

Water and Sewer Study Technical Annex



MAY 2002



MP 4882A



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Table of Contents

1. Inventory of Watermains and Recirculation Lines
2. Inventory of Sewers and Forcemains
3. Water Pressures under Peak Hour Demand
4. Available Fire Flows under Maximum Day Demand
5. Sewer Capacity Calculations using City's Design Standard of 400 L/c/d
6. Sewer Capacity Calculations using Historical Consumption Rate of 277 L/c/d
7. Sewage Pumping Station Curves
8. Heat Loss Calculations
 - 8a. Heat Loss at Ambient Temperature = -10°C , $K = 0.016 \text{ W/m. }^{\circ}\text{C}$
 - 8b. Heat Loss at Ambient Temperature = -10°C , $K = 0.024 \text{ W/m. }^{\circ}\text{C}$
 - 8c. Heat Loss at Ambient Temperature = -10°C , $K = 0.048 \text{ W/m. }^{\circ}\text{C}$
 - 8d. Heat Loss at Ambient Temperature = -15°C , $K = 0.016 \text{ W/m. }^{\circ}\text{C}$
 - 8e. Heat Loss at Ambient Temperature = -15°C , $K = 0.024 \text{ W/m. }^{\circ}\text{C}$
 - 8f. Heat Loss at Ambient Temperature = -15°C , $K = 0.048 \text{ W/m. }^{\circ}\text{C}$



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Airport Loop	AV 215	AV 214	1985	HDPE S160	200	103.1	1985	HDPE S160	50	103.1
Airport Loop	AV 214	AV 213	1985	HDPE S160	200	113.1	1986	HDPE S160	50	113.1
Airport Loop	AV 271	AV 270	1999	HDPE S160	200	110.0	1999	HDPE S160	50	110.0
Airport Loop	AV 270	AV 213	1999	HDPE S160	200	120.0	1999	HDPE S160	50	120.0
Airport Loop	P.S. #1	PT D								
Airport Loop	PT D	PT E								
Airport Loop	PT E	PT F								
Airport Loop	PT F	PT G								
Airport Loop	PT G	PT H								
Airport Loop	PT H	PT I								
Airport Loop	PT I	AV 211								
Airport Loop	AV 305	AV 304	1989	HDPE S160	300	77.0				
Airport Loop	AV 304	AV 303	1989	HDPE S160	300	84.0				
Airport Loop	AV 303	AV 301	1989	HDPE S160	300	95.0				
Airport Loop	AV 304B	AV 303B	1989	HDPE S160	200	109.1	1989	HDPE S160	50	109.1
Airport Loop	AV 303B	AV 302	1989	HDPE S160	200	49.2	1989	HDPE S160	50	49.2
Airport Loop	AV 302	AV 301	1987	HDPE S160	200	32.0	1987	HDPE S160	50	32.0
Airport Loop	AV 301	AV 300	1987	HDPE S160	250	75.5	1987	HDPE S160	50	75.5
Airport Loop	AV 300	AV 406	1989	HDPE S160	300	192.0				
Airport Loop	AV 406	AV 200	1989	HDPE S160	200	8.0	1989	HDPE S160	50	8.0
Airport Loop	AV 300	AV 203	Out of Service				Out of Service			
Airport Loop	AV 200	AV 201	1985	HDPE S160	200	90.7	1985	HDPE S160	75	90.7
Airport Loop	AV 201	AV 202	1985	HDPE S160	200	122.9	1985	HDPE S160	75	122.9



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MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Airport Loop	AV 202	AV 203	1985	HDPE S160	200	61.0	1985	HDPE S160	75	61.0
Airport Loop	AV 203	AV 204	1985	HDPE S160	200	73.5	1985	HDPE S160	75	73.5
Airport Loop	AV 204	AV 205	1985	HDPE S160	200	74.9	1985	HDPE S160	75	74.9
Airport Loop	AV 201	AV 414	1990	HDPE S160	300	100.0				
Airport Loop	AV 414	AV 413	1990	HDPE S160	150	80.0				
Airport Loop	AV 414	AV 415		HDPE S160	200	45.0		HDPE S160	200	45.0
Airport Loop	AV 413	AV 205	1990	HDPE S160	150	84.0				
Airport Loop	AV 205	AV 206	1985	HDPE S160	200	127.7	1985	HDPE S160	75	127.7
Airport Loop	AV 206	AV 207	1985	HDPE S160	200	94.3	1985	HDPE S160	75	94.3
Airport Loop	AV 207	AV 208	1985	HDPE S160	200	91.9	1985	HDPE S160	75	91.9
Airport Loop	AV 213	AV 212	1985	HDPE S160	200	94.0	1985	HDPE S160	50	94.0
Airport Loop	AV 212	AV 208	1985	HDPE S160	200	82.4	1985	HDPE S160	50	82.4
Airport Loop	AV 208	AV 209	1985	HDPE S160	200	61.7	1985	HDPE S160	50	61.7
Airport Loop	AV 209	AV 210	1985	HDPE S160	200	76.7	1985	HDPE S160	50	76.7
Airport Loop	AV 210	AV 211								
Airport Loop	AV 256	AV 255	1989	HDPE S160	200	90.4	1988-89	HDPE S160	200	90.4
Airport Loop	AV 255	AV 215	1988-89	HDPE S160	200	54.9	1988-89	HDPE S160	50	54.9
Airport Loop	AV 255	AV 254								
Airport Loop	AV 254	AV 253								
Airport Loop	AV 253	AV 252								
Airport Loop	AV 252	AV 251								
Airport Loop	AV 251	AV 211								
Airport Loop	AV 211	AV 241								
Airport Loop	AV 241	AV 242								



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MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Airport Loop	AV 242	Truck Discharge								
Airport Loop	Truck Discharge	Lagoon								
Astro Hill	AV 305	PT A	1976	Asbestos Cement	250	58.0	1976	Copper	50	58.0
Astro Hill	PT L	PT A	1976	Asbestos Cement	250	65.0	1976	Copper	50	65.0
Astro Hill	PT A	PT B	1976	Asbestos Cement	250	210.0	1976	Copper	50	210.0
Astro Hill	PT C	PT B	1976	Asbestos Cement	250	35.0				
Astro Hill	PT B	PT D	1976	Asbestos Cement	250	61.0	1976	Copper	50	61.0
Astro Hill	PT D	MH 9								
Astro Hill	MH 9	MH 8								
Astro Hill	MH 8	MH 7								
Astro Hill	MH 7	PT A2	1975-76	Ductile Iron	150	48.0				
Astro Hill	MH 8	AV 9A	1975-76	Ductile Iron	150	87.0				
Astro Hill	PT A2	AV 400	1986	HDPE S160	150	24.6				
Astro Hill	PT H	AV 9A		Asbestos Cement	150	68.0		Copper	50	68.0
Astro Hill	MH 10	MH 16	1975-76	Ductile Iron	100	51.8				
Astro Hill	MH 16	PT J		HDPE S160	150	17.0		Out of Service		
Astro Hill	PT I	PT J		Asbestos Cement	150	16.0		Out of Service		
Astro Hill	PT H	PT I		Asbestos Cement	150	172.0		Out of Service		
Astro Hill	AV 400	PT B2								
Astro Hill	PT B2	MH 5								
Expansion Area	MH 103	TAC 2	1989	HDPE S125	300	108.0				
Expansion Area	TAC 2	TAC 3	1989	HDPE S125	300	91.0				
Expansion Area	TAC 3	TAC 4	1989	HDPE S125	300	108.0				
Expansion Area	TAC 4	AV 326	1989	HDPE S125	300	95.0				



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City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Expansion Area	AV 326	Booster Station	1989	HDPE S160	250, 300	19.8	1989	HDPE S160	200	19.8
Expansion Area	AV 326	AV 327	1989	HDPE S160	250	174.0	1989	HDPE S160	200	174.0
Expansion Area	AV 327	AV 328	1989	HDPE S160	250	83.9	1989	HDPE S160	200	83.9
Expansion Area	AV 328	AV 500	1989	HDPE S160	250	40.8	1989	HDPE S160	200	40.8
Expansion Area	AV 500	AV 329	1989	HDPE S160	250	39.7	1989	HDPE S160	200	39.7
Expansion Area	AV 329	AV 330	1989	HDPE S160	250	94.8	1989	HDPE S160	200	94.8
Expansion Area	AV 330	AV 331	1989	HDPE S160	250	105.0	1989	HDPE S160	200	105.0
Expansion Area	AV 331	AV 332	1989	HDPE S160	250	107.0	1989	HDPE S160	200	107.0
Expansion Area	AV 331	AV 333	1989	HDPE S160	250	47.0	1989	HDPE S160	200	47.0
Expansion Area	AV 333	AV 334	1989	HDPE S160	250	81.0	1989	HDPE S160	200	81.0
Expansion Area	AV 334	AV 335	1989	HDPE S160	50	98.0	Out of Service			
Expansion Area	AV 335	AV 338	1990	HDPE S160	200	67.4	Out of Service			
Expansion Area	AV 336	AV 337	1990	HDPE S160	200	95.0	1990	HDPE S160	200	95.0
Expansion Area	AV 337	AV 338	1990	HDPE S160	200	68.0	1990	HDPE S160	200	68.0
Expansion Area	AV 338	AV 339	1990	HDPE S160	200	63.1	Out of Service			
Expansion Area (2200 Shunt)	AV 339	AV 340	1997	HDPE S160	200	80.3	Out of Service			
Expansion Area (2200 Shunt)	AV 340	AV 341	1997	HDPE S160	200	72.2	Out of Service			
Expansion Area (2200 Shunt)	AV 341	AV 342	1997	HDPE S160	200	83.2	Out of Service			
Expansion Area (2200 Shunt)	AV 342	AV 343	1997	HDPE S160	200	58.0	Out of Service			
Expansion Area	AV 343	AV 351	1998	HDPE S160	200	67.3				
Expansion Area	AV 351	Middle School	2001	HDPE	200	108.0	2001	HDPE	200	108.0
Expansion Area	Middle School	French School	2001	HDPE	200	76.0	2001	HDPE	200	76.0
Expansion Area	French School	New Arena	2001	HDPE	200	73.7	2001	HDPE	200	73.7
Expansion Area	AV 351	AV 352	1998	HDPE S160	200	81.0				



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

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			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Expansion Area	AV 352	AV 353	1998	HDPE S160	200	80.5				
Expansion Area	AV 353	AV 354	1998	HDPE S160	200	59.4	1998	HDPE S160	200	59.4
Expansion Area	AV 353	AV 355	1998	HDPE S160	200	80.8				
Expansion Area	AV 341	AV 344					Out of Service			
Expansion Area	AV 344	AV 345	1997	HDPE S160	200	82.1	1997	HDPE S160	200	82.1
Expansion Area	AV 345	AV 355	1998	HDPE S160	200	98.7				
Expansion Area	AV 345	AV 346	1997	HDPE S160	200	64.1				
Expansion Area	AV 346	AV 347	1997	HDPE S160	200	88.2	1997	HDPE S160	200	88.2
Expansion Area	AV 346	AV 348	1997	HDPE S160	200	94.1				
Expansion Area	AV 348	AV 349	1997	HDPE S160	200	77.1				
Expansion Area	AV 349	AV 350	1997	HDPE S160	200	74.9				
Expansion Area	AV 350	AV 334	1997	HDPE S160	200	60.1				
Federal Building Loop	AV 3	AV 2	1984-85	HDPE S160	200	101.0				
Federal Building Loop	AV 2	AV 1	1984-85	HDPE S160	200	102.0				
Federal Building Loop	AV 1	PT E		HDPE S160	200	90.0				
Federal Building Loop	PT E	AV 262						Copper	50	22.8
Federal Building Loop	PT E	AV 262						HDPE S160	75	234.0
Federal Building Loop	AV 5	AV 4	1984-85	HDPE S160	200	107.0				
Federal Building Loop	PT D3	PT C3	1984-85	HDPE S160	150	30.0				
Federal Building Loop	PT C3	PT B3	1984-85	HDPE S160	150	5.0				
Federal Building Loop	PT B3	AV 4	1984-85	HDPE S160	150	87.0				
Federal Building Loop	AV 4	AV 3	1984-85	HDPE S160	200	120.0				
Federal Building Loop	AV 3	AV 264	1993	HDPE S160	200	119.6	1993	HDPE S160	75	119.6



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Federal Building Loop	AV 264	AV 263	1993	HDPE S160	200	102.6	1993	HDPE S160	75	102.6
Federal Building Loop	AV 263	AV 262	1993	HDPE S160	200	69.0	1993	HDPE S160	75	69.0
Federal Building Loop	AV 262	AV 261	1993	HDPE S160	200	25.2	1993	HDPE S160	75	25.2
Federal Building Loop	AV 261	AV 260	1993	HDPE S160	200	85.8	1993	HDPE S160	75	85.8
Federal Building Loop	AV 260	AV 259	1993	HDPE S160	200	71.4	1993	HDPE S160	75	71.4
Federal Building Loop	AV 259	AV 258	1993	HDPE S160	200	93.5	1993	HDPE S160	75	93.5
Federal Building Loop	AV 258	AV 257	1993	HDPE S160	200	96.9	1993	HDPE S160	75	96.9
Federal Building Loop	AV 257	AV 256	1993	HDPE S160	200	111.0	1993	HDPE S160	75	111.0
Happy Valley	AV 327	MH 100								
Happy Valley	MH 100	MH 99	1979	HDPE S160	200	92.0				
Happy Valley	MH 99	MH 98	1979	HDPE S160	200	61.0				
Happy Valley	MH 98	MH 97	1979	HDPE S160	200	51.0				
Happy Valley	MH 97	MH 96	1979	HDPE S160	200	29.0				
Happy Valley	AV 238	AV 237	1986	HDPE S160	200	90.2				
Happy Valley	AV 237	AV 217	1986	HDPE S160	200	37.2				
Happy Valley	AV 217	AV 216	1986	HDPE S160	200	44.9				
Happy Valley	AV 216	MH 96	1986	HDPE S160	200	64.9				
Happy Valley	MH 96	MH 93								
Happy Valley	MH 93	MH 92	1979	HDPE S160	150	81.0				
Happy Valley	MH 92	MH 91	1979	HDPE S160	150	20.0				
Happy Valley	AV 234	AV 233	1986	HDPE S160	200	98.0	Out of Service			
Happy Valley	AV 233	AV 232	1986	HDPE S160	200	56.0	Out of Service			
Happy Valley	AV 232	AV 231	1986	HDPE S160	200	98.6				

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Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Happy Valley	MH 71	MH 70	1979	HDPE S160	200	105.6				
Happy Valley	MH 70	MH 69	1979	HDPE S160	200	78.5				
Happy Valley	MH 69	MH 68	1979	HDPE S160	200	96.0	1979	HDPE S160	50	96.0
Happy Valley	MH 68	MH 77								
Happy Valley	MH 77	MH 78								
Happy Valley	MH 78	MH 79								
Happy Valley	MH 79	MH 80								
Happy Valley	MH 76	MH 90	1979	HDPE S160	200	34.0				
Happy Valley	MH 90	MH 75	1979	HDPE S160	200	48.5				
Happy Valley	MH 73	MH 74	1979	HDPE S160	200	97.5				
Happy Valley	MH 74	MH 75	1979	HDPE S160	200	98.9				
Happy Valley	MH 75	MH 94								
Happy Valley	MH 94	MH 80								
Happy Valley	MH 73	MH 85	1979	HDPE S160	150	55.2				
Happy Valley	MH 85	MH 86	1979	HDPE S160	150	58.5				
Happy Valley	MH 86	MH 87	1979	HDPE S160	150	50.0				
Happy Valley	MH 87	MH 88	1979	HDPE S160	150	42.8				
Happy Valley	MH 88	MH 80								
Happy Valley	MH 80	MH 81								
Happy Valley	MH 81	MH 82								
Happy Valley	MH 82	MH 83								
Happy Valley	MH 83	MH 84	Out of Service							
Happy Valley	MH 84	MH 9								



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MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Happy Valley	MH 84	AV 9A	Out of Service							
Lower Base	AV 404	AV 412	1999	HDPE S160	200	64.5				
Lower Base	AV 412	AV 411	1999	HDPE S160	200	55.0				
Lower Base	AV 435	AV 411	1999	HDPE S160	200	102.0	1999	HDPE S160	200	102.0
Lower Base	AV 411	AV 410	1999	HDPE S160	200	70.5				
Lower Base	AV 410	AV 409	1999	HDPE S160	200	103.3	1999	HDPE S160	200	103.3
Lower Base	AV 207	AV 407	1999	HDPE S160	200	122.2				
Lower Base	AV 407	AV 408	1999	HDPE S160	200	62.8				
Lower Base	AV 408	AV 409	1999	HDPE S160	200	124.5				
Lower Base	AV 409	MH 1								
Lower Base	AV 402	AV 403	Out of Service				Out of Service			
Lower Base	AV 205	AV 405	1990	HDPE S160	200	104.6				
Lower Base	AV 405	AV 404	1990	HDPE S160	200	108.6				
Lower Base	AV 404	AV 402	1990	HDPE S160	200	121.1				
Lower Base	AV 402	AV 403	1990	HDPE S160	200	58.6				
Lower Base	AV 403	MH 3								
Lower Base	AV 402	AV 401	1989	HDPE S160	200	128.6				
Lower Base	AV 401	AV 400	1989	HDPE S160	200	112.1				
Lower Iqaluit	MH 29	MH 28								
Lower Iqaluit	MH 28	MH 12								
Lower Iqaluit	PT A1	MH 42A	1977-78	HDPE S160	200	38.0				
Lower Iqaluit	MH 42A	MH 42	1977-78	HDPE S160	200	42.0				
Lower Iqaluit	MH 42	MH 43	1978	HDPE S160	150	112.8				
Lower Iqaluit	MH 45	MH 43	1978	HDPE S160	150	50.4				

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Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Lower Iqaluit	MH 43	MH 44								
Lower Iqaluit	MH 44	MH 40								
Lower Iqaluit	MH 41	MH 40	1978	HDPE S160	150	95.7				
Lower Iqaluit	MH 41	MH 42	1978	HDPE S160	150	27.7				
Lower Iqaluit	AV 40A	MH 40	1990	HDPE S160	150	110.0				
Lower Iqaluit	MH 40	MH 24A	1978	HDPE S160	150	68.9				
Lower Iqaluit	MH 27	MH 8	1977	Ductile Iron	150	31.1				
Lower Iqaluit	MH 27	MH 26	1977	Ductile Iron	150	40.2				
Lower Iqaluit	MH 26	MH 25	1977	Ductile Iron	150	160.0				
Lower Iqaluit	MH 25	MH 24								
Lower Iqaluit	PT E1	AV 25A	1989	HDPE S80	150	6.0				
Lower Iqaluit	AV 25A	PT F1	1989	HDPE S80	150	6.0				
Lower Iqaluit	PT F1	MH 24	1977	Ductile Iron	150	67.0				
Lower Iqaluit	MH 24	MH 24A	1977	Ductile Iron	150	16.0				
Lower Iqaluit	MH 24A	MH 33	Out of Service							
Lower Iqaluit	MH 45	MH 46	1978	HDPE S160	150	51.1				
Lower Iqaluit	MH 58	MH 46B	1979	HDPE S160	150	41.0				
Lower Iqaluit	MH 46B	MH 46A	1977	HDPE S160	150	75.0				
Lower Iqaluit	MH 46A	MH 46	1977	HDPE S160	150	39.8				
Lower Iqaluit	MH 46	MH 47	1978	HDPE S160	150	56.6				
Lower Iqaluit	MH 47	MH 48	1978	HDPE S160	150	44.2				
Lower Iqaluit	MH 48	MH 59	1978-79	HDPE S160	150	49.0				
Lower Iqaluit	MH 48	MH 39								
Lower Iqaluit	MH 39	MH 38	1978	HDPE S160	150	56.0				

