	110	uPVC	Retained
P-354	J-247	J-245	46	110	PVC	125	HDPE	Replacement
P-355	J-246	J-248	45.5	110	PVC	110	uPVC	Retained
P-356	J-248	J-249	95.5	110	PVC	110	uPVC	Retained
P-357	J-249	J-233	44.5	160	PVC	160	uPVC	Retained
P-358	J-249	J-250	63	160	PVC	160	uPVC	Retained
P-359	J-250	J-236	41.5	110	PVC	110	uPVC	Retained
P-36	J-30	J-24	11.5	315	PVC	315	uPVC	Retained
P-360	J-250	J-251	96.5	110	PVC	110	uPVC	Retained
P-361	J-251	J-248	61.5	110	PVC	110	uPVC	Retained
P-362	J-237	J-252	135	110	PVC	110	uPVC	Retained
P-363	J-252	J-247	44	110	PVC	110	uPVC	Retained
P-364	J-252	J-251	44.5	110	PVC	110	uPVC	Retained
P-365	J-229	J-253	55	110	PVC	110	uPVC	Retained
P-366	J-253	J-254	43	110	PVC	110	uPVC	Retained
P-367	J-254	J-255	41.5	110	PVC	110	uPVC	Retained
P-368	J-255	J-256	58	110	PVC	110	uPVC	Retained
P-369	J-256	J-242	49.5	110	PVC	110	uPVC	Retained
P-37	J-30	J-31	52	250	PVC	250	uPVC	Retained
P-370	J-235	J-243	45	160	PVC	160	uPVC	Retained
P-371	J-228	J-257	97.5	160	PVC	160	uPVC	Retained
P-372	J-257	J-258	42	110	PVC	110	uPVC	Retained
P-373	J-258	J-254	75.5	110	PVC	110	uPVC	Retained
P-374	J-228	J-259	39	110	PVC	110	uPVC	Retained
P-375	J-259	J-229	76.5	110	PVC	110	uPVC	Retained
P-376	J-259	J-260	54	160	PVC	160	uPVC	Retained
P-377	J-260	J-253	76	110	PVC	110	uPVC	Retained
P-378	J-260	J-258	42.5	160	PVC	160	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-379	J-257	J-261	44.5	160	PVC	160	uPVC	Retained
P-38	J-31	J-32	57.5	250	PVC	250	uPVC	Retained
P-380	J-261	J-255	117	110	PVC	110	uPVC	Retained
P-381	J-261	J-262	46	110	PVC	110	uPVC	Retained
P-382	J-262	J-200	242.5	110	PVC	110	uPVC	Retained
P-383	J-262	J-263	56.5	110	PVC	110	uPVC	Retained
P-384	J-263	J-264	123	110	PVC	110	uPVC	Retained
P-385	J-264	J-256	44.5	110	PVC	125	HDPE	Replacement
P-386	J-264	J-265	99.5	110	PVC	140	HDPE	Replacement
P-387	J-265	J-266	122	160	PVC	160	uPVC	Retained
P-388	J-266	J-267	93	110	PVC	110	uPVC	Retained
P-389	J-267	J-241	97	160	PVC	160	uPVC	Retained
P-39	J-32	J-20	141	110	PVC	110	uPVC	Retained
P-390	J-265	J-268	127	110	PVC	110	uPVC	Retained
P-391	J-268	J-269	190	110	PVC	110	uPVC	Retained
P-392	J-269	J-270	128	110	PVC	110	uPVC	Retained
P-393	J-270	J-271	95.5	110	PVC	110	uPVC	Retained
P-394	J-271	J-265	92	110	PVC	110	uPVC	Retained
P-395	J-266	J-272	95	160	PVC	160	uPVC	Retained
P-396	J-272	J-271	121	110	PVC	110	uPVC	Retained
P-397	J-272	J-273	91.5	110	PVC	110	uPVC	Retained
P-398	J-273	J-270	120	110	PVC	110	uPVC	Retained
P-399	J-270	J-274	321.5	110	PVC	110	uPVC	Retained
P-4	J-3	J-4	63.5	110	PVC	250	HDPE	Replacement
P-40	J-21	J-31	148.5	110	PVC	110	uPVC	Retained
P-400	J-274	J-275	121	110	PVC	110	uPVC	Retained
P-401	J-275	J-273	319.5	110	PVC	110	uPVC	Retained
P-402	J-267	J-276	504	160	PVC	160	uPVC	Retained
P-403	J-276	J-275	94	110	PVC	110	uPVC	Retained
P-404	J-274	J-277	195	110	PVC	110	uPVC	Retained
P-405	J-277	J-278	108	110	PVC	110	uPVC	Retained
P-406	J-278	J-279	111.5	110	PVC	110	uPVC	Retained
P-407	J-279	J-276	202.5	110	PVC	110	uPVC	Retained
P-408	J-278	J-280	16	110	PVC	110	uPVC	Retained
P-409	J-280	J-281	111	110	PVC	110	uPVC	Retained