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Area	From	To	WATERMAIN				RECIRCULATION LINE			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Lower Iqaluit	MH 38	MH 37	1978	HDPE S160	150	50.0				
Lower Iqaluit	MH 37	MH 36	1978	HDPE S160	150	78.2				
Lower Iqaluit	MH 36	MH 35	1978	HDPE S160	150	56.1				
Lower Iqaluit	MH 35	MH 33	1978	HDPE S160	150	24.4				
Lower Iqaluit	MH 33	MH 23	1977	Ductile Iron	150	47.5				
Lower Iqaluit	MH 58	MH 60	1979	HDPE S160	150	95.5				
Lower Iqaluit	MH 59	MH 60	1979	HDPE S160	150	44.3				
Lower Iqaluit	MH 60	MH 61	1979	HDPE S160	150	97.9				
Lower Iqaluit	MH 61	MH 62	1979	HDPE S160	150	56.0				
Lower Iqaluit	MH 62	MH 63	1979	HDPE S160	150	60.0				
Lower Iqaluit	MH 66	MH 65	1979	HDPE S160	150	47.9				
Lower Iqaluit	MH 65	MH 63	1979	HDPE S160	150	72.0				
Lower Iqaluit	MH 63	MH 63A								
Lower Iqaluit	MH 63	MH 32B	1978-79	HDPE S160	150	154.0				
Lower Iqaluit	MH 63A	MH 63B								
Lower Iqaluit	MH 63B	MH 32B								
Lower Iqaluit	MH 32B	MH 32A	1978-79	HDPE S160	150	94.0				
Lower Iqaluit	MH 32A	MH 32	1978-79	HDPE S160	150	56.0				
Lower Iqaluit	MH 32	MH 31	1977	Ductile Iron	150	65.8				
Lower Iqaluit	MH 31	MH 30	1977	Ductile Iron	150	45.9				
Lower Iqaluit	MH 30	MH 23	1977	Ductile Iron	150	9.0				
Lower Iqaluit	MH 23	P.S.#2								
Lower Iqaluit	MH 22	MH 21	1977	Ductile Iron	150	63.4				
Lower Iqaluit	MH 21	MH 20	1977	Ductile Iron	150	75.9				

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City of Iqaluit - Water and Sewer Study

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			WATERMAIN				RECIRCULATION LINE			
Area	From	To	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Reservoir Mains	MH 306	AV 305	1995	HDPE S160	2-300	45.0	1995	HDPE S160	50	45.0
Road to Nowhere Subdivision	AV 509	AV 508	1999	HDPE S160	200	119.9				
Road to Nowhere Subdivision	AV 508	AV 507	1999	HDPE S160	200	116.8				
Road to Nowhere Subdivision	AV 507	AV 506	1999	HDPE S160	200	123.7				
Road to Nowhere Subdivision	AV 506	AV 505	1999	HDPE S160	200	95.5				
Road to Nowhere Subdivision	AV 505	AV 504	1999	HDPE S160	200	61.7				
Road to Nowhere Subdivision	AV 504	AV 503	1999	HDPE S160	200	117.0				
Road to Nowhere Subdivision	AV 503	AV 502	1999	HDPE S160	250	96.8	1999	HDPE S160	250	96.8
Road to Nowhere Subdivision	AV 509	AV 510	1999	HDPE S160	200	68.4				
Road to Nowhere Subdivision	AV 510	AV 511	1999	HDPE S160	200	109.7				
Road to Nowhere Subdivision	AV 511	AV 512	1999	HDPE S160	200	111.8				
Road to Nowhere Subdivision	AV 512	AV 513	1999	HDPE S160	200	96.4				
Road to Nowhere Subdivision	AV 513	AV 514	1999	HDPE S160	200	90.6				
Road to Nowhere Subdivision	AV 505	AV 514	1999	HDPE S160	200	55.3				
Road to Nowhere Subdivision	AV 514	AV 515								
Road to Nowhere Subdivision	AV 504	AV 515	1999	HDPE S160	200	76.9	1999	HDPE S160	200	76.9
Road to Nowhere Subdivision	AV 515	AV 502								
Road to Nowhere Subdivision	AV 502	AV 501	1999	HDPE S160	250	297.5	1999	HDPE S160	250	297.5
Road to Nowhere Subdivision	AV 501	AV 500	1999	HDPE S160	250	80.0	1999	HDPE S160	250	80.0
Uivvaq Loop	PT E2	PT F2								
Uivvaq Loop	PT G1	PT G2								
Uivvaq Loop	PT G2	PT F2								
Uivvaq Loop	PT H2	PT F2								
Uivvaq Loop	PT F2	MH 102								



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 1 - Inventory of Watermains and Recirculation Lines

			WATERMAIN				RECIRCULATION LINE			
Area	From	To	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Uivvaq Loop	MH 101	MH 102	Out of Service							
Uivvaq Loop	MH 102	PT I2								
Uivvaq Loop	PT I2	PT J2								
Uivvaq Loop	PT J2	PT K								
Uivvaq Loop	PT L	PT K								
Uivvaq Loop	PT K	AV 402								
Uivvaq Loop	MH 55	MH 54	1979	HDPE	150	109.3				
Uivvaq Loop	MH 54	MH 53	1978	HDPE	150	104.4				
Uivvaq Loop	MH 53	MH 52	1978	HDPE	150	107.9				
Uivvaq Loop	MH 52	MH 51	1978	HDPE	150	30.1				
Uivvaq Loop	MH 51	MH 50	1978	HDPE	150	72.7				
Uivvaq Loop	MH 50	MH 49								
Uivvaq Loop	MH 49	MH 11	1975-76	Ductile Iron	100	93.0				
Uivvaq Loop	MH 49	MH 10	1975-76	Ductile Iron	100	20.0				
Uivvaq Loop	MH 11	MH 8	Out of Service							
Uivvaq Loop	MH 10	MH 7	Out of Service							



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Airport Loop	AV 215	AV 214								
Airport Loop	AV 214	AV 213								
Airport Loop	AV 271	AV 270	1999	HDPE S160	200	110.0				
Airport Loop	AV 270	AV 213	1999	HDPE S160	200	120.0				
Airport Loop	P.S. #1	PT D					1978	HDPE S80	200	245.0
Airport Loop	PT D	PT E					1978	HDPE S80	200	161.0
Airport Loop	PT E	PT F					1978	HDPE S80	200	76.0
Airport Loop	PT F	PT G					1978	HDPE S80	200	61.0
Airport Loop	PT G	PT H					1978	HDPE S80	200	6.0
Airport Loop	PT H	PT I					1978	HDPE S80	200	46.0
Airport Loop	PT I	AV 211					1986-87	HDPE S80	200	19.0
Airport Loop	AV 305	AV 304	1989	HDPE S80	250	89.0				
Airport Loop	AV 304	AV 303	1989	HDPE S80	250	81.2				
Airport Loop	AV 303	AV 301	1989	HDPE S80	250	92.0				
Airport Loop	AV 304B	AV 303B	1989	HDPE S60	150	109.1				
Airport Loop	AV 303B	AV 302	1989	HDPE S60	150	49.2				
Airport Loop	AV 302	AV 301	1987	HDPE S60	200	32.0				
Airport Loop	AV 301	AV 300	1987	HDPE S80	200	75.5				
Airport Loop	AV 300	AV 406								
Airport Loop	AV 406	AV 200								
Airport Loop	AV 300	AV 203	1987	HDPE S60	200	49.5				
			1989	HDPE S80	200	39.5				
Airport Loop	AV 200	AV 201	1989	HDPE S80	200	88.0				
Airport Loop	AV 201	AV 202	1985	HDPE S60	200	122.9				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Airport Loop	AV 202	AV 203	1985	HDPE S60	200	61.0				
Airport Loop	AV 203	AV 204	1985	HDPE S60	200	73.5				
Airport Loop	AV 204	AV 205	1985	HDPE S60	200	74.9				
Airport Loop	AV 201	AV 414	1990	HDPE S100	200	100.0				
Airport Loop	AV 414	AV 413	1990	HDPE S100	200	78.0				
Airport Loop	AV 414	AV 415				45.0				
Airport Loop	AV 413	AV 205	1990	HDPE S100	200	81.1				
Airport Loop	AV 205	AV 206	1985	HDPE S60	200	127.7				
Airport Loop	AV 206	AV 207	1989	HDPE S80	250	92.0				
Airport Loop	AV 207	AV 208	+/-1995	HDPE S100	350	91.9				
Airport Loop	AV 213	AV 212	1985	HDPE S60	200	94.0				
Airport Loop	AV 212	AV 208	1985	HDPE S60	200	82.4				
Airport Loop	AV 208	AV 209	1985	HDPE S60	250	61.7				
Airport Loop	AV 209	AV 210	1985	HDPE S60	250	76.7				
Airport Loop	AV 210	AV 211	1985	HDPE S60	250	97.1				
Airport Loop	AV 256	AV 255	1989	HDPE S60	250	90.4				
Airport Loop	AV 255	AV 215								
Airport Loop	AV 255	AV 254	1989	HDPE S60	250	57.6				
Airport Loop	AV 254	AV 253	1989	HDPE S60	250	94.3				
Airport Loop	AV 253	AV 252	1989	HDPE S60	250	111.7				
Airport Loop	AV 252	AV 251	1989	HDPE S60	250	81.9				
Airport Loop	AV 251	AV 211	1989	HDPE S60	250	63.3				
Airport Loop	AV 211	AV 241	1987	HDPE S60	300	46.0				
Airport Loop	AV 241	AV 242	1987	HDPE S60	300	110.0				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Forcemains

			SEWER				FORCEMAIN			
Area	From	To	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Airport Loop	AV 242	Truck Dischar	1987	HDPE S60	300	67.0				
Airport Loop	Truck Dischar	Lagoon	1987	HDPE S60	300	31.0				
Astro Hill	AV 305	PT A								
Astro Hill	PT L	PT A								
Astro Hill	PT A	PT B	1976	sbestos Ceme	250	27.0				
Astro Hill	PT C	PT B	1976	sbestos Ceme	250	36.0				
Astro Hill	PT B	PT D	1976	sbestos Ceme	250	143.0				
Astro Hill	PT D	MH 9	1976	sbestos Ceme	250	206.0				
Astro Hill	MH 9	MH 8	1975-76	Ductile Iron	250	90.8				
Astro Hill	MH 8	MH 7	1975-76	Ductile Iron	250	93.0				
Astro Hill	MH 7	PT A2	1975-76	Ductile Iron	250	48.0				
Astro Hill	MH 8	AV 9A								
Astro Hill	PT A2	AV 400	1989	HDPE S80	250	22.0				
Astro Hill	PT H	AV 9A								
Astro Hill	MH 10	MH 16								
Astro Hill	MH 16	PT J								
Astro Hill	PT I	PT J								
Astro Hill	PT H	PT I								
Astro Hill	AV 400	PT B2	1989	HDPE S80	250	31.0				
Astro Hill	PT B2	MH 5	1975	Ductile Iron	250	48.0				
Expansion Area	MH 103	TAC 2								
Expansion Area	TAC 2	TAC 3								
Expansion Area	TAC 3	TAC 4								
Expansion Area	TAC 4	AV 326								



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Forcemains

			SEWER				FORCEMAIN			
Area	From	To	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Expansion Area	AV 326	Booster Station								
Expansion Area	AV 326	AV 327								
Expansion Area	AV 327	AV 328	1989	HDPE S80	200	83.9				
Expansion Area	AV 328	AV 500	1989	HDPE S80	200	50.0				
Expansion Area	AV 500	AV 329	1989	HDPE S80	200	50.0				
Expansion Area	AV 329	AV 330	1989	HDPE S80	200	94.8				
Expansion Area	AV 330	AV 331	1989	HDPE S80	200	105.6				
Expansion Area	AV 331	AV 332	1989	HDPE S80	150	107.0				
Expansion Area	AV 331	AV 333	1989	HDPE S80	200	50.4				
Expansion Area	AV 333	AV 334	1989	HDPE S80	200	75.5				
Expansion Area	AV 334	AV 335	1989	HDPE S80	200	93.6				
Expansion Area	AV 335	AV 338	1990	HDPE S80	150	45.0				
Expansion Area	AV 336	AV 337	1990	HDPE S80	150	95.0				
Expansion Area	AV 337	AV 338	1990	HDPE S80	150	68.0				
Expansion Area	AV 338	AV 339	1990	HDPE S80	150	45.0				
Expansion Area (2200 Shunt)	AV 339	AV 340	1997	HDPE S100	150	80.3				
Expansion Area (2200 Shunt)	AV 340	AV 341	1997	HDPE S100	150	72.2				
Expansion Area (2200 Shunt)	AV 341	AV 342	1997	HDPE S100	150	83.2				
Expansion Area (2200 Shunt)	AV 342	AV 343	1997	HDPE S100	150	58.0				
Expansion Area	AV 343	AV 351	1998	HDPE S100	150	67.8				
Expansion Area	AV 351	Middle School	2001	HDPE	150	108.0				
Expansion Area	Middle School	French School	2001	HDPE	150	76.0				
Expansion Area	French School	New Arena	2001	HDPE	150	73.7				
Expansion Area	AV 351	AV 352	1998	HDPE S100	150	81.0				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Expansion Area	AV 352	AV 353	1998	HDPE S100	150	80.5				
Expansion Area	AV 353	AV 354	1998	HDPE S100	150	59.4				
Expansion Area	AV 353	AV 355	1998	HDPE S100	150	80.8				
Expansion Area	AV 341	AV 344	1997	HDPE S100	150	54.4				
Expansion Area	AV 344	AV 345	1997	HDPE S100	150	83.3				
Expansion Area	AV 345	AV 355								
Expansion Area	AV 345	AV 346	1997	HDPE S100	150	62.5				
Expansion Area	AV 346	AV 347	1997	HDPE S100	150	76.2				
Expansion Area	AV 346	AV 348	1997	HDPE S100	150	70.3				
Expansion Area	AV 348	AV 349	1997	HDPE S100	200	77.2				
Expansion Area	AV 349	AV 350	1997	HDPE S100	200	71.0				
Expansion Area	AV 350	AV 334	1997	HDPE S100	200	60.0				
Federal Building Loop	AV 3	AV 2								
Federal Building Loop	AV 2	AV 1								
Federal Building Loop	AV 1	PT E								
Federal Building Loop	PT E	AV 262								
Federal Building Loop	PT E	AV 262								
Federal Building Loop	AV 5	AV 4	1984-85	HDPE S45	200	107.0				
Federal Building Loop	PT D3	PT C3	1984-85	HDPE S45	100	30.0				
Federal Building Loop	PT C3	PT B3	1984-85	HDPE S45	150	35.0				
Federal Building Loop	PT B3	AV 4	1984-85	HDPE S45	150	90.0				
Federal Building Loop	AV 4	AV 3	1984-85	HDPE S60	200	15.0				
			1989	HDPE S80	200	100.0				
Federal Building Loop	AV 3	AV 264	1993	HDPE S100	200	119.6				



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Federal Building Loop	AV 264	AV 263	1993	HDPE S100	200	102.6				
Federal Building Loop	AV 263	AV 262	1993	HDPE S100	200	69.0				
Federal Building Loop	AV 262	AV 261	1993	HDPE S160	200	25.4				
Federal Building Loop	AV 261	AV 260	1993	HDPE S100	200	85.8				
Federal Building Loop	AV 260	AV 259	1993	HDPE S100	200	71.4				
Federal Building Loop	AV 259	AV 258	1993	HDPE S100	200	93.5				
Federal Building Loop	AV 258	AV 257	1993	HDPE S100	200	97.0				
Federal Building Loop	AV 257	AV 256	1993	HDPE S100	200	111.0				
Happy Valley	AV 327	MH 100	1989	HDPE S80	200	14.7				
Happy Valley	MH 100	MH 99	1979	HDPE S45	200	92.0				
Happy Valley	MH 99	MH 98	1979	HDPE S45	200	61.0				
Happy Valley	MH 98	MH 97	1979	HDPE S45	200	51.0				
Happy Valley	MH 97	MH 96	1979	HDPE S45	200	29.0				
Happy Valley	AV 238	AV 237	1986	HDPE S60	200	90.2				
Happy Valley	AV 237	AV 217	1986	HDPE S60	200	37.2				
Happy Valley	AV 217	AV 216	1986	HDPE S60	200	44.7				
Happy Valley	AV 216	MH 96	1986	HDPE S60	200	63.6				
Happy Valley	MH 96	MH 93	1979	HDPE S45	200	25.6				
Happy Valley	MH 93	MH 92	1979	HDPE S60	200	57.4				
			1979	HDPE S80	200	29.6				
Happy Valley	MH 92	MH 91	1979	HDPE S45	200	52.0				
Happy Valley	AV 234	AV 233	1986	HDPE S60	200	98.0				
Happy Valley	AV 233	AV 232	1986	HDPE S60	200	56.0				
Happy Valley	AV 232	AV 231	1986	HDPE S60	200	98.0				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Happy Valley	AV 231	AV 230	1986	HDPE S60	200	34.0				
Happy Valley	AV 230	AV 229	1986	HDPE S60	200	77.0				
Happy Valley	AV 229	AV 228	1986	HDPE S60	200	85.0				
Happy Valley	AV 228	AV 227	1986	HDPE S60	200	117.6				
Happy Valley	AV 227	AV 226	1986	HDPE S60	200	132.0				
Happy Valley	AV 227	AV 238								
Happy Valley	AV 235	AV 234	1986	HDPE S60	200	101.5				
Happy Valley	AV 234	AV 226	1986	HDPE S60	200	63.0				
Happy Valley	AV 226	AV 225	1986	HDPE S60	200	57.6				
Happy Valley	AV 239	AV 225	1986	HDPE S60	200	57.9				
Happy Valley	AV 225	AV 224	1986	HDPE S60	200	92.9				
Happy Valley	AV 240	AV 224	1986	HDPE S60	200	37.3				
Happy Valley	AV 224	AV 223	1986	HDPE S60	200	79.0				
Happy Valley	AV 223	MH 91	1986	HDPE S60	200	37.0				
Happy Valley	AV 223	MH 92								
Happy Valley	AV 223	MH 96								
Happy Valley	MH 91	MH 89	1979	HDPE S45	200	96.6				
Happy Valley	MH 89	MH 83	1979	HDPE S45	200	63.7				
Happy Valley	MH 104	TAC 1								
Happy Valley	MH 104	MH 103	1979	HDPE S45	200	80.7				
Happy Valley	MH 103	MH 95	1979	HDPE S45	200	59.0				
Happy Valley	MH 95	MH 68	1979	HDPE S45	200	16.0				
Happy Valley	MH 72	MH 71	1979	HDPE S45	200	75.1				
			1989	HDPE S80	200	19.9				