P-41	J-32	J-33	48	250	PVC	250	uPVC	Retained
P-410	J-281	J-277	13	110	PVC	110	uPVC	Retained
P-411	J-281	J-282	69	110	PVC	110	uPVC	Retained
P-412	J-282	J-283	44	160	PVC	160	uPVC	Retained
P-413	J-283	J-284	68.5	160	PVC	160	uPVC	Retained
P-414	J-284	J-280	64	110	PVC	110	uPVC	Retained
P-415	J-280	J-285	285	110	PVC	110	uPVC	Retained
P-416	J-285	J-286	482	160	PVC	160	uPVC	Retained
P-417	J-286	J-239	391.5	160	PVC	160	uPVC	Retained
P-418	J-285	J-287	71.5	110	PVC	125	HDPE	Replacement
P-419	J-287	J-288	279	110	PVC	110	uPVC	Retained
P-42	J-33	J-34	51.5	110	PVC	110	uPVC	Retained
P-420	J-288	J-289	67	110	PVC	110	uPVC	Retained
P-421	J-289	J-290	68.5	110	PVC	110	uPVC	Retained
P-422	J-290	J-291	59.5	110	PVC	110	uPVC	Retained
P-423	J-291	J-292	183	110	PVC	110	uPVC	Retained
P-424	J-292	J-287	70.5	110	PVC	110	uPVC	Retained
P-425	J-292	J-293	58.5	110	PVC	110	uPVC	Retained
P-426	J-293	J-294	98	110	PVC	110	uPVC	Retained
P-427	J-294	J-284	59	160	PVC	160	uPVC	Retained
P-428	J-284	J-295	137.5	110	PVC	110	uPVC	Retained
P-429	J-295	J-296	63.5	110	PVC	110	uPVC	Retained
P-43	J-34	J-19	87	110	PVC	110	uPVC	Retained
P-430	J-296	J-297	60.5	110	PVC	110	uPVC	Retained
P-431	J-297	J-294	67	110	PVC	110	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-432	J-297	J-298	98.5	110	PVC	110	uPVC	Retained
P-433	J-298	J-293	66.5	110	PVC	110	uPVC	Retained
P-434	J-298	J-299	59.5	110	PVC	110	uPVC	Retained
P-435	J-299	J-296	95	110	PVC	110	uPVC	Retained
P-436	J-299	J-300	77	110	PVC	110	uPVC	Retained
P-437	J-300	J-291	63	110	PVC	110	uPVC	Retained
P-438	J-300	J-301	87	110	PVC	110	uPVC	Retained
P-439	J-301	J-302	59.5	110	PVC	110	uPVC	Retained
P-44	J-17	J-35	54	110	PVC	110	uPVC	Retained
P-440	J-302	J-290	138.5	110	PVC	110	uPVC	Retained
P-441	J-302	J-303	65.5	110	PVC	110	uPVC	Retained
P-442	J-303	J-289	127	110	PVC	110	uPVC	Retained
P-443	J-295	J-304	52.5	110	PVC	110	uPVC	Retained
P-444	J-304	J-305	76.5	160	PVC	160	uPVC	Retained
P-445	J-305	J-301	62	110	PVC	110	uPVC	Retained
P-446	J-305	J-306	126.5	160	PVC	160	uPVC	Retained
P-447	J-306	J-303	52	110	PVC	110	uPVC	Retained
P-448	J-282	J-307	41	110	PVC	110	uPVC	Retained
P-449	J-307	J-308	71.5	110	PVC	110	uPVC	Retained
P-45	J-35	J-36	39.5	250	PVC	250	uPVC	Retained
P-450	J-308	J-309	83	110	PVC	110	uPVC	Retained
P-451	J-309	J-283	68	110	PVC	110	uPVC	Retained
P-452	J-309	J-310	87	110	PVC	110	uPVC	Retained
P-453	J-310	J-311	73.5	110	PVC	110	uPVC	Retained
P-454	J-311	J-308	105	110	PVC	110	uPVC	Retained
P-455	J-311	J-312	61.5	110	PVC	110	uPVC	Retained
P-456	J-312	J-313	61			110	HDPE	Replacement
P-457	J-313	J-310	55.5	110	PVC	110	uPVC	Retained
P-458	J-304	J-313	66.5	110	PVC	110	uPVC	Retained
P-459	J-312	J-314	203.5	110	PVC	110	uPVC	Retained
P-46	J-36	J-37	98	250	PVC	250	uPVC	Retained
P-460	J-314	J-306	62.5	110	PVC	110	uPVC	Retained
P-47	J-38	J-39	49.5	110	PVC	110	uPVC	Retained
P-48	J-39	J-36	43.5	110	PVC	110	uPVC	Retained
P-49	J-39	J-40	85.5	110	PVC	110	uPVC	Retained
P-5	J-4	J-5	150	110	PVC	160	HDPE	Replacement
P-50	J-40	J-41	57.5	250	PVC	250	uPVC	Retained