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Happy Valley	MH 71	MH 70	1979	HDPE S45	200	105.6				
Happy Valley	MH 70	MH 69	1979	HDPE S45	200	78.5				
Happy Valley	MH 69	MH 68	1979	HDPE S45	200	96.0				
Happy Valley	MH 68	MH 77	1979	HDPE S45	200	25.4				
Happy Valley	MH 77	MH 78	1979	HDPE S45	200	41.4				
Happy Valley	MH 78	MH 79	1979	HDPE S45	200	76.6				
Happy Valley	MH 79	MH 80	1979	HDPE S45	200	100.5				
Happy Valley	MH 76	MH 90	Out of Service							
Happy Valley	MH 90	MH 75	Out of Service							
Happy Valley	MH 73	MH 74	1979	HDPE S45	200	80.8				
			1989	HDPE S80	200	17.5				
Happy Valley	MH 74	MH 75	1979	HDPE S45	200	98.9				
Happy Valley	MH 75	MH 94	1979	HDPE S45	200	51.7				
Happy Valley	MH 94	MH 80	1979	HDPE S45	200	27.3				
Happy Valley	MH 73	MH 85								
Happy Valley	MH 85	MH 86	1979	HDPE S45	200	58.5				
Happy Valley	MH 86	MH 87	1979	HDPE S45	200	50.0				
Happy Valley	MH 87	MH 88	1979	HDPE S45	200	42.8				
Happy Valley	MH 88	MH 80	1979	HDPE S45	200	68.0				
Happy Valley	MH 80	MH 81	1990	HDPE S100	200	55.6				
Happy Valley	MH 81	MH 82	1989	HDPE S80	200	70.8				
Happy Valley	MH 82	MH 83	1979	HDPE S45	200	31.5				
Happy Valley	MH 83	MH 84	1979	HDPE S45	200	77.5				
Happy Valley	MH 84	MH 9	1979	HDPE S45	200	104.5				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Happy Valley	MH 84	AV 9A								
Lower Base	AV 404	AV 412	1999	HDPE S160	200	64.5				
Lower Base	AV 412	AV 411	1999	HDPE S160	200	55.0				
Lower Base	AV 435	AV 411	1999	HDPE S160	200	99.6				
Lower Base	AV 411	AV 410	1999	HDPE S160	200	70.5				
Lower Base	AV 410	AV 409	1999	HDPE S160	200	103.6				
Lower Base	AV 207	AV 407	1999	HDPE S160	200	122.2				
Lower Base	AV 407	AV 408	1999	HDPE S160	200	62.8				
Lower Base	AV 408	AV 409	1999	HDPE S160	200	124.5				
Lower Base	AV 409	MH 1	1999	HDPE S160	200	123.0				
Lower Base	AV 402	AV 403								
Lower Base	AV 205	AV 405	1990	HDPE S80	200	102.0				
Lower Base	AV 405	AV 404	1990	HDPE S80	200	106.0				
Lower Base	AV 404	AV 402	1990	HDPE S80	200	118.5				
Lower Base	AV 402	AV 403	1990	HDPE S80	200	56.0				
Lower Base	AV 403	MH 3	1990	HDPE S80	200	41.1				
Lower Base	AV 402	AV 401								
Lower Base	AV 401	AV 400								
Lower Iqaluit	MH 29	MH 28	1976-77	Ductile Iron	200	105.2				
Lower Iqaluit	MH 28	MH 12	1976-77	Ductile Iron	200	25.3				
Lower Iqaluit	PT A1	MH 42A	1977-78	HDPE S45	200	38.0				
Lower Iqaluit	MH 42A	MH 42	1977-78	HDPE S45	200	42.0				
Lower Iqaluit	MH 42	MH 43	1978	HDPE S45	200	1.6				
Lower Iqaluit	MH 45	MH 43	1978	HDPE S45	200	50.4				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Lower Iqaluit	MH 43	MH 44	1978	HDPE S45	200	46.5				
Lower Iqaluit	MH 44	MH 40	1978	HDPE S45	200	44.3				
Lower Iqaluit	MH 41	MH 40	1978	HDPE S45	200	95.7				
Lower Iqaluit	MH 41	MH 42								
Lower Iqaluit	AV 40A	MH 40	1990	HDPE	150	110.0				
Lower Iqaluit	MH 40	MH 24A	1978	HDPE S45	200	68.9				
Lower Iqaluit	MH 27	MH 8								
Lower Iqaluit	MH 27	MH 26	1976-77	Ductile Iron	150	40.2				
Lower Iqaluit	MH 26	MH 25	1976-77	Ductile Iron	200	111.3				
Lower Iqaluit	MH 25	MH 24	1976-77	Ductile Iron	200	72.8				
Lower Iqaluit	PT E1	AV 25A								
Lower Iqaluit	AV 25A	PT F1								
Lower Iqaluit	PT F1	MH 24								
Lower Iqaluit	MH 24	MH 24A	1977	Ductile Iron	200	12.5				
Lower Iqaluit	MH 24A	MH 33	1977	Ductile Iron	200	12.5				
Lower Iqaluit	MH 45	MH 46	1978	HDPE S45	200	51.1				
Lower Iqaluit	MH 58	MH 46B								
Lower Iqaluit	MH 46B	MH 46A	1977-78	HDPE S45	200	78.5				
Lower Iqaluit	MH 46A	MH 46	1977-78	HDPE S45	200	36.0				
Lower Iqaluit	MH 46	MH 47	1978	HDPE S45	200	56.6				
Lower Iqaluit	MH 47	MH 48	1978	HDPE S45	200	44.2				
Lower Iqaluit	MH 48	MH 59								
Lower Iqaluit	MH 48	MH 39	1978	HDPE S45	200	57.8				
Lower Iqaluit	MH 39	MH 38	1978	HDPE S45	200	53.7				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Lower Iqaluit	MH 38	MH 37	1978	HDPE S45	200	56.1				
Lower Iqaluit	MH 37	MH 36	1978	HDPE S45	200	78.2				
Lower Iqaluit	MH 36	MH 35	1978	HDPE S45	200	56.1				
Lower Iqaluit	MH 35	MH 33	1978	HDPE S45	200	24.4				
Lower Iqaluit	MH 33	MH 23	1977	Ductile Iron	200	43.6				
Lower Iqaluit	MH 58	MH 60	1979	HDPE S45	200	95.5				
Lower Iqaluit	MH 59	MH 60	1979	HDPE S45	200	44.3				
Lower Iqaluit	MH 60	MH 61	1979	HDPE S45	200	97.9				
Lower Iqaluit	MH 61	MH 62	1979	HDPE S45	200	56.0				
Lower Iqaluit	MH 62	MH 63	1979	HDPE S45	200	60.0				
Lower Iqaluit	MH 66	MH 65	1979	HDPE S45	200	47.9				
Lower Iqaluit	MH 65	MH 63	1979	HDPE S45	200	72.0				
Lower Iqaluit	MH 63	MH 63A	1979	HDPE S45	200	26.4				
Lower Iqaluit	MH 63	MH 32B								
Lower Iqaluit	MH 63A	MH 63B	1979	HDPE S45	200	72.0				
Lower Iqaluit	MH 63B	MH 32B	1979	HDPE S45	200	72.0				
Lower Iqaluit	MH 32B	MH 32A	1977	HDPE S45	200	101.5				
Lower Iqaluit	MH 32A	MH 32	1977	HDPE S45	200	54.0				
Lower Iqaluit	MH 32	MH 31	1977	Ductile Iron	200	65.8				
Lower Iqaluit	MH 31	MH 30	1977	Ductile Iron	200	47.9				
Lower Iqaluit	MH 30	MH 23	1977	Ductile Iron	200	32.0				
Lower Iqaluit	MH 23	P.S.#2	1977	Ductile Iron	200	4.0				
Lower Iqaluit	MH 22	MH 21	1977	Ductile Iron	200	63.4				
Lower Iqaluit	MH 21	MH 20	1977	Ductile Iron	200	75.9				



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Lower Iqaluit	MH 20	PT C1	1977	Ductile Iron	200	60.0				
Lower Iqaluit	PT C1	AV 19A								
Lower Iqaluit	AV 19A	PT D1								
Lower Iqaluit	PT D1	AV 23A								
Lower Iqaluit	MH 19	MH 23B	1977	Ductile Iron	200	61.1				
Lower Iqaluit	MH 23B	P.S. #2			200	4.0				
Lower Iqaluit	P.S. #2	MH 22					1977	Ductile Iron	150	184.5
Lower Iqaluit	MH 22	MH 13	1977	Ductile Iron	200	43.9				
Lower Iqaluit	PT B3	MH 14								
Lower Iqaluit	MH 14	MH 15								
Lower Iqaluit	MH 15	BLDG 222								
Lower Iqaluit	MH 15	MH 22								
Lower Iqaluit	MH 13	MH 12	1976	Ductile Iron	200	76.2				
Lower Iqaluit	MH 12	MH 5	1976	Ductile Iron	200	67.1				
Lower Iqaluit	MH 5	MH 4	1976	Ductile Iron	250	74.7				
Lower Iqaluit	MH 4	MH 3	1976	Ductile Iron	250	78.0				
Lower Iqaluit	MH 3	MH 2	1976	Ductile Iron	250	95.1				
Lower Iqaluit	MH 2	MH 1	1976	Ductile Iron	250	73.8				
Lower Iqaluit	MH 1	P.S. #1	1976	Ductile Iron	250	13.7				
Lower Iqaluit	Atco Loop									
Reservoir Mains	Treatment Plant	MH 307	1995	HDPE S100	150	289.2				
Reservoir Mains	MH 307	MH 306	1995	HDPE S100	150	34.2				
			1995	HDPE S100	200	38.8				



Trow
MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Reservoir Mains	MH 306	AV 305	1995	HDPE S100	200	45.0				
Road to Nowhere Subdivision	AV 509	AV 508	1999	HDPE S160	200	119.9				
Road to Nowhere Subdivision	AV 508	AV 507	1999	HDPE S160	200	116.8				
Road to Nowhere Subdivision	AV 507	AV 506	1999	HDPE S160	200	123.7				
Road to Nowhere Subdivision	AV 506	AV 505	1999	HDPE S160	200	95.5				
Road to Nowhere Subdivision	AV 505	AV 504	1999	HDPE S160	200	61.8				
Road to Nowhere Subdivision	AV 504	AV 503	1999	HDPE S160	200	117.0				
Road to Nowhere Subdivision	AV 503	AV 502	1999	HDPE S160	200	96.8				
Road to Nowhere Subdivision	AV 509	AV 510	1999	HDPE S160	200	68.4				
Road to Nowhere Subdivision	AV 510	AV 511	1999	HDPE S160	200	109.7				
Road to Nowhere Subdivision	AV 511	AV 512	1999	HDPE S160	200	111.8				
Road to Nowhere Subdivision	AV 512	AV 513	1999	HDPE S160	200	96.4				
Road to Nowhere Subdivision	AV 513	AV 514	1999	HDPE S160	200	90.6				
Road to Nowhere Subdivision	AV 505	AV 514	1999	HDPE S160	200	55.3				
Road to Nowhere Subdivision	AV 514	AV 515	1999	HDPE S160	200	66.2				
Road to Nowhere Subdivision	AV 504	AV 515	1999	HDPE S160	200	76.9				
Road to Nowhere Subdivision	AV 515	AV 502	1999	HDPE S160	200	134.5				
Road to Nowhere Subdivision	AV 502	AV 501	1999	HDPE S160	200	119.7				
Road to Nowhere Subdivision	AV 501	AV 500	1999	HDPE S160	200	81.0				
Uivvaq Loop	PT E2	PT F2		PVC S45	200	86.6				
Uivvaq Loop	PT G1	PT G2	1991	HDPE S60	200	34.6				
Uivvaq Loop	PT G2	PT F2	1991	HDPE S60	200	55.6				
Uivvaq Loop	PT H2	PT F2	1991	HDPE S60	100	29.9				
Uivvaq Loop	PT F2	MH 102			200	42.0				



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 2 - Inventory of Sewers and Force mains

Area	From	To	SEWER				FORCEMAIN			
			Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)	Year	Pipe Material	Pipe Diameter (mm)	Pipe Length (m)
Uivvaq Loop	MH 101	MH 102	Out of Service							
Uivvaq Loop	MH 102	PT I2		CSP	200	66.5				
Uivvaq Loop	PT I2	PT J2		CSP	200	150.5				
Uivvaq Loop	PT J2	PT K		CSP	200	52.0				
Uivvaq Loop	PT L	PT K	1998		150	168.0				
Uivvaq Loop	PT K	AV 402		CSP	200	47.0				
Uivvaq Loop	MH 55	MH 54	1978-79	HDPE S45	200	110.0				
Uivvaq Loop	MH 54	MH 53	1978	HDPE S45	200	104.4				
Uivvaq Loop	MH 53	MH 52	1979	HDPE S45	200	52.7				
			1989	HDPE S80	200	56.8				
Uivvaq Loop	MH 52	MH 51	1978	HDPE S45	200	30.1				
Uivvaq Loop	MH 51	MH 50	1978	HDPE S45	200	72.7				
Uivvaq Loop	MH 50	MH 49	1978	HDPE S45	200	54.0				
Uivvaq Loop	MH 49	MH 11	1975-76	Ductile Iron	200	74.5				
Uivvaq Loop	MH 49	MH 10	1975-76	Ductile Iron	200	20.0				
Uivvaq Loop	MH 11	MH 8								
Uivvaq Loop	MH 10	MH 7	1975-76	Ductile Iron	200	61.0				



Trow

Technical Annex 3 - Water Presures under Peak Hour Conditions

Location	Elevation (m)	Peak Hour (L/min)	HGL (m)	Pressure (kPa)
AV-1	25	0	93	661
AV-2 HYD	26	0	93	651
AV-3 HYD	25	0	93	661
AV-4 HYD	25	0	93	661
AV-5 HYD (bleeder)	25	1.8	93	661
AV-9A	20	0	93	711
AV-23A	8	0	93	833
AV-200 (bleeder)	27	3.82	93	648
AV-201 HYD	25	0	93	665
AV-202 HYD	26.2	0	93	653
AV-203	26.3	0	93	651
AV-204 HYD	23.5	0	93	678
AV-205	22	0	93	692
AV-206 HYD	20.5	0	93	706
AV-207 HYD	19	0	93	721
AV-208 HYD	18.75	0	93	723
AV-209	17.5	0	93	735
AV-210 HYD	17.5	0	93	735
AV-212 HYD	18.75	0	93	723
AV-213 HYD	19	0	93	720
AV-214 HYD	17.5	0	93	735
AV-215 HYD	20	0	93	710
AV-216	46.2	0	92	450
AV-217 HYD	47	0	92	442
AV-223	40	0	97	557
AV-224 HYD	47.5	0	91	430
AV-225 HYD	43	0	92	474
AV-226	43.5	41.58	92	470
AV-227	47	35.1	92	440
AV-228	45	0	92	458
AV-229 HYD	45	52.92	92	458
AV-230	45	0	92	457
AV-231 HYD	43.5	0	92	471
AV-232 HYD	45	0	92	456
AV-233	45	177.66	92	455
AV-234 HYD	47.5	0	92	431
AV-235 HYD	47.5	24.84	92	431
AV-237	47.5	65.34	92	436
AV-238 HYD	47.5	0	92	435
AV-239	43.5	13.5	92	469
AV-240	43.3	17.82	91	471
AV-255	20	0	93	710
AV-256 HYD	20	0	93	710
AV-257	20	0	93	710



Trow

Technical Annex 3 - Water Presures under Peak Hour Conditions

Location	Elevation (m)	Peak Hour (L/min)	HGL (m)	Pressure (kPa)
AV-258 HYD	20	0	93	710
AV-259	20	0	93	710
AV-260	20	0	93	710
AV-262	20	0	93	710
AV-263	22.5	0	93	685
AV-264 HYD	25.5	0	93	656
AV-300 HYD	29	0	93	629
AV-301	35	0	93	570
AV-302 HYD	37	0	93	551
AV-303 HYD	38	0	93	541
AV-303B	37	0	93	551
AV-304 HYD	37.5	0	93	546
AV-304B	41	0	93	512
AV-305	37.5	0	93	546
AV-306	40	0	93	522
AV-307	49	0	93	435
AV-326	55	0	93	371
AV-327 HYD	65	0	152	847
AV-328	67.5	0	151	821
AV-329 HYD	71	0	151	785
AV-330	77	75.06	151	725
AV-331 HYD	82	0	151	675
AV-332 HYD	81.3	0	151	680
AV-333	84	0	151	652
AV-334 HYD	87.3	0	151	618
AV-335	92.1	67.5	150	567
AV-336 HYD	97	0	149	512
AV-337	93.8	43.2	150	546
AV-338 HYD	93.8	43.2	150	548
AV-339	94	29.16	149	534
AV-340 HYD	95.5	22.68	148	518
AV-341 HYD	96.42	29.16	148	508
AV-342 HYD	98.14	22.68	148	490
AV-343	98.37	16.2	148	487
AV-344	100.73	0	147	456
AV-345	106.15	22.68	147	402
AV-346 HYD	108.06	6.48	147	381
AV-347 HYD	108.6	61.56	147	377
AV-348 HYD	100.85	22.68	147	451
AV-349 HYD	95	22.68	147	507
AV-350 HYD	89	16.2	147	566
AV-351 HYD	99.4	0	148	476
AV-351A	100.95	0	148	460
AV-352	102.4	6.48	148	445



Trow

Technical Annex 3 - Water Presures under Peak Hour Conditions

Location	Elevation (m)	Peak Hour (L/min)	HGL (m)	Pressure (kPa)
AV-353 HYD	106.5	16.2	148	404
AV-354	107.8	29.16	148	391
AV-355 HYD	108	22.68	148	387
AV-400	11	0	92	794
AV-401 HYD	12	0	92	784
AV-402 HYD	10	22.14	92	804
AV-404 HYD	17.05	0	93	740
AV-405 HYD	19	0	93	721
AV-406	27	0	93	648
AV-407 HYD	17.48	27.56	93	734
AV-408	12.86	31.49	93	780
AV-409 HYD	9.43	39.37	93	813
AV-410 HYD	10.93	0	93	799
AV-411 HYD	13.72	23.62	93	772
AV-413	22.5	0	93	689
AV-414 HYD	23	0	93	685
av-415	0	0	93	910
AV-435	18	23.62	93	730
AV-500	69.3	0	151	803
AV-501	77.45	0	151	723
AV-502	83.12	0.37	151	668
AV-503 HYD	87.78	1.5	151	622
AV-504 HYD	97.06	0	151	531
AV-505 HYD	103.98	0.84	151	464
AV-506	110.38	0.94	151	401
AV-507 HYD	110.64	0.84	151	398
AV-508	110.49	1.03	151	400
AV-509 HYD	113.2	0.37	151	373
AV-510	112.96	0.75	151	376
AV-511 HYD	109.32	0.75	151	411
AV-512	106.2	0.75	151	442
AV-513 HYD	106.71	0.56	151	437
AV-514	102.6	0.75	151	477
AV-515 HYD	93.15	1.5	151	569
MH-7	13	6.48	92	776
MH-8	16.5	0	93	744
MH-10	13.8	0	93	770
MH-11	18	0	93	729
MH-13	9	0	94	827
MH-14	10	15.12	92	803
MH-15	9	0	92	812
MH-16	15	0	93	759
MH-19 HYD	8	0	93	834
MH-20	8.3	49.68	93	832



Trow

Technical Annex 3 - Water Presures under Peak Hour Conditions

Location	Elevation (m)	Peak Hour (L/min)	HGL (m)	Pressure (kPa)
MH-21	9	0	93	826
MH-22	10	0	94	817
MH-23B	7.5	0	93	838
MH-24	10	0	93	807
MH-24A	10	0	93	807
MH-25A HYD	11.3	0	93	795
MH-26	13.2	0	93	776
MH-29	14	15.12	89	737
MH-30	7.5	16.2	93	838
MH-31	7.5	0	93	837
MH-32	7.5	0	93	836
MH-32A HYD	7.4	0	93	836
MH-32B HYD	8	0	93	829
MH-35	11.8	36.72	93	790
MH-36 HYD	11.3	0	93	795
MH-37	13.25	54.54	93	776
MH-38 HYD	17.5	0	93	734
MH-39	16.3	10.8	93	746
MH-40	12.5	0	93	783
MH-40A	13.6	14.58	93	772
MH-41 HYD	17.6	14.58	93	733
MH-42	17.6	0	93	733
MH-43	16	5.4	93	749
MH-45	18	31.86	93	729
MH-46 HYD	20	0	93	710
MH-46A	23	0	93	680
MH-46B	26.3	9.72	93	648
MH-47	18.6	10.8	93	723
MH-48	18	16.2	93	729
MH-49	15	13.5	93	759
MH-50	17	2.16	93	742
MH-51	19.2	2.16	93	720
MH-52	21.3	9.72	93	700
MH-53 HYD	21.3	3.24	93	700
MH-54	22.3	15.12	93	690
MH-55 (bleeder)	24	0	93	673
MH-58	26.3	5.4	93	648
MH-59	17.5	0	93	734
MH-60	16.3	0	93	746
MH-61	13	25.38	93	778
MH-62	13	18.9	93	779
MH-63 HYD	13	0	93	779
MH-65	15	0	93	759
MH-66	15	0	93	759



Trow

Technical Annex 3 - Water Presures under Peak Hour Conditions

Location	Elevation (m)	Peak Hour (L/min)	HGL (m)	Pressure (kPa)
MH-68	45	0	93	471
MH-69	50	0	93	421
MH-70 HYD	52.5	0	93	396
MH-71	53.75	45.9	93	383
MH-72 HYD	55	0	93	370
MH-73 (bleeder)	49.6	5.07	95	447
MH-74 HYD	48.75	0	95	455
MH-75	43.5	37.8	95	506
MH-76 (bleeder)	45	5.07	95	491
MH-85 HYD	45	6.48	95	492
MH-86	42	43.74	95	521
MH-87	38.3	0	95	558
MH-88 HYD	37.5	0	95	566
MH-89	33	0	95	610
MH-90 HYD	45	0	95	491
MH-91 HYD	37.5	12.42	95	567
MH-92	41	0	96	533
MH-93	44	3.78	96	504
MH-95 HYD	47	0	93	452
MH-96	45	0	92	463
MH-97	45	0	92	463
MH-98	49.5	0	92	420
MH-99 HYD	56.3	23.76	93	354
MH-100	62.5	0	93	295
MH-103	44.5	0	93	477
MH-104	42	0	93	502
TAC-1	45	0	93	472
TAC-2	47.5	0	93	447
TAC-3	50	0	93	422
TAC-4	53.5	0	93	387



Trow

Technical Annex 4 - Available Fire Flows under Maximum Day Conditions and 140 kPa

Location	Maximum Day Demand	Needed Fire Flow	Total Needed Flow	Available Fire Flow	Reserve Fire Flow	Potential Growth at 400 Lpcd (Persons)
	(l/min)	(l/min)	(l/min)	(l/min)	(l/min)	
AV-1	2	3,600	3,602	3,010	-590	0
AV-2 HYD	0	3,600	3,600	3,054	-546	0
AV-3 HYD	0	3,600	3,600	3,127	-473	0
AV-4 HYD	0	3,600	3,600	3,065	-535	0
AV-5 HYD (bleeder)	1.8	3,600	3,602	3,017	-583	0
AV-9A	0	3,600	3,600	5,456	1,856	3,341
AV-23A	0	3,600	3,600	4,267	667	1,200
AV-200 (bleeder)	3.82	3,600	3,604	10,000	6,400	11,520
AV-201 HYD	0	3,600	3,600	9,158	5,558	10,004
AV-202 HYD	0	3,600	3,600	8,021	4,421	7,958
AV-203	0	3,600	3,600	7,737	4,137	7,446
AV-204 HYD	0	3,600	3,600	7,595	3,995	7,192
AV-205	0	3,600	3,600	7,302	3,702	6,664
AV-206 HYD	0	3,600	3,600	6,701	3,101	5,582
AV-207 HYD	0	3,600	3,600	6,387	2,787	5,017
AV-208 HYD	0	3,600	3,600	5,400	1,800	3,240
AV-209	0	3,600	3,600	5,079	1,479	2,662
AV-210 HYD	0	3,600	3,600	4,416	816	1,468
AV-212 HYD	0	3,600	3,600	5,081	1,481	2,665
AV-213 HYD	0	3,600	3,600	4,782	1,182	2,127
AV-214 HYD	0	3,600	3,600	4,484	884	1,591
AV-215 HYD	0	3,600	3,600	4,255	655	1,179
AV-216	0	3,600	3,600	4,379	779	1,402
AV-217 HYD	0	3,600	3,600	4,330	730	1,314
AV-223	0	3,600	3,600	3,734	134	242
AV-224 HYD	0	3,600	3,600	3,774	174	313
AV-225 HYD	0	3,600	3,600	3,824	224	403
AV-226	27.72	3,600	3,628	3,855	255	459
AV-227	23.4	3,600	3,623	4,127	527	948
AV-228	0	3,600	3,600	4,123	523	942
AV-229 HYD	35.28	3,600	3,635	4,075	475	855
AV-230	0	3,600	3,600	4,025	425	765
AV-231 HYD	0	3,600	3,600	3,997	397	715
AV-232 HYD	0	3,600	3,600	3,926	326	587
AV-233	118.44	3,600	3,718	3,884	284	511
AV-234 HYD	0	3,600	3,600	3,820	220	395
AV-235 HYD	16.56	3,600	3,617	3,132	-468	0
AV-237	43.56	3,600	3,644	4,269	669	1,205
AV-238 HYD	0	3,600	3,600	4,141	541	974
AV-239	9	3,600	3,609	3,614	14	25
AV-240	11.88	3,600	3,612	3,774	174	313
AV-255	0	3,600	3,600	4,149	549	988
AV-256 HYD	0	3,600	3,600	3,985	385	693



Trow

Technical Annex 4 - Available Fire Flows under Maximum Day Conditions and 140 kPa

Location	Maximum Day Demand (l/min)	Needed Fire Flow (l/min)	Total Needed Flow (l/min)	Available Fire Flow (l/min)	Reserve Fire Flow (l/min)	Potential Growth at 400 Lpcd (Persons)
AV-257	0	3,600	3,600	3,838	238	429
AV-258 HYD	0	3,600	3,600	3,718	118	212
AV-259	0	3,600	3,600	3,604	4	7
AV-260	0	3,600	3,600	3,522	-78	0
AV-262	0	3,600	3,600	3,390	-210	0
AV-263	0	3,600	3,600	3,330	-270	0
AV-264 HYD	0	3,600	3,600	3,223	-377	0
AV-300 HYD	0	3,600	3,600	10,000	6,400	11,520
AV-301	0	3,600	3,600	10,000	6,400	11,520
AV-302 HYD	0	3,600	3,600	10,000	6,400	11,520
AV-303 HYD	0	3,600	3,600	10,000	6,400	11,520
AV-304 HYD	0	3,600	3,600	10,000	6,400	11,520
AV-305	0	3,600	3,600	10,000	6,400	11,520
AV-306	0	3,600	3,600	10,000	6,400	11,520
AV-307	110	3,600	3,710	10,000	6,400	11,520
AV-326	0	3,600	3,600	8,742	5,142	9,256
AV-327 HYD	0	3,600	3,600	8,130	4,530	8,154
AV-328	0	3,600	3,600	8,124	4,524	8,143
AV-329 HYD	0	3,600	3,600	8,124	4,524	8,143
AV-330	50.04	3,600	3,650	8,124	4,524	8,143
AV-331 HYD	0	3,600	3,600	8,124	4,524	8,143
AV-332 HYD	0	3,600	3,600	8,124	4,524	8,143
AV-333	0	3,600	3,600	8,044	4,444	7,999
AV-334 HYD	0	3,600	3,600	7,729	4,129	7,432
AV-335	45	3,600	3,645	6,902	3,302	5,943
AV-336 HYD	0	3,600	3,600	5,720	2,120	3,816
AV-337	28.8	3,600	3,629	6,111	2,511	4,520
AV-338 HYD	28.8	3,600	3,629	6,467	2,867	5,160
AV-339	19.44	3,600	3,619	3,305	-295	0
AV-340 HYD	15.12	3,600	3,615	3,295	-305	0
AV-341 HYD	19.44	3,600	3,619	3,286	-314	0
AV-342 HYD	15.12	3,600	3,615	3,275	-325	0
AV-343	10.8	3,600	3,611	3,268	-333	0
AV-344	0	3,600	3,600	3,538	-62	0
AV-345	15.12	3,600	3,615	3,638	38	69
AV-346 HYD	4.32	3,600	3,604	3,958	358	644
AV-347 HYD	41.04	3,600	3,641	3,813	213	383
AV-348 HYD	15.12	3,600	3,615	4,133	533	959
AV-349 HYD	15.12	3,600	3,615	4,300	700	1,260
AV-350 HYD	10.8	3,600	3,611	4,487	887	1,596
AV-351 HYD	6.2	3,600	3,606	3,257	-343	0
AV-351A	0	3,600	3,600	3,251	-349	0
AV-352	4.32	3,600	3,604	3,242	-358	0



MP14882A

City of Iqaluit - Water and Sewer Study

Technical Annex 4 - Available Fire Flows under Maximum Day Conditions and 140 kPa

Location	Maximum Day Demand	Needed Fire Flow	Total Needed Flow	Available Fire Flow	Reserve Fire Flow	Potential Growth at 400 Lpcd (Persons)
	(l/min)	(l/min)	(l/min)	(l/min)	(l/min)	
AV-353 HYD	10.8	3,600	3,611	3,233	-367	0
AV-354	19.44	3,600	3,619	3,224	-376	0
AV-355 HYD	15.12	3,600	3,615	3,339	-261	0
AV-400	3.24	3,600	3,603	4,388	788	1,418
AV-401 HYD	0	3,600	3,600	4,205	605	1,090
AV-402 HYD	14.76	3,600	3,615	4,006	406	731
AV-404 HYD	0	3,600	3,600	6,986	3,386	6,095
AV-405 HYD	0	3,600	3,600	7,116	3,516	6,329
AV-406	0	3,600	3,600	10,000	6,400	11,520
AV-407 HYD	18.37	3,600	3,618	6,355	2,755	4,960
AV-408	21	3,600	3,621	6,417	2,817	5,071
AV-409 HYD	26.24	3,600	3,626	6,528	2,928	5,270
AV-410 HYD	0	3,600	3,600	6,617	3,017	5,431
AV-411 HYD	15.75	3,600	3,616	6,679	3,079	5,543
AV-413	0	3,600	3,600	7,540	3,940	7,093
AV-414 HYD	0	3,600	3,600	9,063	5,463	9,833
AV-415	0	3,600	3,600	8,857	5,257	9,463
AV-435	15.75	3,600	3,616	6,579	2,979	5,362
AV-500	0	3,600	3,600	8,124	4,524	8,143
AV-501	0	3,600	3,600	8,124	4,524	8,143
AV-502	0.25	3,600	3,600	8,124	4,524	8,143
AV-503 HYD	1	3,600	3,601	8,264	4,664	8,394
AV-504 HYD	0	3,600	3,600	8,124	4,524	8,143
AV-505 HYD	0.56	3,600	3,601	7,619	4,019	7,234
AV-506	0.63	3,600	3,601	7,312	3,712	6,682
AV-507 HYD	0.56	3,600	3,601	7,106	3,506	6,311
AV-508	0.69	3,600	3,601	6,874	3,274	5,893
AV-509 HYD	0.25	3,600	3,600	6,646	3,046	5,484
AV-510	0.5	3,600	3,601	6,667	3,067	5,520
AV-511 HYD	0.5	3,600	3,601	6,864	3,264	5,875
AV-512	0.5	3,600	3,601	7,076	3,476	6,256
AV-513 HYD	0.37	3,600	3,600	7,274	3,674	6,614
AV-514	0.5	3,600	3,601	7,478	3,878	6,980
AV-515 HYD	1	3,600	3,601	8,025	4,425	7,965
MH-7	4.32	3,600	3,604	4,845	1,245	2,241
MH-8	0	3,600	3,600	4,894	1,294	2,329
MH-10	0	3,600	3,600	3,175	-425	0
MH-11	0	3,600	3,600	3,873	273	491
MH-13	0	3,600	3,600	4,471	871	1,567
MH-14	10.08	3,600	3,610	4,330	730	1,315
MH-15	0	3,600	3,600	4,040	440	793
MH-16	0	3,600	3,600	2,942	-658	0
MH-19 HYD	0	3,600	3,600	4,323	723	1,301


Technical Annex 4 - Available Fire Flows under Maximum Day Conditions and 140 kPa

Location	Maximum Day Demand	Needed Fire Flow	Total Needed Flow	Available Fire Flow	Reserve Fire Flow	Potential Growth at 400 Lpcd
	(l/min)	(l/min)	(l/min)	(l/min)	(l/min)	(Persons)
MH-20	33.12	3,600	3,633	4,363	763	1,374
MH-21	0	3,600	3,600	4,407	807	1,453
MH-22	0	3,600	3,600	4,448	848	1,526
MH-23B	0	3,600	3,600	4,288	688	1,239
MH-24	0	3,600	3,600	4,154	554	996
MH-24A	0	3,600	3,600	4,121	521	938
MH-25A HYD	0	3,600	3,600	4,304	704	1,267
MH-26	0	3,600	3,600	4,605	1,005	1,809
MH-30	10.8	3,600	3,611	4,240	640	1,152
MH-31	0	3,600	3,600	4,213	613	1,104
MH-32	0	3,600	3,600	4,177	577	1,039
MH-32A HYD	0	3,600	3,600	4,124	524	944
MH-32B HYD	0	3,600	3,600	4,034	434	781
MH-35	24.48	3,600	3,624	4,099	499	899
MH-36 HYD	0	3,600	3,600	4,083	483	870
MH-37	36.36	3,600	3,636	4,047	447	805
MH-38 HYD	0	3,600	3,600	4,020	420	757
MH-39	7.2	3,600	3,607	3,986	386	695
MH-40	0	3,600	3,600	3,826	226	406
MH-40A	9.72	3,600	3,610	3,910	310	558
MH-41HYD	9.72	3,600	3,610	3,744	144	258
MH-42	0	3,600	3,600	3,712	112	201
MH-43	3.6	3,600	3,604	3,617	17	31
MH-45	21.24	3,600	3,621	3,571	-29	0
MH-46 HYD	0	3,600	3,600	3,523	-77	0
MH-46A	0	3,600	3,600	3,474	-126	0
MH-46B	6.48	3,600	3,606	3,397	-203	0
MH-47	7.2	3,600	3,607	3,530	-70	0
MH-48	10.8	3,600	3,611	3,534	-66	0
MH-49	9	3,600	3,609	3,274	-326	0
MH-50	1.44	3,600	3,601	4,740	1,140	2,052
MH-51	1.44	3,600	3,601	4,197	597	1,075
MH-52	6.48	3,600	3,606	3,999	399	718
MH-53 HYD	2.16	3,600	3,602	3,493	-107	0
MH-54	10.08	3,600	3,610	3,167	-433	0
MH-55 (bleeder)	3.55	3,600	3,604	2,905	-695	0
MH-58	3.6	3,600	3,604	3,404	-196	0
MH-59	0	3,600	3,600	3,534	-66	0
MH-60	0	3,600	3,600	3,532	-68	0
MH-61	16.92	3,600	3,617	3,677	77	139
MH-62	12.6	3,600	3,613	3,773	173	312
MH-63 HYD	0	3,600	3,600	3,891	291	524
MH-65	0	3,600	3,600	3,942	342	616


Technical Annex 4 - Available Fire Flows under Maximum Day Conditions and 140 kPa

Location	Maximum Day Demand (l/min)	Needed Fire Flow (l/min)	Total Needed Flow (l/min)	Available Fire Flow (l/min)	Reserve Fire Flow (l/min)	Potential Growth at 400 Lpcd (Persons)
MH-66	0	3,600	3,600	3,973	373	672
MH-68	0	3,600	3,600	9,123	5,523	9,941
MH-69	0	3,600	3,600	8,439	4,839	8,711
MH-70 HYD	0	3,600	3,600	7,976	4,376	7,877
MH-71	30.6	3,600	3,631	7,423	3,823	6,881
MH-72 HYD	0	3,600	3,600	6,953	3,353	6,035
MH-73 (bleeder)	5.07	3,600	3,605	2,025	-1,575	0
MH-74 HYD	0	3,600	3,600	1,888	-1,712	0
MH-75	25.2	3,600	3,625	1,774	-1,826	0
MH-76 (bleeder)	5.07	3,600	3,605	1,689	-1,911	0
MH-85 HYD	4.32	3,600	3,604	2,117	-1,483	0
MH-86	29.16	3,600	3,629	2,231	-1,369	0
MH-87	0	3,600	3,600	2,363	-1,237	0
MH-88 HYD	0	3,600	3,600	2,473	-1,127	0
MH-89	0	3,600	3,600	2,841	-759	0
MH-90 HYD	0	3,600	3,600	1,724	-1,876	0
MH-91 HYD	8.28	3,600	3,608	3,290	-310	0
MH-92	0	3,600	3,600	3,854	254	458
MH-93	2.52	3,600	3,603	4,238	638	1,148
MH-95 HYD	0	3,600	3,600	9,270	5,670	10,206
MH-96	0	3,600	3,600	4,479	879	1,581
MH-97	0	3,600	3,600	4,583	983	1,769
MH-98	0	3,600	3,600	4,583	983	1,769
MH-99 HYD	15.84	3,600	3,616	4,583	983	1,769
MH-100	0	3,600	3,600	4,583	983	1,769
MH-103	0	3,600	3,600	9,645	6,045	10,881
MH-104	0	3,600	3,600	10,000	6,400	11,520
PT-B3	0	3,600	3,600	4,388	788	1,418
PT A	2.16	3,600	3,602	10,000	6,400	11,520
PT A3	2.52	3,600	3,603	4,590	990	1,783
PT B	0	3,600	3,600	10,000	6,400	11,520
PT B3	0	3,600	3,600	2,977	-623	0
PT C1	0	3,600	3,600	4,332	732	1,318
PT C3	0	3,600	3,600	2,949	-651	0
PT D	0	3,600	3,600	10,000	6,400	11,520
PT D1	0	3,600	3,600	4,314	714	1,285
PT D3	0	3,600	3,600	2,794	-806	0
PT E	80.64	3,600	3,681	10,000	6,400	11,520
PT E1	10.44	3,600	3,610	4,344	744	1,340
PT F	0	3,600	3,600	10,000	6,400	11,520
PT F1	0	3,600	3,600	4,266	666	1,198
PT G	0	3,600	3,600	9,314	5,714	10,285
PT H	15.48	3,600	3,615	6,848	3,248	5,847



Trow

Technical Annex 4 - Available Fire Flows under Maximum Day Conditions and 140 kPa

Location	Maximum Day Demand (l/min)	Needed Fire Flow (l/min)	Total Needed Flow (l/min)	Available Fire Flow (l/min)	Reserve Fire Flow (l/min)	Potential Growth at 400 Lpcd (Persons)
PT H-2	0	3,600	3,600	6,736	3,136	5,644
PT I	0	3,600	3,600	2,335	-1,265	0
PT J	1.44	3,600	3,601	2,174	-1,426	0
PT O	0	3,600	3,600	10,000	6,400	11,520
TAC-1	0	3,600	3,600	10,000	6,400	11,520
TAC-2	0	3,600	3,600	10,000	6,400	11,520
TAC-3	0	3,600	3,600	9,643	6,043	10,877
TAC-4	0	3,600	3,600	9,123	5,523	9,942
PT H	15.48	3,600	3,615	6,846	3,246	5,843
PT H-2	0	3,600	3,600	6,733	3,133	5,640
PT I	0	3,600	3,600	2,333	-1,267	0
PT J	1.44	3,600	3,601	2,173	-1,427	0
PT K	3.24	3,600	3,603	3,829	229	413
PT L	0	3,600	3,600	10,000	6,400	11,520
PT L-1	0	3,600	3,600	533	-3,067	0
PT O	0	3,600	3,600	10,000	6,400	11,520
TAC-1	0	3,600	3,600	10,000	6,400	11,520
TAC-2	0	3,600	3,600	10,000	6,400	11,520
TAC-3	0	3,600	3,600	9,609	6,009	10,816
TAC-4	0	3,600	3,600	9,103	5,503	9,905

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit: Single Family Home4.33 Apartment2 Peaking Factors: Residential1+14/(4+P^{0.5}) Sports Facility2 Office/Commercial/Retail3 Hotels/Hospitals/Schools/Dorms2 n =0.013 Average Flows: Single Family Homes400L/c/d Apartments400L/c/d Sports Facility15L/seat Office/Commercial25,000L/ha.d Hospital900L/bed.d Schools70L/student.d Hotels/Residence225L/bed.d																				
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s)(Persons)		Flow Velocity (m/s)	Notes
Expansion Area	AV 355	AV 353	1	20	4.33	40				0.21	0.50	0.2	0.5	150	1.25	17.0	16.5	900	1.0	
Expansion Area	AV 354	AV 353	2	10	8.66	20				0.13	0.37	0.1	0.4	150	2.00	21.5	21.2	1,200	1.2	
Expansion Area	AV 353	AV 352		12	0	24				0.11	0.29	0.4	1.2	150	4.96	33.9	32.8	2,000	1.9	
Expansion Area	AV 352	AV 351		9	0	18				0.08	0.22	0.5	1.4	150	2.30	23.1	21.7	1,300	1.3	
Expansion Area	New Arena	French Sc.					500			0.09	0.17	0.1	0.2	150	0.61	11.9	11.7	600	0.7	AVs not numbered.
Expansion Area	French Sc.	Middle Sc.						200		0.16	0.00	0.2	0.2	150	0.55	11.3	11.1	600	0.6	AVs not numbered.
Expansion Area	Middle Sc.	AV 351								0.00	0.00	0.2	0.2	150	0.56	11.4	11.2	600	0.6	AVs not numbered.
Expansion Area	AV 351	AV 343		15	0	30		200	0.01	0.30	0.68	1.1	2.2	150	0.84	14.0	11.7	600	0.8	
Expansion Area	AV 343	AV 342		14	0	28				0.13	0.32	1.2	2.6	150	2.14	22.3	19.7	1,100	1.3	
Expansion Area	AV 342	AV 341		16	0	32				0.15	0.36	1.4	2.9	150	0.90	14.4	11.5	600	0.8	
Expansion Area	AV 346	AV 345		6	0	12				0.06	0.16	0.1	0.2	150	1.37	17.8	17.7	1,000	1.0	
Expansion Area	AV 345	AV 344		18	0	36				0.17	0.40	0.2	0.6	150	6.89	40.0	39.4	2,400	2.3	
Expansion Area	AV 344	AV 341			0	0				0.00	0.00	0.2	0.6	150	5.50	35.7	35.2	2,100	2.0	
Expansion Area	AV 344	AV 341			0	0				0.00	0.00	0.2	0.6	150	1.00	15.2	14.7	800	0.9	
Expansion Area	AV 341	AV 340		12	0	24				0.11	0.29	1.7	3.8	150	1.04	15.5	11.8	600	0.9	
Expansion Area	AV 340	AV 339		18	0	36				0.17	0.40	1.9	4.2	150	1.92	21.1	16.9	900	1.2	
Expansion Area	AV 339	AV 338		6	0	12				0.06	0.16	1.9	4.3	150	0.60	11.8	7.5	400	0.7	
Expansion Area	AV 336	AV 337		31	0	62				0.29	0.63	0.3	0.6	150						Pipe slope unkown
Expansion Area	AV 337	AV 338		18	0	36				0.17	0.40	0.5	1.0	150	0.75	13.2	12.2	600	0.7	
Expansion Area	AV 338	AV 335			0	0				0.00	0.00	2.4	5.3	150	0.60	11.8	6.4	300	0.7	
Expansion Area	AV 335	AV 334		16	0	32				0.15	0.36	2.5	5.7	200	0.75	28.4	22.7	1,300	0.9	