P-51	J-41	J-35	30	250	PVC	250	uPVC	Retained
P-52	J-41	J-42	54	110	PVC	110	uPVC	Retained
P-53	J-42	J-34	46	110	PVC	110	uPVC	Retained
P-54	J-18	J-42	87.5	110	PVC	110	uPVC	Retained
P-55	J-40	J-43	55	250	PVC	250	uPVC	Retained
P-56	J-43	J-33	46	250	PVC	250	uPVC	Retained
P-57	J-11	J-44	98	110	PVC	110	uPVC	Retained
P-58	J-44	J-45	65.5	110	PVC	110	uPVC	Retained
P-59	J-46	J-47	68	110	PVC	110	uPVC	Retained
P-6	J-5	J-6	114	110	PVC	125	HDPE	Replacement
P-60	J-47	J-44	60.5	110	PVC	110	uPVC	Retained
P-61	J-44	J-48	218.5	110	PVC	110	uPVC	Retained
P-62	J-48	J-49	55.5	110	PVC	110	uPVC	Retained
P-63	J-49	J-10	97.5	110	PVC	110	uPVC	Retained
P-64	J-6	J-49	57.5	110	PVC	110	uPVC	Retained
P-65	J-49	J-50	113.5	110	PVC	110	uPVC	Retained
P-66	J-50	J-5	58	315	PVC	315	uPVC	Retained
P-67	J-48	J-51	55.5	110	PVC	110	uPVC	Retained
P-68	J-51	J-52	56.5	110	PVC	110	uPVC	Retained
P-69	J-52	J-50	55.5	315	PVC	315	uPVC	Retained
P-7	J-6	J-7	63.5	110	PVC	160	HDPE	Replacement
P-70	J-51	J-47	214	110	PVC	110	uPVC	Retained
P-71	J-47	J-53	53	110	PVC	110	uPVC	Retained

BOQ for Z18								
				Existing		Proposal to meet 2041 requirements		
Label	From Node	To Node	Length (m)	Diameter (mm)	Material	Diameter (mm)	Material	Status
P-72	J-53	J-25	178	315	PVC	315	uPVC	Retained
P-73	J-53	J-52	217.5	315	PVC	315	uPVC	Retained
P-74	J-54	J-55	9	200	PVC	200	uPVC	Retained
P-75	J-55	J-56	20	200	PVC	200	uPVC	Retained
P-76	J-56	J-57	21	200	PVC	200	uPVC	Retained
P-77	J-57	J-58	28.5	110	PVC	110	uPVC	Retained
P-78	J-58	J-59	23.5	110	PVC	110	uPVC	Retained
P-79	J-59	J-54	45	110	PVC	110	uPVC	Retained
P-8	J-7	J-3	260.5	110	PVC	110	uPVC	Retained
P-80	J-59	J-60	84	110	PVC	110	uPVC	Retained
P-81	J-60	J-61	64.5	110	PVC	110	uPVC	Retained
P-82	J-61	J-62	23	110	PVC	110	uPVC	Retained
P-83	J-62	J-60	52.5	110	PVC	110	uPVC	Retained
P-85	J-58	J-63	18.5	110	PVC	110	uPVC	Retained
P-86	J-63	J-64	21	110	PVC	110	uPVC	Retained
P-87	J-64	J-65	20.5	110	PVC	110	uPVC	Retained
P-88	J-60	J-66	19.5	110	PVC	110	uPVC	Retained
P-89	J-66	J-58	42	110	PVC	110	uPVC	Retained
P-9	J-1	J-8	183.5	110	PVC	180	HDPE	Replacement
P-90	J-65	J-66	21	110	PVC	110	uPVC	Retained
P-91	J-62	J-67	20.5	110	PVC	110	uPVC	Retained
P-92	J-67	J-65	40	110	PVC	110	uPVC	Retained
P-93	J-67	J-68	23.5	110	PVC	110	uPVC	Retained
P-94	J-68	J-69	23	110	PVC	110	uPVC	Retained
P-95	J-69	J-63	60.5	110	PVC	110	uPVC	Retained
P-96	J-68	J-64	50	110	PVC	110	uPVC	Retained
P-97	J-69	J-70	33	110	PVC	110	uPVC	Retained
P-98	J-70	J-71	64.5	200	PVC	200	uPVC	Retained
P-99	J-71	J-57	26	200	PVC	200	uPVC	Retained
PP-461	T-1	PJ-315	62.5	#N/A	#N/A	280	HDPE	New
PP-463	PJ-316	PJ-317	377	#N/A	#N/A	140	HDPE	New
PP-464	PJ-317	PJ-318	250.5	#N/A	#N/A	140	HDPE	New
PP-465	PJ-318	PJ-319	91.5	#N/A	#N/A	140	HDPE	New
PP-466	PJ-319	J-168	154.5	#N/A	#N/A	140	HDPE	New
PP-467	J-81	PJ-320	73	#N/A	#N/A	110	HDPE	New
PP-468	J-54	J-43	128.5	#N/A	#N/A	125	HDPE	New
PP-469	PJ-315	PJ-321	78	#N/A	#N/A	315	HDPE	New
PP-470	PJ-321	PJ-316	167.5	#N/A	#N/A	140	HDPE	New
PP-471	J-192	PJ-321	86	#N/A	#N/A	315	HDPE	New
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