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:											n = 0.013									
Single Family Home 4.33											Average Flows:									
Apartment 2											Single Family Homes 400 L/c/d									
											Apartments 400 L/c/d									
Peaking Factors:											Sports Facility 15 L/seat									
Residential 1+14/(4+P ^{0.5})											Office/Commercial 25,000 L/ha.d									
Sports Facility 2											Hospital 900 L/bed.d									
Office/Commercial/Retail 3											Schools 70 L/student.d									
Hotels/Hospitals/Schools/Dorms 2											Hotels/Residence 225 L/bed.d									
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Expansion Area	AV 347	AV 346	1	23	4.33	46				0.23	0.56	0.2	0.6	150	2.70	25.0	24.5	1,400	1.4	
Expansion Area	AV 346	AV 348		12	0	24				0.11	0.29	0.3	0.8	150	8.05	43.2	42.4	2,600	2.4	
Expansion Area	AV 348	AV 349		21	0	42				0.19	0.45	0.5	1.3	200	7.24	88.3	87.0	5,900	2.8	
Expansion Area	AV 349	AV 350		28	0	56				0.26	0.58	0.8	1.9	200	10.20	104.8	102.9	7,100	3.3	
Expansion Area	AV 350	AV 334			0	0				0.00	0.00	0.8	1.9	200	1.83	44.4	42.5	2,600	1.4	
Expansion Area	AV 334	AV 333		24	0	48				0.22	0.51	3.5	8.1	200	7.95	92.5	84.4	5,600	2.9	
Expansion Area	AV 333	AV 331		16	0	32				0.15	0.36	3.7	8.5	200	4.66	70.8	62.3	4,000	2.3	
Expansion Area	AV 332	AV 331		5	0	10		150		0.05	0.14	0.0	0.1	150	0.93	14.7	14.5	800	0.8	
Expansion Area	AV 331	AV 330		17	0	34				0.16	0.38	3.9	9.0	200	4.83	72.1	63.1	4,100	2.3	
Expansion Area	AV 330	AV 329		20	0	40				0.19	0.44	4.1	9.4	200	7.77	91.4	82.0	5,500	2.9	
Expansion Area	AV 329	AV 500		4	0	8				0.04	0.11	4.1	9.5	200	2.27	49.4	39.9	2,400	1.6	
Expansion Area	AV 509	AV 508	9		38.97	0				0.18	0.43	0.2	0.4	200	1.50	40.2	39.7	2,400	1.3	
Expansion Area	AV 508	AV 507	9		38.97	0				0.18	0.43	0.4	0.9	200	0.40	20.7	19.9	1,100	0.7	
Expansion Area	AV 507	AV 506		16	0	32				0.15	0.36	0.5	1.2	200	0.40	20.7	19.5	1,100	0.7	
Expansion Area	AV 506	AV 505		6	0	12				0.06	0.16	0.6	1.4	200	6.38	82.8	81.5	5,400	2.6	
Expansion Area	AV 505	AV 504		5	0	10				0.05	0.14	0.6	1.5	200	9.87	103.0	101.5	7,000	3.3	
Expansion Area	AV 504	AV 503	2		8.66	0				0.04	0.12	0.7	1.6	200	8.80	97.3	95.7	6,500	3.1	
Expansion Area	AV 503	AV 502			0	0				0.00	0.00	0.7	1.6	200	4.18	67.1	65.4	4,200	2.1	
Expansion Area	AV 509	AV 510	2		8.66	0				0.04	0.12	0.0	0.1	200	0.40	20.7	20.6	1,200	0.7	
Expansion Area	AV 510	AV 511	4		17.32	0				0.08	0.22	0.1	0.3	200	2.93	56.1	55.8	3,500	1.8	
Expansion Area	AV 511	AV 512	8		34.64	0				0.16	0.39	0.3	0.7	200	1.50	40.2	39.4	2,400	1.3	
Expansion Area	AV 512	AV 513	7		30.31	0				0.14	0.35	0.4	1.1	200	0.40	20.7	19.7	1,100	0.7	
Expansion Area	AV 513	AV 514	6		25.98	0				0.12	0.31	0.5	1.4	200	3.40	60.5	59.1	3,800	1.9	

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

<u>Residents per Unit:</u> Single Family Home 4.33 Apartment 2 <u>Peaking Factors:</u> Residential 1+14/(4+P ^{0.5}) Sports Facility 2 Office/Commercial/Retail 3 Hotels/Hospitals/Schools/Dorms 2										<u>n = 0.013</u> <u>Average Flows:</u> Single Family Homes 400 L/c/d Apartments 400 L/c/d Sports Facility 15 L/seat Office/Commercial 25,000 L/ha.d Hospital 900 L/bed.d Schools 70 L/student.d Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Expansion Area	AV 505	AV 514		16	0	32				0.15	0.36	0.1	0.4	200	2.17	48.3	48.0	3,000	1.5	
Expansion Area	AV 514	AV 515			0	0				0.00	0.00	0.7	1.7	200	8.61	96.2	94.5	6,500	3.1	
Expansion Area	AV 504	AV 515	2	4	8.66	8				0.08	0.23	0.1	0.2	200	5.30	75.5	75.3	5,000	2.4	
Expansion Area	AV 515	AV 502			0	0				0.00	0.00	0.8	2.0	200	7.60	90.4	88.4	6,000	2.9	
Expansion Area	AV 502	AV 501			0	0				0.00	0.00	1.4	3.6	200	5.15	74.4	70.8	4,600	2.4	
Expansion Area	AV 501	AV 500			0	0				0.00	0.00	1.4	3.6	200	7.77	91.4	87.8	6,000	2.9	
Expansion Area	AV 500	AV 328		2	0	4				0.02	0.06	5.6	13.2	200	2.27	49.4	36.2	2,200	1.6	
Expansion Area	AV 328	AV 327	2		8.66	0				0.04	0.12	5.6	13.3	200	2.96	56.4	43.1	2,700	1.8	
Expansion Area	AV 327	MH 100			0	0				0.00	0.00	5.6	13.3	200	1.77	43.6	30.3	1,800	1.4	
Happy Valley	MH 100	MH 99	5		21.65	0				0.10	0.26	5.7	13.6	200	9.78	102.6	89.0	6,100	3.3	
Happy Valley	MH 99	MH 98	4		17.32	0				0.08	0.22	5.8	13.8	200	9.02	98.5	84.7	5,700	3.1	
Happy Valley	MH 98	MH 97	3		12.99	0				0.06	0.17	5.8	14.0	200	7.06	87.1	73.2	4,800	2.8	
Happy Valley	MH 97	MH 96			0	0				0.00	0.00	5.8	14.0	200	2.76	54.5	40.5	2,500	1.7	
Happy Valley	AV 238	AV 237	6		25.98	0				0.12	0.31	0.1	0.3	200	0.40	20.7	20.4	1,100	0.7	
Happy Valley	AV 237	AV 217	3		12.99	0				0.06	0.17	0.2	0.5	200	0.40	20.7	20.3	1,100	0.7	
Happy Valley	AV 217	AV 216	4		17.32	0				0.08	0.22	0.3	0.7	200	0.41	21.0	20.3	1,100	0.7	
Happy Valley	AV 216	MH 96	2	7	8.66	14				0.10	0.30	0.4	1.0	200	0.50	23.2	22.2	1,300	0.7	
Happy Valley	MH 96	MH 93	1		4.33	0				0.02	0.07	6.2	15.0	200	1.80	44.0	29.0	1,700	1.4	
Happy Valley	MH 96	MH 93			0	0				0.00	0.00	6.2	15.0	200	4.03	65.8	50.8	3,200	2.1	
Happy Valley	MH 93	MH 92	3	6	12.99	12				0.12	0.33	6.3	15.4	200	5.13	74.3	58.9	3,700	2.4	
Happy Valley	MH 92	MH 91	2		8.66	0				0.04	0.12	6.4	15.5	200	8.30	94.5	79.0	5,200	3.0	

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 400 L/c/d										
										Apartments 400 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes	Apts	Single Family Population	Apartment Population	Sports Facilities	Hotels Hospital Schools	Office Comm. Retail	Individual Average Flow	Individual Peak Flow	Cumulative Average Flow	Cumulative Peak Flow	Pipe Diameter	Pipe Slope	Design Capacity	Remaining Capacity		Flow Velocity	Notes
			(units)	(units)	(persons)	(persons)	(seats)	(persons)	(ha)	(L/s)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(L/s)	(L/s)	(Persons)	(m/s)	
Happy Valley	AV 234	AV 233	3	16	12.99	32				0.21	0.53	0.2	0.5	200	1.70	42.8	42.2	2,600	1.4	
Happy Valley	AV 233	AV 232	3	4	12.99	8				0.10	0.28	0.3	0.8	200	0.40	20.7	19.9	1,100	0.7	
Happy Valley	AV 232	AV 231	1	6	4.33	12				0.08	0.23	0.4	1.0	200	0.40	20.7	19.7	1,100	0.7	
Happy Valley	AV 231	AV 230		6	0	12				0.06	0.16	0.4	1.2	200	0.40	20.7	19.5	1,000	0.7	
Happy Valley	AV 230	AV 229	3	2	12.99	4				0.08	0.23	0.5	1.4	200	0.40	20.7	19.3	1,000	0.7	
Happy Valley	AV 229	AV 228	4	4	17.32	8				0.12	0.33	0.6	1.8	200	0.40	20.7	19.0	1,000	0.7	
Happy Valley	AV 228	AV 227	11		47.63	0				0.22	0.50	0.9	2.3	200	0.40	20.7	18.5	1,000	0.7	
Happy Valley	AV 227	AV 226	5		21.65	0				0.10	0.26	1.0	2.5	200	0.40	20.7	18.2	1,000	0.7	
Happy Valley	AV 235	AV 234	10		43.3	0				0.20	0.47	0.2	0.5	200	3.00	56.8	56.3	3,600	1.8	
Happy Valley	AV 234	AV 226		8	0	16				0.07	0.20	0.3	0.7	200	6.33	82.5	81.8	5,500	2.6	
Happy Valley	AV 226	AV 225	1	4	4.33	8				0.06	0.18	1.3	3.4	200	2.00	46.4	43.0	2,600	1.5	
Happy Valley	AV 239	AV 225	7		30.31	0				0.14	0.35	0.1	0.3	200	4.10	66.4	66.1	4,300	2.1	
Happy Valley	AV 225	AV 224		8	0	16				0.07	0.20	1.5	3.9	200	1.78	43.8	39.8	2,300	1.4	
Happy Valley	AV 240	AV 224	6		25.98	0				0.12	0.31	0.1	0.3	200	5.59	77.5	77.2	5,100	2.5	
Happy Valley	AV 224	AV 223		4	0	8				0.04	0.11	1.7	4.4	200	0.40	20.7	16.4	900	0.7	
Happy Valley	AV 223	MH 91	1		4.33	0				0.02	0.07	1.7	4.4	200	3.88	64.6	60.2	3,800	2.1	
Happy Valley	MH 91	MH 89	7		30.31	0				0.14	0.35	8.2	20.2	200	3.89	64.7	44.4	2,700	2.1	
Happy Valley	MH 89	MH 83			0	0				0.00	0.00	8.2	20.2	200	9.25	99.8	79.5	5,300	3.2	
Happy Valley	MH 104	MH 103			0	0		100		1.04	2.08	1.0	2.1	200	0.60	25.4	23.3	1,300	0.8	
Happy Valley	MH 103	MH 95			0	0				0.00	0.00	1.0	2.1	200	0.40	20.7	18.7	1,000	0.7	

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 400 L/c/d										
										Apartments 400 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Happy Valley	MH 95	MH 68			0	0				0.00	0.00	1.0	2.1	200	1.75	43.4	41.3	2,500	1.4	
Happy Valley	MH 72	MH 71	4	2	17.32	4				0.10	0.28	1.1	2.4	200	1.42	39.1	36.7	2,200	1.2	
Happy Valley	MH 72	MH 71			0	0				0.00	0.00	1.1	2.4	200	1.42	39.1	36.7	2,200	1.2	
Happy Valley	MH 71	MH 70	4	7	17.32	14				0.15	0.40	1.3	2.8	200	0.40	20.7	18.0	1,000	0.7	
Happy Valley	MH 70	MH 69	5		21.65	0				0.10	0.26	1.4	3.0	200	3.62	62.4	59.4	3,800	2.0	
Happy Valley	MH 69	MH 68	4		17.32	0				0.08	0.22	1.5	3.2	200	5.75	78.6	75.4	5,000	2.5	
Happy Valley	MH 68	MH 77	3		12.99	0				0.06	0.17	2.6	5.5	200	1.64	42.0	36.5	2,200	1.3	
Happy Valley	MH 77	MH 78			0	0				0.00	0.00	2.6	5.5	200	6.88	86.0	80.5	5,300	2.7	
Happy Valley	MH 78	MH 79			0	0				0.00	0.00	2.6	5.5	200	7.09	87.3	81.8	5,500	2.8	
Happy Valley	MH 79	MH 80			0	0				0.00	0.00	2.6	5.5	200	0.96	32.1	26.6	1,500	1.0	
Happy Valley	MH 73	MH 74	3	3	12.99	6				0.09	0.26	0.1	0.3	200	0.50	23.2	22.9	1,300	0.7	
Happy Valley	MH 74	MH 75	8		34.64	0				0.16	0.39	0.2	0.6	200	5.24	75.1	74.4	4,900	2.4	
Happy Valley	MH 75	MH 94			0	0				0.00	0.00	0.2	0.6	200	15.06	127.3	126.6	9,100	4.1	
Happy Valley	MH 94	MH 80			0	0				0.00	0.00	0.2	0.6	200	10.44	106.0	105.3	7,300	3.4	
Happy Valley	MH 85	MH 86	5		21.65	0				0.10	0.26	0.1	0.3	200	4.09	66.3	66.1	4,300	2.1	
Happy Valley	MH 86	MH 87	4		17.32	0				0.08	0.22	0.2	0.5	200	7.82	91.7	91.2	6,200	2.9	
Happy Valley	MH 87	MH 88	2		8.66	0				0.04	0.12	0.2	0.6	200	4.24	67.5	66.9	4,300	2.1	
Happy Valley	MH 88	MH 80			0	0				0.00	0.00	0.2	0.6	200	4.52	69.7	69.1	4,500	2.2	
Happy Valley	MH 80	MH 81			0	0				0.00	0.00	3.0	6.7	200	5.86	79.4	72.7	4,700	2.5	
Happy Valley	MH 81	MH 82			0	0				0.00	0.00	3.0	6.7	200	2.34	50.2	43.4	2,600	1.6	
Happy Valley	MH 82	MH 83			0	0				0.00	0.00	3.0	6.7	200	5.16	74.5	67.8	4,400	2.4	
Happy Valley	MH 83	MH 84			0	0				0.00	0.00	11.2	27.0	200	4.16	66.9	39.9	2,400	2.1	
Happy Valley	MH 84	MH 9	2		8.66	0				0.04	0.12	11.3	27.1	200	6.00	80.3	53.2	3,300	2.6	

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

<u>Residents per Unit:</u>										n = 0.013										
Single Family Home					4.33					<u>Average Flows:</u>										
Apartment					2					Single Family Homes					400 L/c/d					
										Apartments					400 L/c/d					
										Sports Facility					15 L/seat					
<u>Peaking Factors:</u>										Office/Commercial					25,000 L/ha.d					
Residential					1+14/(4+P ^{0.5})					Hospital					900 L/bed.d					
Sports Facility					2					Schools					70 L/student.d					
Office/Commercial/Retail					3					Hotels/Residence					225 L/bed.d					
Hotels/Hospitals/Schools/Dorms					2															
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Astro Hill Complex	PT A	PT B			0	0			0.10	0.03	0.09	0.0	0.1	250						Above ground
Astro Hill Complex	PT C	PT B			0	0			0.10	0.03	0.09	0.0	0.1	250						Above ground
Astro Hill Complex	PT B	PT D			0	0		150	1.00	0.68	1.65	0.7	1.8	250						Above ground
Astro Hill Complex	PT D	MH 9		100	0	200			0.10	0.95	1.73	1.7	3.6	250						Above ground
Astro Hill Complex	MH 9	MH 8	3		12.99	0				0.06	0.17	13.0	30.8	250	1.71	77.8	46.9	2,900	1.6	
Astro Hill Complex	MH 8	MH 7	10		43.3	0				0.20	0.47	13.2	31.3	250	4.26	122.7	91.4	6,200	2.5	
Astro Hill Complex	MH 55	MH 54	3	10	12.99	20				0.15	0.42	0.2	0.4	200	1.84	44.5	44.1	2,700	1.4	
Astro Hill Complex	MH 54	MH 53		10	0	20				0.09	0.25	0.2	0.7	200	0.64	26.2	25.6	1,400	0.8	
Astro Hill Complex	MH 53	MH 52		14	0	28				0.13	0.32	0.4	1.0	200	1.51	40.3	39.3	2,300	1.3	
Astro Hill Complex	MH 53	MH 52			0	0				0.00	0.00	0.4	1.0	200	0.50	23.2	22.2	1,200	0.7	
Astro Hill Complex	MH 52	MH 51	1		4.33	0				0.02	0.07	0.4	1.1	200	4.99	73.3	72.2	4,700	2.3	
Astro Hill Complex	MH 51	MH 50	3		12.99	0				0.06	0.17	0.5	1.2	200	3.04	57.2	56.0	3,500	1.8	
Astro Hill Complex	MH 50	MH 49	2		8.66	0				0.04	0.12	0.5	1.3	200	3.48	61.2	59.8	3,800	1.9	
Astro Hill Complex	MH 11	MH 49	1	4	4.33	8				0.06	0.18	0.1	0.2	200	3.53	61.6	61.4	3,900	2.0	
Astro Hill Complex	MH 49	MH 10	1		4.33	0				0.02	0.07	0.6	1.6	200	3.53	61.6	60.0	3,800	2.0	
Astro Hill Complex	MH 10	MH 7	1		4.33	0				0.02	0.07	0.6	1.7	200	2.80	54.9	53.2	3,300	1.7	
Astro Hill Complex	MH 7	PT A2			0	0				0.00	0.00	13.8	33.0	250	1.76	78.9	45.9	2,300	1.6	
Astro Hill Complex	PT A2	AV 400			0	0				0.00	0.00	13.8	33.0	250	2.00	84.1	51.1	2,700	1.7	
Astro Hill Complex	AV 400	PT B2			0	0				0.00	0.00	13.8	33.0	250	2.00	84.1	51.1	2,700	1.7	
Astro Hill Complex	PT B2	MH 5			0	0				0.00	0.00	13.8	33.0	250	3.33	108.5	75.6	5,000	2.2	

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 400 L/c/d										
										Apartments 400 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Iqaluit	MH 29	MH 28	4		17.32	0				0.08	0.22	0.1	0.2	200	3.35	60.0	59.8	3,800	1.9	
Lower Iqaluit	MH 28	MH 12	1		4.33	0				0.02	0.07	0.1	0.3	200	3.59	62.1	61.9	4,000	2.0	
Lower Iqaluit	PT A1	MH 42A	3		12.99	0				0.06	0.17	0.1	0.2	200					0.0	Pipe slope unkown
Lower Iqaluit	MH 42A	MH 42	2		8.66	0				0.04	0.12	0.1	0.3	200					0.0	Pipe slope unkown
Lower Iqaluit	MH 42	MH 43	6		25.98	0				0.12	0.31	0.2	0.6	200	1.63	41.9	41.3	2,500	1.3	
Lower Iqaluit	MH 45	MH 43	3		12.99	0				0.06	0.17	0.1	0.2	200	6.08	80.9	80.7	5,400	2.6	
Lower Iqaluit	MH 43	MH 44	9		38.97	0				0.18	0.43	0.5	1.2	200	7.77	91.4	90.2	6,100	2.9	
Lower Iqaluit	MH 44	MH 40	1		4.33	0				0.02	0.07	0.5	1.3	200	2.72	54.1	52.8	3,300	1.7	
Lower Iqaluit	MH 41	MH 40	4		17.32	0				0.08	0.22	0.1	0.2	200	6.81	85.6	85.4	5,700	2.7	
Lower Iqaluit	AV 40A	MH 40	6		25.98	0				0.12	0.31	0.1	0.3	150						Pipe slope unkown
Lower Iqaluit	MH 40	MH 24A	1		4.33	0				0.02	0.07	0.7	1.9	200	4.03	65.8	64.0	4,100	2.1	
Lower Iqaluit	MH 27	MH 26	2		8.66	0				0.04	0.12	0.0	0.1	150	3.42	28.2	28.0	1,600	1.6	
Lower Iqaluit	MH 26	MH 25	10		43.3	0				0.20	0.47	0.2	0.6	200	2.93	56.1	55.6	3,500	1.8	
Lower Iqaluit	MH 25	MH 24	2		8.66	0				0.04	0.12	0.3	0.7	200	2.65	53.4	52.7	3,300	1.7	
Lower Iqaluit	MH 24	MH 24A			0	0				0.00	0.00	0.3	0.7	200	0.57	24.8	24.1	1,400	0.8	
Lower Iqaluit	MH 24A	MH 33			0	0				0.00	0.00	1.0	2.6	200	0.57	24.8	22.2	1,200	0.8	
Lower Iqaluit	MH 45	MH 46	6		25.98	0				0.12	0.31	0.1	0.3	200	1.62	41.7	41.4	2,500	1.3	
Lower Iqaluit	MH 46B	MH 46A	8		34.64	0				0.16	0.39	0.2	0.4	200						Pipe slope unkown
Lower Iqaluit	MH 46A	MH 46	2		8.66	0				0.04	0.12	0.2	0.5	200						Pipe slope unkown

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 400 L/c/d										
										Apartments 400 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
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Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Iqaluit	MH 46	MH 47	5		21.65	0				0.10	0.26	0.4	1.1	200	1.68	42.5	41.4	2,500	1.4	
Lower Iqaluit	MH 47	MH 48	3		12.99	0				0.06	0.17	0.5	1.2	200	1.25	36.7	35.4	2,100	1.2	
Lower Iqaluit	MH 48	MH 39			0	0				0.00	0.00	0.5	1.2	200	0.78	29.0	27.7	1,600	0.9	
Lower Iqaluit	MH 39	MH 38	2		8.66	0				0.04	0.12	0.5	1.4	200	0.59	25.2	23.8	1,300	0.8	
Lower Iqaluit	MH 38	MH 37	3		12.99	0				0.06	0.17	0.6	1.5	200	5.93	79.9	78.3	5,200	2.5	
Lower Iqaluit	MH 37	MH 36	7		30.31	0				0.14	0.35	0.7	1.9	200	3.23	58.9	57.1	3,600	1.9	
Lower Iqaluit	MH 36	MH 35	4	4	17.32	8				0.12	0.33	0.8	2.2	200	1.92	45.4	43.2	2,600	1.4	
Lower Iqaluit	MH 35	MH 33			0	0				0.00	0.00	0.8	2.2	200	2.59	52.8	50.6	3,100	1.7	
Lower Iqaluit	MH 33	MH 23			0	0				0.00	0.00	1.8	4.8	200	5.45	76.6	71.8	4,700	2.4	
Lower Iqaluit	MH 58	MH 60	5		21.65	0				0.10	0.26	0.1	0.3	200	8.76	97.1	96.8	6,700	3.1	
Lower Iqaluit	MH 59	MH 60	5		21.65	0				0.10	0.26	0.1	0.3	200	2.26	49.3	49.0	3,100	1.6	
Lower Iqaluit	MH 60	MH 61	9		38.97	0				0.18	0.43	0.4	1.0	200	2.75	54.4	53.4	3,400	1.7	
Lower Iqaluit	MH 61	MH 62	2		8.66	0				0.04	0.12	0.4	1.1	200	0.40	20.7	19.7	1,100	0.7	
Lower Iqaluit	MH 62	MH 63	3		12.99	0				0.06	0.17	0.5	1.2	200	0.50	23.2	21.9	1,200	0.7	
Lower Iqaluit	MH 66	MH 65	6		25.98	0				0.12	0.31	0.1	0.3	200	1.70	42.8	42.5	2,600	1.4	
Lower Iqaluit	MH 65	MH 63	6		25.98	0				0.12	0.31	0.2	0.6	200	3.15	58.2	57.6	3,700	1.9	
Lower Iqaluit	MH 63	MH 63A	1		4.33	0				0.02	0.07	0.7	1.9	200						Pipe slope unkown
Lower Iqaluit	MH 63A	MH 63B			0	0				0.00	0.00	0.7	1.9	200						Pipe slope unkown
Lower Iqaluit	MH 63B	MH 32B	4		17.32	0				0.08	0.22	0.8	2.1	200						Pipe slope unkown
Lower Iqaluit	MH 32B	MH 32A	5	6	21.65	12				0.16	0.42	1.0	2.6	200						Pipe slope unkown
Lower Iqaluit	MH 32A	MH 32		6	0	12				0.06	0.16	1.0	2.7	200						Pipe slope unkown
Lower Iqaluit	MH 32	MH 31	2	4	8.66	8				0.08	0.23	1.1	3.0	200	0.54	24.1	21.1	1,200	0.8	

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 400 L/c/d										
										Apartments 400 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Iqaluit	MH 31	MH 30	1		4.33	0				0.02	0.07	1.1	3.0	200	0.46	22.2	19.2	1,000	0.7	
Lower Iqaluit	MH 30	MH 23	2		8.66	0				0.04	0.12	1.2	3.1	200	0.31	18.3	15.1	800	0.6	
Lower Iqaluit	MH 23	P.S.#2			0	0				0.00	0.00	3.0	7.9	200	1.89	45.1	37.2	2,200	1.4	
Lower Iqaluit	MH 22	MH 21	6		25.98	0				0.12	0.31	0.1	0.3	200	0.96	32.1	31.8	1,900	1.0	
Lower Iqaluit	MH 21	MH 20	6		25.98	0				0.12	0.31	0.2	0.6	200	1.50	40.2	39.6	2,300	1.3	
Lower Iqaluit	MH 20	MH 19	4		17.32	0				0.08	0.22	0.3	0.8	200	0.80	29.3	28.5	1,600	0.9	
Lower Iqaluit	MH 19	MH 23B	2		8.66	0				0.04	0.12	0.4	0.9	200	2.00	46.4	45.4	2,800	1.5	
Lower Iqaluit	MH 23B	P.S. #2			0	0				0.00	0.00	0.4	0.9	200	0.57	24.8	23.8	800	0.8	
Lower Iqaluit	P.S. #2	MH 22			0	0				0.00	0.00	3.4	8.9	150		21.0	12.1	600		Pump
Lower Iqaluit	MH 22	MH 13	2		8.66	0				0.04	0.12	3.4	9.0	200	0.58	25.0	16.0	800	0.8	
Lower Iqaluit	MH 13	MH 12	1		4.33	0			0.10	0.05	0.15	3.4	9.1	200	0.40	20.7	11.6	600	0.7	
Lower Iqaluit	MH 12	MH 5			0	0				0.00	0.00	3.5	9.4	200	0.45	22.0	12.6	600	0.7	
Lower Iqaluit	MH 5	MH 4			0	0				0.00	0.00	17.4	42.4	250	0.40	37.6	-4.8	0	0.8	
Lower Iqaluit	MH 4	MH 3			0	0			0.50	0.14	0.43	17.5	42.8	250	0.40	37.6	-5.2	0	0.8	
Astro Hill Complex	PT E2	PT F2			0	0		500		0.41	0.81	0.4	0.8	200						Pipe slope unknown
Astro Hill Complex	PT G-1	PT G2		5	0	10				0.05	0.14	0.0	0.1	200	0.90	31.1	31.0	1,800	1.0	
Astro Hill Complex	PT G2	PT F2		5	0	10				0.05	0.14	0.1	0.3	200	0.90	31.1	30.8	1,800	1.0	
Astro Hill Complex	PT H2	PT F2		5	0	10				0.05	0.14	0.0	0.1	100	0.02	0.7	0.6	30	0.1	
Astro Hill Complex	PT F2	MH 102		2	0	4				0.02	0.06	0.6	1.3	200						Pipe slope unknown

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013											
Single Family Home 4.33										Average Flows:											
Apartment 2										Single Family Homes 400 L/c/d											
										Apartments 400 L/c/d											
Peaking Factors:										Sports Facility 15 L/seat											
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d											
Sports Facility 2										Hospital 900 L/bed.d											
Office/Commercial/Retail 3										Schools 70 L/student.d											
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d											
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes	
Astro Hill Complex	MH 102	PT I2	3		12.99	0				0.06	0.17	0.6	1.5	200							Above ground
Astro Hill Complex	PT I2	PT J2	14		60.62	0				0.28	0.61	0.9	2.1	200							Above ground
Astro Hill Complex	PT J2	PT K			0	0				0.00	0.00	0.9	2.1	200							Above ground
Astro Hill Complex	AV L	PT K	2		8.66	0		200	0.10	0.23	0.53	0.2	0.5	150							Pipe slope unknown
Astro Hill Complex	PT K	AV 402			0	0				0.00	0.00	1.1	2.6	200							Pipe slope unknown
Astro Hill Complex	AV 205	AV 405			0	0			0.20	0.06	0.17	0.1	0.2	200	4.20	67.2	67.0	4,400	2.1		
Astro Hill Complex	AV 405	AV 404			0	0			0.20	0.06	0.17	0.1	0.3	200	1.96	45.9	45.6	2,800	1.5		
Astro Hill Complex	AV 404	AV 402			0	0				0.00	0.00	0.1	0.3	200	3.13	58.0	57.7	3,700	1.8		
Astro Hill Complex	AV 402	AV 403	2		8.66	0				0.04	0.12	1.3	3.1	200	3.25	59.1	56.1	3,600	1.9		
Astro Hill Complex	AV 403	MH 3			0	0				0.00	0.00	1.3	3.1	200	4.11	66.5	63.4	4,100	2.1		
Lower Iqaluit	MH 3	MH 2			0	0				0.00	0.00	18.8	45.9	250	1.44	71.4	25.5	1,500	1.5		
Lower Iqaluit	MH 2	MH 1			0	0				0.00	0.00	18.8	45.9	250	1.81	80.0	34.1	1,400	1.6		
Lower Iqaluit	MH 1	P.S. #1			0	0				0.00	0.00	18.8	45.9	250	1.81	80.0	34.1	1,400	1.6		
Lower Base	AV 412	AV 411	5		21.65	0				0.10	0.26	0.1	0.3	200	6.80	85.5	85.3	5,700	2.7		
Lower Base	AV 434	AV 435	3		12.99	0			0.10	0.09	0.26	0.1	0.3	200	1.94	45.7	45.4	2,800	1.5		
Lower Base	AV 435	AV 411	3		12.99	0				0.06	0.17	0.1	0.4	200	5.45	76.6	76.1	5,000	2.4		
Lower Base	AV 411	AV 410			0	0				0.00	0.00	0.2	0.7	200	1.97	46.0	45.3	2,800	1.5		
Lower Base	AV 410	AV 409	6		25.98	0				0.12	0.31	0.4	1.0	200	1.45	39.5	38.5	2,300	1.3		
Lower Base	AV 207	AV 407	9		38.97	0				0.18	0.43	0.2	0.4	200	3.19	58.6	58.2	3,700	1.9		

City of Iqaluit - Water and Sewer Study

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 400 L/c/d										
										Apartments 400 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Base	AV 407	AV 408	5		21.65	0				0.10	0.26	0.3	0.7	200	7.36	89.0	88.3	6,000	2.8	
Lower Base	AV 408	AV 409	8		34.64	0				0.16	0.39	0.4	1.1	200	5.07	73.9	72.8	4,800	2.4	
Lower Base	AV 409	AV 437	5		21.65	0				0.10	0.26	0.5	1.3	200	0.84	30.1	28.7	1,700	1.0	
Lower Base	AV 437	P.S. #1	1		4.33	0				0.02	0.07	0.6	1.4	200	0.84	30.1	28.7	1,700	1.0	
Airport Loop	P.S. #1	PT D			0	0				0.00	0.00	19.3	47.3	200	1.00	56.0	8.7	400		Pump
Airport Loop	PT D	PT E			0	0				0.00	0.00	19.3	47.3	200	2.92					Forcemain
Airport Loop	PT E	PT F			0	0				0.00	0.00	19.3	47.3	200	0.00					Forcemain
Airport Loop	PT F	PT G			0	0				0.00	0.00	19.3	47.3	200	0.96					Forcemain
Airport Loop	PT G	PT H			0	0				0.00	0.00	19.3	47.3	200	0.00					Forcemain
Airport Loop	PT H	PT I			0	0				0.00	0.00	19.3	47.3	200	0.96					Forcemain
Airport Loop	PT I	AV 211			0	0				0.00	0.00	19.3	47.3	200						Forcemain
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	14.11	57.2	57.2	3,700	3.2	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	15.59	60.1	60.1	3,900	3.4	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	18.46	65.4	65.4	4,200	3.7	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	9.84	47.8	47.8	3,000	2.7	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	11.88	52.5	52.5	3,300	3.0	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	10.68	49.8	49.8	3,100	2.8	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	9.30	46.4	46.4	2,900	2.6	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	9.43	46.8	46.8	2,900	2.6	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	13.48	55.9	55.9	3,600	3.2	Above ground
Reservoir Mains	MH 307	MH 306			0	0				0.00	0.00	0.0	0.0	150	11.15	50.9	50.9	3,200	2.9	
Reservoir Mains	MH 307	MH 306			0	0				0.00	0.00	0.0	0.0	200	12.47	115.8	115.8	8,200	3.7	
Reservoir Mains	MH 306	MH 305			0	0				0.00	0.00	0.0	0.0	200	7.49	89.8	89.8	6,100	2.9	
Airport Loop	MH 305	AV 304			0	0				0.00	0.00	0.0	0.0	250	0.82	53.9	53.9	3,400	1.1	
Airport Loop	AV 304	AV 303			0	0				0.00	0.00	0.0	0.0	250	0.75	51.5	51.5	3,200	1.0	
Airport Loop	AV 303	AV 301			0	0				0.00	0.00	0.0	0.0	250	0.77	52.2	52.2	3,300	1.1	

City of Iqaluit - Water and Sewer Study

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Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Airport Loop	AV 304B	AV 303B			0	0				0.00	0.00	0.0	0.0	150	10.77	50.0	50.0	3,100	2.8	
Airport Loop	AV 303B	AV 302			0	0			0.13	0.04	0.11	0.0	0.1	150	1.04	15.5	15.4	800	0.9	
Airport Loop	AV 302	AV 301			0	0				0.00	0.00	0.0	0.1	200	5.26	75.2	75.1	5,000	2.4	
Airport Loop	AV 301	AV 300			0	0				0.00	0.00	0.0	0.1	200	5.77	78.8	78.7	5,200	2.5	
Airport Loop	AV 300	AV 203			0	0	500			0.09	0.17	0.1	0.3	200	4.50	69.6	69.3	4,500	2.2	
Airport Loop	AV 200	AV 201			0	0			0.20	0.06	0.17	0.1	0.2	200	0.76	28.6	28.4	1,600	0.9	
Airport Loop	AV 201	AV 202			0	0	200			0.03	0.07	0.1	0.2	200	0.51	23.4	23.2	1,300	0.7	
Airport Loop	AV 202	AV 203			0	0				0.00	0.00	0.1	0.2	200	1.00	32.8	32.6	1,900	1.0	
Airport Loop	AV 203	AV 204			0	0			0.05	0.01	0.04	0.2	0.6	200	2.03	46.7	46.2	2,900	1.5	
Airport Loop	AV 204	AV 205			0	0			0.19	0.05	0.16	0.3	0.7	200	2.05	47.0	46.2	2,900	1.5	
Airport Loop	AV 201	AV 414			0	0			0.05	0.01	0.04	0.0	0.0	200	2.50	51.9	51.8	3,300	1.7	
Airport Loop	AV 414	AV 413			0	0			0.20	0.06	0.17	0.1	0.2	200	0.49	23.0	22.7	1,300	0.7	
Airport Loop	AV 413	AV 205			0	0				0.00	0.00	0.1	0.2	200	0.57	24.8	24.5	1,400	0.8	
Airport Loop	AV 205	AV 206			0	0			0.18	0.05	0.16	0.4	1.1	200	1.36	38.3	37.2	2,200	1.2	
Airport Loop	AV 206	AV 207	3		12.99	0			0.10	0.09	0.26	0.5	1.4	250	0.98	58.9	57.5	3,700	1.2	
Airport Loop	AV 207	AV 208			0	0			0.18	0.05	0.16	0.6	1.5	200	0.46	22.2	20.7	1,200	0.7	
Airport Loop	AV 213	AV 212		12	0	24			0.17	0.16	0.43	0.2	0.4	200	0.46	22.2	21.8	1,200	0.7	
Airport Loop	AV 212	AV 208			0	0				0.00	0.00	0.2	0.4	200	0.56	24.5	24.1	1,400	0.8	
Airport Loop	AV 208	AV 209			0	0		100		0.26	0.52	1.0	2.5	250	4.11	120.6	118.1	8,400	2.5	
Airport Loop	AV 209	AV 210			0	0			0.09	0.03	0.08	1.0	2.6	250	1.49	72.6	70.0	4,600	1.5	
Airport Loop	AV 210	AV 211			0	0			1.10	0.32	0.95	1.3	3.5	250	0.47	40.9	37.3	2,300	0.8	

City of Iqaluit - Water and Sewer Study

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Residents per Unit:										n = 0.013										
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Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
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Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Airport Loop	AV 210	AV 211			0	0			0.00	0.00	0.00	1.3	3.5	250	4.97	132.6	129.1	9,300	2.7	
Federal Building Loop	AV 5	PT E			0	0		400		1.04	2.08	1.0	2.1	200	0.60	25.4	23.3	1,300	0.8	
Federal Building Loop	PT E	AV 4			0	0				0.00	0.00	1.0	2.1	200	0.60	25.4	23.3	1,300	0.8	
Federal Building Loop	PT D3	PT C3			0	0			5.00	1.45	4.34	1.4	4.3	100	0.50	3.7	-0.7	0	0.5	Service Connection
Federal Building Loop	PT C3	PT B3			0	0				0.00	0.00	1.4	4.3	150	0.50	10.8	6.4	300	0.6	Service Connection
Federal Building Loop	PT B3	AV 4			0	0				0.00	0.00	1.4	4.3	150	0.50	10.8	6.4	300	0.6	Service Connection
Federal Building Loop	AV 4	AV 3			0	0				0.00	0.00	2.5	6.4	200	0.30	18.0	11.5	600	0.6	
Federal Building Loop	AV 3	AV 264			0	0				0.00	0.00	2.5	6.4	200	1.01	33.0	26.5	1,500	1.0	
Federal Building Loop	AV 264	AV 263			0	0				0.00	0.00	2.5	6.4	200	1.49	40.0	33.6	2,000	1.3	
Federal Building Loop	AV 263	AV 262			0	0				0.00	0.00	2.5	6.4	200	0.57	24.8	18.3	1,000	0.8	
Federal Building Loop	AV 262	AV 261			0	0				0.00	0.00	2.5	6.4	200	0.63	26.0	19.6	1,100	0.8	
Federal Building Loop	AV 261	AV 260			0	0				0.00	0.00	2.5	6.4	200	0.55	24.3	17.9	1,000	0.8	
Federal Building Loop	AV 260	AV 259			0	0				0.00	0.00	2.5	6.4	200	0.60	25.4	19.0	1,000	0.8	
Federal Building Loop	AV 259	AV 258			0	0				0.00	0.00	2.5	6.4	200	0.43	21.5	15.1	800	0.7	
Federal Building Loop	AV 258	AV 257			0	0				0.00	0.00	2.5	6.4	200	0.40	20.7	14.3	800	0.7	
Federal Building Loop	AV 257	AV 256			0	0				0.00	0.00	2.5	6.4	200	0.40	20.7	14.3	800	0.7	
Airport Loop	AV 256	AV 255			0	0			0.20	0.06	0.17	2.5	6.6	250	0.72	50.5	43.9	2,700	1.0	
Airport Loop	AV 255	AV 254			0	0			0.36	0.10	0.31	2.7	6.9	250	0.77	52.2	45.3	2,800	1.1	
Airport Loop	AV 254	AV 253			0	0				0.00	0.00	2.7	6.9	250	1.57	74.5	67.6	4,400	1.5	
Airport Loop	AV 253	AV 252			0	0			0.04	0.01	0.03	2.7	6.9	250	0.90	56.4	49.5	3,100	1.1	
Airport Loop	AV 252	AV 251			0	0				0.00	0.00	2.7	6.9	250	0.50	42.0	35.1	2,100	0.9	
Airport Loop	AV 251	AV 211			0	0			0.04	0.01	0.03	2.7	7.0	250	0.97	58.6	51.6	3,200	1.2	
Airport Loop	AV 211	AV 241			0	0				0.00	0.00	23.3	57.8	300	1.40	114.4	56.7	3,600	1.6	
Airport Loop	AV 241	AV 242			0	0				0.00	0.00	23.3	57.8	300	0.80	86.5	28.7	1,600	1.2	
Airport Loop	AV 242	AV 243			0	0				0.00	0.00	23.3	57.8	300	0.67	79.2	21.4	1,200	1.1	

Technical Annex 5 - Calculation of Sewage Flows using 400 L/c/d for Resident Population

<u>Residents per Unit:</u>											n =		0.013	
Single Family Home		4.33		<u>Average Flows:</u>										
Apartment		2		Single Family Homes		400		L/c/d						
				Apartments		400		L/c/d						
				Sports Facility		15		L/seat						
<u>Peaking Factors:</u>				Office/Commercial		25,000		L/ha.d						
Residential		1+14/(4+P ^{0.5})		Hospital		900		L/bed.d						
Sports Facility		2		Schools		70		L/student.d						
Office/Commercial/Retail		3		Hotels/Residence		225		L/bed.d						
Hotels/Hospitals/Schools/Dorms		2												

Area	From	To	S.F. Homes	Apts	Single Family Population	Apartment Population	Sports Facilities	Hotels Hospital Schools	Office Comm. Retail	Individual Average Flow	Individual Peak Flow	Cumulative Average Flow	Cumulative Peak Flow	Pipe Diameter	Pipe Slope	Design Capacity	Remaining Capacity		Flow Velocity	Notes
			(units)	(units)	(persons)	(persons)	(seats)	(persons)	(ha)	(L/s)	(L/s)	(L/s)	(L/s)	(mm)	(%)	(L/s)	(L/s)	(Persons)	(m/s)	
Airport Loop	AV 243	D. Station			0	0				0.00	0.00	23.3	57.8	300	0.42	62.7	4.9	250	0.9	
Airport Loop	D. Station	Lagoon			0	0				9.03	9.03	32.4	66.8	250						Truck discharge (8 h)

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

<u>Residents per Unit:</u>										n = 0.013										
Single Family Home 4.33										<u>Average Flows:</u>										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
<u>Peaking Factors:</u>										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Expansion Area	AV 355	AV 353	1	20	4.33	40				0.14	0.35	0.1	0.3	150	1.25	17.0	16.7	1,400	1.0	
Expansion Area	AV 354	AV 353	2	10	8.66	20				0.09	0.25	0.1	0.3	150	2.00	21.5	21.3	1,800	1.2	
Expansion Area	AV 353	AV 352		12	0	24				0.08	0.20	0.3	0.8	150	4.96	33.9	33.1	2,900	1.9	
Expansion Area	AV 352	AV 351		9	0	18				0.06	0.16	0.4	1.0	150	2.30	23.1	22.1	1,900	1.3	
Expansion Area	AV 358	AV 357					500			0.09	0.17	0.1	0.2	150	0.61	11.9	11.7	900	0.7	Assumed AV number
Expansion Area	AV 357	AV 356						200		0.16	0.00	0.2	0.2	150	0.55	11.3	11.1	900	0.6	Assumed AV number
Expansion Area	AV 356	AV 351								0.00	0.00	0.2	0.2	150	0.56	11.4	11.2	900	0.6	Assumed AV number
Expansion Area	AV 351	AV 343		15	0	30		200	0.01	0.26	0.57	0.9	1.7	150	0.84	14.0	12.3	900	0.8	
Expansion Area	AV 343	AV 342		14	0	28				0.09	0.23	1.0	1.9	150	2.14	22.3	20.4	1,700	1.3	
Expansion Area	AV 342	AV 341		16	0	32				0.10	0.25	1.1	2.2	150	0.90	14.4	12.3	900	0.8	
Expansion Area	AV 346	AV 345		6	0	12				0.04	0.11	0.0	0.1	150	1.37	17.8	17.7	1,400	1.0	
Expansion Area	AV 345	AV 344		18	0	36				0.12	0.28	0.2	0.4	150	6.89	40.0	39.6	3,600	2.3	
Expansion Area	AV 344	AV 341			0	0				0.00	0.00	0.2	0.4	150	5.50	35.7	35.3	3,200	2.0	
Expansion Area	AV 344	AV 341			0	0				0.00	0.00	0.2	0.4	150	1.00	15.2	14.8	1,200	0.9	
Expansion Area	AV 341	AV 340		12	0	24				0.08	0.20	1.3	2.8	150	1.04	15.5	12.8	1,000	0.9	
Expansion Area	AV 340	AV 339		18	0	36				0.12	0.28	1.4	3.0	150	1.92	21.1	18.1	1,500	1.2	
Expansion Area	AV 339	AV 338		6	0	12				0.04	0.11	1.5	3.1	150	0.60	11.8	8.6	600	0.7	
Expansion Area	AV 336	AV 337		31	0	62				0.20	0.43	0.2	0.4	150						Pipe slope unkown
Expansion Area	AV 337	AV 338		18	0	36				0.12	0.28	0.3	0.7	150	0.75	13.2	12.5	1,000	0.7	
Expansion Area	AV 338	AV 335			0	0				0.00	0.00	1.8	3.9	150	0.60	11.8	7.9	600	0.7	
Expansion Area	AV 335	AV 334		16	0	32				0.10	0.25	1.9	4.1	200	0.75	28.4	24.3	2,100	0.9	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Expansion Area	AV 347	AV 346	1	23	4.33	46				0.16	0.38	0.2	0.4	150	2.70	25.0	24.6	2,100	1.4	
Expansion Area	AV 346	AV 348		12	0	24				0.08	0.20	0.2	0.6	150	8.05	43.2	42.6	3,900	2.4	
Expansion Area	AV 348	AV 349		21	0	42				0.13	0.31	0.4	0.9	200	7.24	88.3	87.4	9,000	2.8	
Expansion Area	AV 349	AV 350		28	0	56				0.18	0.40	0.6	1.3	200	10.20	104.8	103.5	10,000	3.3	
Expansion Area	AV 350	AV 334			0	0				0.00	0.00	0.6	1.3	200	1.83	44.4	43.1	4,000	1.4	
Expansion Area	AV 334	AV 333		24	0	48				0.15	0.35	2.6	5.8	200	7.95	92.5	86.7	8,900	2.9	
Expansion Area	AV 333	AV 331		16	0	32				0.10	0.25	2.7	6.0	200	4.66	70.8	64.8	6,400	2.3	
Expansion Area	AV 332	AV 331		5	0	10		150		0.03	0.09	0.0	0.1	150	0.93	14.7	14.6	1,200	0.8	
Expansion Area	AV 331	AV 330		17	0	34				0.11	0.26	2.8	6.4	200	4.83	72.1	65.7	6,500	2.3	
Expansion Area	AV 330	AV 329		20	0	40				0.13	0.30	3.0	6.7	200	7.77	91.4	84.8	8,600	2.9	
Expansion Area	AV 329	AV 500		4	0	8				0.03	0.08	3.0	6.7	200	2.27	49.4	42.7	3,900	1.6	
Expansion Area	AV 509	AV 508	9		38.97	0				0.12	0.30	0.1	0.3	200	1.50	40.2	39.9	3,600	1.3	
Expansion Area	AV 508	AV 507	9		38.97	0				0.12	0.30	0.2	0.6	200	0.40	20.7	20.2	1,700	0.7	
Expansion Area	AV 507	AV 506		16	0	32				0.10	0.25	0.4	0.8	200	0.40	20.7	19.9	1,600	0.7	
Expansion Area	AV 506	AV 505		6	0	12				0.04	0.11	0.4	1.0	200	6.38	82.8	81.9	8,300	2.6	
Expansion Area	AV 505	AV 504		5	0	10				0.03	0.09	0.4	1.0	200	9.87	103.0	102.0	10,000	3.3	
Expansion Area	AV 504	AV 503	2		8.66	0				0.03	0.08	0.5	1.1	200	8.80	97.3	96.2	10,000	3.1	
Expansion Area	AV 503	AV 502			0	0				0.00	0.00	0.5	1.1	200	4.18	67.1	65.9	6,500	2.1	
Expansion Area	AV 509	AV 510	2		8.66	0				0.03	0.08	0.0	0.1	200	0.40	20.7	20.7	1,700	0.7	
Expansion Area	AV 510	AV 511	4		17.32	0				0.06	0.15	0.1	0.2	200	2.93	56.1	55.9	5,300	1.8	
Expansion Area	AV 511	AV 512	8		34.64	0				0.11	0.27	0.2	0.5	200	1.50	40.2	39.7	3,600	1.3	
Expansion Area	AV 512	AV 513	7		30.31	0				0.10	0.24	0.3	0.7	200	0.40	20.7	20.0	1,600	0.7	
Expansion Area	AV 513	AV 514	6		25.98	0				0.08	0.21	0.4	1.0	200	3.40	60.5	59.5	5,800	1.9	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Expansion Area	AV 505	AV 514		16	0	32				0.10	0.25	0.1	0.3	200	2.17	48.3	48.1	4,500	1.5	
Expansion Area	AV 514	AV 515			0	0				0.00	0.00	0.5	1.2	200	8.61	96.2	95.0	9,900	3.1	
Expansion Area	AV 504	AV 515	2	4	8.66	8				0.05	0.16	0.1	0.2	200	5.30	75.5	75.3	7,500	2.4	
Expansion Area	AV 515	AV 502			0	0				0.00	0.00	0.5	1.4	200	7.60	90.4	89.1	9,200	2.9	
Expansion Area	AV 502	AV 501			0	0				0.00	0.00	1.0	2.5	200	5.15	74.4	71.9	7,100	2.4	
Expansion Area	AV 501	AV 500			0	0				0.00	0.00	1.0	2.5	200	7.77	91.4	88.9	9,100	2.9	
Expansion Area	AV 500	AV 328		2	0	4				0.01	0.04	4.0	9.3	200	2.27	49.4	40.1	3,600	1.6	
Expansion Area	AV 328	AV 327	2		8.66	0				0.03	0.08	4.0	9.4	200	2.96	56.4	47.1	4,400	1.8	
Expansion Area	AV 327	MH 100			0	0				0.00	0.00	4.0	9.4	200	1.77	43.6	34.3	3,000	1.4	
Happy Valley	MH 100	MH 99	5		21.65	0				0.07	0.18	4.1	9.6	200	9.78	102.6	93.0	9,500	3.3	
Happy Valley	MH 99	MH 98	4		17.32	0				0.06	0.15	4.1	9.7	200	9.02	98.5	88.8	9,100	3.1	
Happy Valley	MH 98	MH 97	3		12.99	0				0.04	0.12	4.2	9.8	200	7.06	87.1	77.3	7,800	2.8	
Happy Valley	MH 97	MH 96			0	0				0.00	0.00	4.2	9.8	200	2.76	54.5	44.7	4,100	1.7	
Happy Valley	AV 238	AV 237	6		25.98	0				0.08	0.21	0.1	0.2	200	0.40	20.7	20.5	1,700	0.7	
Happy Valley	AV 237	AV 217	3		12.99	0				0.04	0.12	0.1	0.3	200	0.40	20.7	20.4	1,700	0.7	
Happy Valley	AV 217	AV 216	4		17.32	0				0.06	0.15	0.2	0.5	200	0.41	21.0	20.5	1,700	0.7	
Happy Valley	AV 216	MH 96	2	7	8.66	14				0.07	0.21	0.3	0.7	200	0.50	23.2	22.5	1,900	0.7	
Happy Valley	MH 96	MH 93	1		4.33	0				0.01	0.05	4.4	10.6	200	1.80	44.0	33.4	3,000	1.4	
Happy Valley	MH 96	MH 93			0	0				0.00	0.00	4.4	10.6	200	4.03	65.8	55.3	5,300	2.1	
Happy Valley	MH 93	MH 92	3	6	12.99	12				0.08	0.23	4.5	10.8	200	5.13	74.3	63.5	6,200	2.4	
Happy Valley	MH 92	MH 91	2		8.66	0				0.03	0.08	4.5	10.9	200	8.30	94.5	83.6	8,500	3.0	

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population																				
Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes	Apts	Single Family Population	Apartment Population	Sports Facilities	Hotels Hospital Schools	Office Comm. Retail	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
			(units)	(units)	(persons)	(persons)	(seats)	(persons)	(ha)											
Happy Valley	AV 234	AV 233	3	16	12.99	32				0.14	0.37	0.1	0.4	200	1.70	42.8	42.4	3,900	1.4	
Happy Valley	AV 233	AV 232	3	4	12.99	8				0.07	0.20	0.2	0.6	200	0.40	20.7	20.2	1,700	0.7	
Happy Valley	AV 232	AV 231	1	6	4.33	12				0.05	0.16	0.3	0.7	200	0.40	20.7	20.0	1,600	0.7	
Happy Valley	AV 231	AV 230		6	0	12				0.04	0.11	0.3	0.8	200	0.40	20.7	19.9	1,600	0.7	
Happy Valley	AV 230	AV 229	3	2	12.99	4				0.05	0.16	0.4	1.0	200	0.40	20.7	19.7	1,600	0.7	
Happy Valley	AV 229	AV 228	4	4	17.32	8				0.08	0.23	0.4	1.2	200	0.40	20.7	19.5	1,600	0.7	
Happy Valley	AV 228	AV 227	11		47.63	0				0.15	0.35	0.6	1.6	200	0.40	20.7	19.2	1,600	0.7	
Happy Valley	AV 227	AV 226	5		21.65	0				0.07	0.18	0.7	1.8	200	0.40	20.7	19.0	1,500	0.7	
Happy Valley	AV 235	AV 234	10		43.3	0				0.14	0.32	0.1	0.3	200	3.00	56.8	56.5	5,400	1.8	
Happy Valley	AV 234	AV 226		8	0	16				0.05	0.14	0.2	0.5	200	6.33	82.5	82.1	8,300	2.6	
Happy Valley	AV 226	AV 225	1	4	4.33	8				0.04	0.12	0.9	2.3	200	2.00	46.4	44.0	4,000	1.5	
Happy Valley	AV 239	AV 225	7		30.31	0				0.10	0.24	0.1	0.2	200	4.10	66.4	66.2	6,500	2.1	
Happy Valley	AV 225	AV 224		8	0	16				0.05	0.14	1.0	2.7	200	1.78	43.8	41.0	3,800	1.4	
Happy Valley	AV 240	AV 224	6		25.98	0				0.08	0.21	0.1	0.2	200	5.59	77.5	77.3	7,800	2.5	
Happy Valley	AV 224	AV 223		4	0	8				0.03	0.08	1.1	3.0	200	0.40	20.7	17.7	1,400	0.7	
Happy Valley	AV 223	MH 91	1		4.33	0				0.01	0.05	1.2	3.1	200	3.88	64.6	61.5	6,000	2.1	
Happy Valley	MH 91	MH 89	7		30.31	0				0.10	0.24	5.8	14.2	200	3.89	64.7	50.5	4,700	2.1	
Happy Valley	MH 89	MH 83			0	0				0.00	0.00	5.8	14.2	200	9.25	99.8	85.6	8,700	3.2	
Happy Valley	MH 104	MH 103			0	0		100		1.04	2.08	1.0	2.1	200	0.60	25.4	23.3	2,000	0.8	
Happy Valley	MH 103	MH 95			0	0				0.00	0.00	1.0	2.1	200	0.40	20.7	18.7	1,500	0.7	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Happy Valley	MH 95	MH 68			0	0				0.00	0.00	1.0	2.1	200	1.75	43.4	41.3	3,800	1.4	
Happy Valley	MH 72	MH 71	4	2	17.32	4				0.07	0.19	1.1	2.3	200	1.42	39.1	36.8	3,300	1.2	
Happy Valley	MH 72	MH 71			0	0				0.00	0.00	1.1	2.3	200	1.42	39.1	36.8	3,300	1.2	
Happy Valley	MH 71	MH 70	4	7	17.32	14				0.10	0.28	1.2	2.6	200	0.40	20.7	18.2	1,500	0.7	
Happy Valley	MH 70	MH 69	5		21.65	0				0.07	0.18	1.3	2.7	200	3.62	62.4	59.7	5,800	2.0	
Happy Valley	MH 69	MH 68	4		17.32	0				0.06	0.15	1.3	2.9	200	5.75	78.6	75.8	7,500	2.5	
Happy Valley	MH 68	MH 77	3		12.99	0				0.04	0.12	2.4	5.1	200	1.64	42.0	36.9	3,300	1.3	
Happy Valley	MH 77	MH 78			0	0				0.00	0.00	2.4	5.1	200	6.88	86.0	80.9	8,100	2.7	
Happy Valley	MH 78	MH 79			0	0				0.00	0.00	2.4	5.1	200	7.09	87.3	82.2	8,300	2.8	
Happy Valley	MH 79	MH 80			0	0				0.00	0.00	2.4	5.1	200	0.96	32.1	27.0	2,300	1.0	
Happy Valley	MH 73	MH 74	3	3	12.99	6				0.06	0.18	0.1	0.2	200	0.50	23.2	23.0	1,900	0.7	
Happy Valley	MH 74	MH 75	8		34.64	0				0.11	0.27	0.2	0.4	200	5.24	75.1	74.6	7,500	2.4	
Happy Valley	MH 75	MH 94			0	0				0.00	0.00	0.2	0.4	200	15.06	127.3	126.8	10,000	4.1	
Happy Valley	MH 94	MH 80			0	0				0.00	0.00	0.2	0.4	200	10.44	106.0	105.5	10,000	3.4	
Happy Valley	MH 85	MH 86	5		21.65	0				0.07	0.18	0.1	0.2	200	4.09	66.3	66.1	6,500	2.1	
Happy Valley	MH 86	MH 87	4		17.32	0				0.06	0.15	0.1	0.3	200	7.82	91.7	91.4	9,500	2.9	
Happy Valley	MH 87	MH 88	2		8.66	0				0.03	0.08	0.2	0.4	200	4.24	67.5	67.1	6,500	2.1	
Happy Valley	MH 88	MH 80			0	0				0.00	0.00	0.2	0.4	200	4.52	69.7	69.3	6,800	2.2	
Happy Valley	MH 80	MH 81			0	0				0.00	0.00	2.7	6.0	200	5.86	79.4	73.4	6,900	2.5	
Happy Valley	MH 81	MH 82			0	0				0.00	0.00	2.7	6.0	200	2.34	50.2	44.2	4,100	1.6	
Happy Valley	MH 82	MH 83			0	0				0.00	0.00	2.7	6.0	200	5.16	74.5	68.6	6,800	2.4	
Happy Valley	MH 83	MH 84			0	0				0.00	0.00	8.5	20.1	200	4.16	66.9	46.8	4,400	2.1	
Happy Valley	MH 84	MH 9	2		8.66	0				0.03	0.08	8.6	20.2	200	6.00	80.3	60.1	5,800	2.6	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Astro Hill Complex	PT A	PT B			0	0			0.10	0.03	0.09	0.0	0.1	250						Above ground
Astro Hill Complex	PT C	PT B			0	0			0.10	0.03	0.09	0.0	0.1	250						Above ground
Astro Hill Complex	PT B	PT D			0	0		150	1.00	0.68	1.65	0.7	1.8	250						Above ground
Astro Hill Complex	PT D	MH 9		100	0	200			0.10	0.67	1.22	1.4	3.0	250						Above ground
Astro Hill Complex	MH 9	MH 8	3		12.99	0				0.04	0.12	10.0	23.4	250	1.71	77.8	54.4	5,200	1.6	
Astro Hill Complex	MH 8	MH 7	10		43.3	0				0.14	0.32	10.2	23.7	250	4.26	122.7	99.0	10,000	2.5	
Astro Hill Complex	MH 55	MH 54	3	10	12.99	20				0.11	0.29	0.1	0.3	200	1.84	44.5	44.2	4,100	1.4	
Astro Hill Complex	MH 54	MH 53		10	0	20				0.06	0.17	0.2	0.5	200	0.64	26.2	25.8	2,200	0.8	
Astro Hill Complex	MH 53	MH 52		14	0	28				0.09	0.23	0.3	0.7	200	1.51	40.3	39.6	3,600	1.3	
Astro Hill Complex	MH 53	MH 52			0	0				0.00	0.00	0.3	0.7	200	0.50	23.2	22.5	1,900	0.7	
Astro Hill Complex	MH 52	MH 51	1		4.33	0				0.01	0.05	0.3	0.7	200	4.99	73.3	72.5	7,200	2.3	
Astro Hill Complex	MH 51	MH 50	3		12.99	0				0.04	0.12	0.3	0.8	200	3.04	57.2	56.3	5,400	1.8	
Astro Hill Complex	MH 50	MH 49	2		8.66	0				0.03	0.08	0.3	0.9	200	3.48	61.2	60.3	5,800	1.9	
Astro Hill Complex	MH 11	MH 49	1	4	4.33	8				0.04	0.12	0.0	0.1	200	3.53	61.6	61.5	6,000	2.0	
Astro Hill Complex	MH 49	MH 10	1		4.33	0				0.01	0.05	0.4	1.1	200	3.53	61.6	60.5	5,900	2.0	
Astro Hill Complex	MH 10	MH 7	1		4.33	0				0.01	0.05	0.4	1.1	200	2.80	54.9	53.7	5,100	1.7	
Astro Hill Complex	MH 7	PT A2			0	0				0.00	0.00	10.6	24.8	250	1.76	78.9	54.1	5,100	1.6	
Astro Hill Complex	PT A2	AV 400			0	0				0.00	0.00	10.6	24.8	250	2.00	84.1	59.3	5,700	1.7	
Astro Hill Complex	AV 400	PT B2			0	0				0.00	0.00	10.6	24.8	250	2.00	84.1	59.3	5,700	1.7	
Astro Hill Complex	PT B2	MH 5			0	0				0.00	0.00	10.6	24.8	250	3.33	108.5	83.7	8,500	2.2	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Iqaluit	MH 29	MH 28	4		17.32	0				0.06	0.15	0.1	0.2	200	3.35	60.0	59.9	5,800	1.9	
Lower Iqaluit	MH 28	MH 12	1		4.33	0				0.01	0.05	0.1	0.2	200	3.59	62.1	61.9	6,000	2.0	
Lower Iqaluit	PT A1	MH 42A	3		12.99	0				0.04	0.12	0.0	0.1	200					0.0	Pipe slope unkown
Lower Iqaluit	MH 42A	MH 42	2		8.66	0				0.03	0.08	0.1	0.2	200					0.0	Pipe slope unkown
Lower Iqaluit	MH 42	MH 43	6		25.98	0				0.08	0.21	0.2	0.4	200	1.63	41.9	41.5	3,800	1.3	
Lower Iqaluit	MH 45	MH 43	3		12.99	0				0.04	0.12	0.0	0.1	200	6.08	80.9	80.8	8,200	2.6	
Lower Iqaluit	MH 43	MH 44	9		38.97	0				0.12	0.30	0.3	0.8	200	7.77	91.4	90.6	9,400	2.9	
Lower Iqaluit	MH 44	MH 40	1		4.33	0				0.01	0.05	0.3	0.9	200	2.72	54.1	53.2	5,000	1.7	
Lower Iqaluit	MH 41	MH 40	4		17.32	0				0.06	0.15	0.1	0.2	200	6.81	85.6	85.4	8,600	2.7	
Lower Iqaluit	AV 40A	MH 40	6		25.98	0				0.08	0.21	0.1	0.2	150						Pipe slope unkown
Lower Iqaluit	MH 40	MH 24A	1		4.33	0				0.01	0.05	0.5	1.3	200	4.03	65.8	64.6	6,300	2.1	
Lower Iqaluit	MH 27	MH 26	2		8.66	0				0.03	0.08	0.0	0.1	150	3.42	28.2	28.1	2,400	1.6	
Lower Iqaluit	MH 26	MH 25	10		43.3	0				0.14	0.32	0.2	0.4	200	2.93	56.1	55.7	5,300	1.8	
Lower Iqaluit	MH 25	MH 24	2		8.66	0				0.03	0.08	0.2	0.5	200	2.65	53.4	52.9	5,000	1.7	
Lower Iqaluit	MH 24	MH 24A			0	0				0.00	0.00	0.2	0.5	200	0.57	24.8	24.3	2,100	0.8	
Lower Iqaluit	MH 24A	MH 33			0	0				0.00	0.00	0.7	1.8	200	0.57	24.8	23.0	1,900	0.8	
Lower Iqaluit	MH 45	MH 46	6		25.98	0				0.08	0.21	0.1	0.2	200	1.62	41.7	41.5	3,800	1.3	
Lower Iqaluit	MH 46B	MH 46A	8		34.64	0				0.11	0.27	0.1	0.3	200						Pipe slope unkown
Lower Iqaluit	MH 46A	MH 46	2		8.66	0				0.03	0.08	0.1	0.4	200						Pipe slope unkown

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Iqaluit	MH 46	MH 47	5		21.65	0				0.07	0.18	0.3	0.7	200	1.68	42.5	41.8	3,800	1.4	
Lower Iqaluit	MH 47	MH 48	3		12.99	0				0.04	0.12	0.3	0.9	200	1.25	36.7	35.8	3,200	1.2	
Lower Iqaluit	MH 48	MH 39			0	0				0.00	0.00	0.3	0.9	200	0.78	29.0	28.1	2,400	0.9	
Lower Iqaluit	MH 39	MH 38	2		8.66	0				0.03	0.08	0.4	0.9	200	0.59	25.2	24.2	2,100	0.8	
Lower Iqaluit	MH 38	MH 37	3		12.99	0				0.04	0.12	0.4	1.1	200	5.93	79.9	78.8	7,900	2.5	
Lower Iqaluit	MH 37	MH 36	7		30.31	0				0.10	0.24	0.5	1.3	200	3.23	58.9	57.6	5,500	1.9	
Lower Iqaluit	MH 36	MH 35	4	4	17.32	8				0.08	0.23	0.6	1.5	200	1.92	45.4	43.9	4,000	1.4	
Lower Iqaluit	MH 35	MH 33			0	0				0.00	0.00	0.6	1.5	200	2.59	52.8	51.2	4,900	1.7	
Lower Iqaluit	MH 33	MH 23			0	0				0.00	0.00	1.3	3.3	200	5.45	76.6	73.3	7,200	2.4	
Lower Iqaluit	MH 58	MH 60	5		21.65	0				0.07	0.18	0.1	0.2	200	8.76	97.1	96.9	10,000	3.1	
Lower Iqaluit	MH 59	MH 60	5		21.65	0				0.07	0.18	0.1	0.2	200	2.26	49.3	49.1	4,500	1.6	
Lower Iqaluit	MH 60	MH 61	9		38.97	0				0.12	0.30	0.3	0.7	200	2.75	54.4	53.7	5,000	1.7	
Lower Iqaluit	MH 61	MH 62	2		8.66	0				0.03	0.08	0.3	0.7	200	0.40	20.7	20.0	1,600	0.7	
Lower Iqaluit	MH 62	MH 63	3		12.99	0				0.04	0.12	0.3	0.9	200	0.50	23.2	22.3	1,900	0.7	
Lower Iqaluit	MH 66	MH 65	6		25.98	0				0.08	0.21	0.1	0.2	200	1.70	42.8	42.6	3,900	1.4	
Lower Iqaluit	MH 65	MH 63	6		25.98	0				0.08	0.21	0.2	0.4	200	3.15	58.2	57.8	5,500	1.9	
Lower Iqaluit	MH 63	MH 63A	1		4.33	0				0.01	0.05	0.5	1.3	200						Pipe slope unkown
Lower Iqaluit	MH 63A	MH 63B			0	0				0.00	0.00	0.5	1.3	200						Pipe slope unkown
Lower Iqaluit	MH 63B	MH 32B	4		17.32	0				0.06	0.15	0.6	1.5	200						Pipe slope unkown
Lower Iqaluit	MH 32B	MH 32A	5	6	21.65	12				0.11	0.29	0.7	1.8	200						Pipe slope unkown
Lower Iqaluit	MH 32A	MH 32		6	0	12				0.04	0.11	0.7	1.9	200						Pipe slope unkown
Lower Iqaluit	MH 32	MH 31	2	4	8.66	8				0.05	0.16	0.8	2.0	200	0.54	24.1	22.1	1,800	0.8	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home					4.33					Average Flows:										
Apartment					2					Single Family Homes					277 L/c/d					
										Apartments					277 L/c/d					
										Sports Facility					15 L/seat					
Residential					1+14/(4+P ^{0.5})					Office/Commercial					25,000 L/ha.d					
Sports Facility					2					Hospital					900 L/bed.d					
Office/Commercial/Retail					3					Schools					70 L/student.d					
Hotels/Hospitals/Schools/Dorms					2					Hotels/Residence					225 L/bed.d					
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Iqaluit	MH 31	MH 30	1		4.33	0				0.01	0.05	0.8	2.1	200	0.46	22.2	20.2	1,700	0.7	
Lower Iqaluit	MH 30	MH 23	2		8.66	0				0.03	0.08	0.8	2.2	200	0.31	18.3	16.1	1,300	0.6	
Lower Iqaluit	MH 23	P.S.#2			0	0				0.00	0.00	2.1	5.5	200	1.89	45.1	39.6	3,500	1.4	
Lower Iqaluit	MH 22	MH 21	6		25.98	0				0.08	0.21	0.1	0.2	200	0.96	32.1	31.9	2,800	1.0	
Lower Iqaluit	MH 21	MH 20	6		25.98	0				0.08	0.21	0.2	0.4	200	1.50	40.2	39.7	3,600	1.3	
Lower Iqaluit	MH 20	MH 19	4		17.32	0				0.06	0.15	0.2	0.6	200	0.80	29.3	28.8	2,500	0.9	
Lower Iqaluit	MH 19	MH 23B	2		8.66	0				0.03	0.08	0.2	0.7	200	2.00	46.4	45.7	4,200	1.5	
Lower Iqaluit	MH 23B	P.S. #2			0	0				0.00	0.00	0.2	0.7	200	0.57	24.8	24.1	2,000	0.8	
Lower Iqaluit	P.S. #2	MH 22			0	0				0.00	0.00	2.3	6.1	150		21.0	14.9	1,200		Pump Capacity
Lower Iqaluit	MH 22	MH 13	2		8.66	0				0.03	0.08	2.3	6.2	200	0.58	25.0	18.8	1,500	0.8	
Lower Iqaluit	MH 13	MH 12	1		4.33	0			0.10	0.04	0.13	2.4	6.4	200	0.40	20.7	14.4	1,100	0.7	
Lower Iqaluit	MH 12	MH 5			0	0				0.00	0.00	2.5	6.6	200	0.45	22.0	15.4	1,200	0.7	
Lower Iqaluit	MH 5	MH 4			0	0				0.00	0.00	13.0	31.4	250	0.40	37.6	6.2	400	0.8	
Lower Iqaluit	MH 4	MH 3			0	0			0.50	0.14	0.43	13.2	31.8	250	0.40	37.6	5.8	400	0.8	
Astro Hill Complex	PT E2	PT F2			0	0		500		0.41	0.81	0.4	0.8	200						Pipe slope unknown
Astro Hill Complex	PT G-1	PT G2		5	0	10				0.03	0.09	0.0	0.1	200	0.90	31.1	31.0	2,700	1.0	
Astro Hill Complex	PT G2	PT F2		5	0	10				0.03	0.09	0.1	0.2	200	0.90	31.1	30.9	2,700	1.0	
Astro Hill Complex	PT H2	PT F2		5	0	10				0.03	0.09	0.0	0.1	100	0.02	0.7	0.6	50	0.1	
Astro Hill Complex	PT F2	MH 102		2	0	4				0.01	0.04	0.5	1.1	200						Pipe slope unknown

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
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										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
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Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Astro Hill Complex	MH 102	PT I2	3		12.99	0				0.04	0.12	0.6	1.3	200						Above ground
Astro Hill Complex	PT I2	PT J2	14		60.62	0				0.19	0.43	0.8	1.7	200						Above ground
Astro Hill Complex	PT J2	PT K			0	0				0.00	0.00	0.8	1.7	200						Above ground
Astro Hill Complex	AV L	PT K	2		8.66	0		200	0.10	0.22	0.49	0.2	0.5	150						Pipe slope unknown
Astro Hill Complex	PT K	AV 402			0	0				0.00	0.00	1.0	2.2	200						Pipe slope unknown
Astro Hill Complex	AV 205	AV 405			0	0			0.20	0.06	0.17	0.1	0.2	200	4.20	67.2	67.0	6,500	2.1	
Astro Hill Complex	AV 405	AV 404			0	0			0.20	0.06	0.17	0.1	0.3	200	1.96	45.9	45.6	4,200	1.5	
Astro Hill Complex	AV 404	AV 402			0	0				0.00	0.00	0.1	0.3	200	3.13	58.0	57.7	5,500	1.8	
Astro Hill Complex	AV 402	AV 403	2		8.66	0				0.03	0.08	1.1	2.6	200	3.25	59.1	56.5	5,500	1.9	
Astro Hill Complex	AV 403	MH 3			0	0				0.00	0.00	1.1	2.6	200	4.11	66.5	63.9	6,000	2.1	
Lower Iqaluit	MH 3	MH 2			0	0				0.00	0.00	14.3	34.4	250	1.44	71.4	36.9	3,300	1.5	
Lower Iqaluit	MH 2	MH 1			0	0				0.00	0.00	14.3	34.4	250	1.81	80.0	45.6	4,200	1.6	
Lower Iqaluit	MH 1	P.S. #1			0	0				0.00	0.00	14.3	34.4	250	1.81	80.0	45.6	4,200	1.6	
Lower Base	AV 412	AV 411	5		21.65	0				0.07	0.18	0.1	0.2	200	6.80	85.5	85.3	8,600	2.7	
Lower Base	AV 434	AV 435	3		12.99	0			0.10	0.07	0.21	0.1	0.2	200	1.94	45.7	45.5	4,200	1.5	
Lower Base	AV 435	AV 411	3		12.99	0				0.04	0.12	0.1	0.3	200	5.45	76.6	76.2	7,500	2.4	
Lower Base	AV 411	AV 410			0	0				0.00	0.00	0.2	0.5	200	1.97	46.0	45.5	4,200	1.5	
Lower Base	AV 410	AV 409	6		25.98	0				0.08	0.21	0.3	0.7	200	1.45	39.5	38.8	3,500	1.3	
Lower Base	AV 207	AV 407	9		38.97	0				0.12	0.30	0.1	0.3	200	3.19	58.6	58.3	5,600	1.9	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Lower Base	AV 407	AV 408	5		21.65	0				0.07	0.18	0.2	0.5	200	7.36	89.0	88.5	9,000	2.8	
Lower Base	AV 408	AV 409	8		34.64	0				0.11	0.27	0.3	0.7	200	5.07	73.9	73.1	7,000	2.4	
Lower Base	AV 409	AV 437	5		21.65	0				0.07	0.18	0.4	0.9	200	0.84	30.1	29.1	2,500	1.0	
Lower Base	AV 437	P.S. #1	1		4.33	0				0.01	0.05	0.4	1.0	200	0.84	30.1	29.1	2,500	1.0	
Airport Loop	P.S. #1	PT D			0	0				0.00	0.00	14.7	35.4	200	1.00	56.0	20.6	1,700		Pump Capacity
Airport Loop	PT D	PT E			0	0				0.00	0.00	14.7	35.4	200	2.92					Forcemain
Airport Loop	PT E	PT F			0	0				0.00	0.00	14.7	35.4	200	0.00					Forcemain
Airport Loop	PT F	PT G			0	0				0.00	0.00	14.7	35.4	200	0.96					Forcemain
Airport Loop	PT G	PT H			0	0				0.00	0.00	14.7	35.4	200	0.00					Forcemain
Airport Loop	PT H	PT I			0	0				0.00	0.00	14.7	35.4	200	0.96					Forcemain
Airport Loop	PT I	AV 211			0	0				0.00	0.00	14.7	35.4	200						Forcemain
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	14.11	57.2	57.2	5,400	3.2	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	15.59	60.1	60.1	5,800	3.4	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	18.46	65.4	65.4	6,300	3.7	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	9.84	47.8	47.8	4,400	2.7	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	11.88	52.5	52.5	5,000	3.0	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	10.68	49.8	49.8	4,600	2.8	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	9.30	46.4	46.4	4,300	2.6	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	9.43	46.8	46.8	4,300	2.6	Above ground
Reservoir Mains					0	0				0.00	0.00	0.0	0.0	150	13.48	55.9	55.9	5,300	3.2	Above ground
Reservoir Mains	MH 307	MH 306			0	0				0.00	0.00	0.0	0.0	150	11.15	50.9	50.9	4,800	2.9	
Reservoir Mains	MH 307	MH 306			0	0				0.00	0.00	0.0	0.0	200	12.47	115.8	115.8	10,000	3.7	
Reservoir Mains	MH 306	MH 305			0	0				0.00	0.00	0.0	0.0	200	7.49	89.8	89.8	9,100	2.9	
Airport Loop	MH 305	AV 304			0	0				0.00	0.00	0.0	0.0	250	0.82	53.9	53.9	5,100	1.1	
Airport Loop	AV 304	AV 303			0	0				0.00	0.00	0.0	0.0	250	0.75	51.5	51.5	4,900	1.0	
Airport Loop	AV 303	AV 301			0	0				0.00	0.00	0.0	0.0	250	0.77	52.2	52.2	4,900	1.1	

City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Airport Loop	AV 304B	AV 303B			0	0				0.00	0.00	0.0	0.0	150	10.77	50.0	50.0	4,600	2.8	
Airport Loop	AV 303B	AV 302			0	0			0.13	0.04	0.11	0.0	0.1	150	1.04	15.5	15.4	1,200	0.9	
Airport Loop	AV 302	AV 301			0	0				0.00	0.00	0.0	0.1	200	5.26	75.2	75.1	7,500	2.4	
Airport Loop	AV 301	AV 300			0	0				0.00	0.00	0.0	0.1	200	5.77	78.8	78.7	7,800	2.5	
Airport Loop	AV 300	AV 203			0	0	500			0.09	0.17	0.1	0.3	200	4.50	69.6	69.3	6,900	2.2	
Airport Loop	AV 200	AV 201			0	0			0.20	0.06	0.17	0.1	0.2	200	0.76	28.6	28.4	2,500	0.9	
Airport Loop	AV 201	AV 202			0	0	200			0.03	0.07	0.1	0.2	200	0.51	23.4	23.2	1,900	0.7	
Airport Loop	AV 202	AV 203			0	0				0.00	0.00	0.1	0.2	200	1.00	32.8	32.6	2,900	1.0	
Airport Loop	AV 203	AV 204			0	0			0.05	0.01	0.04	0.2	0.6	200	2.03	46.7	46.2	4,300	1.5	
Airport Loop	AV 204	AV 205			0	0			0.19	0.05	0.16	0.3	0.7	200	2.05	47.0	46.2	4,300	1.5	
Airport Loop	AV 201	AV 414			0	0			0.05	0.01	0.04	0.0	0.0	200	2.50	51.9	51.8	4,900	1.7	
Airport Loop	AV 414	AV 413			0	0			0.20	0.06	0.17	0.1	0.2	200	0.49	23.0	22.7	1,900	0.7	
Airport Loop	AV 413	AV 205			0	0				0.00	0.00	0.1	0.2	200	0.57	24.8	24.5	2,100	0.8	
Airport Loop	AV 205	AV 206			0	0			0.18	0.05	0.16	0.4	1.1	200	1.36	38.3	37.2	3,300	1.2	
Airport Loop	AV 206	AV 207	3		12.99	0			0.10	0.07	0.21	0.5	1.3	250	0.98	58.9	57.6	5,500	1.2	
Airport Loop	AV 207	AV 208			0	0			0.18	0.05	0.16	0.5	1.5	200	0.46	22.2	20.8	1,700	0.7	
Airport Loop	AV 213	AV 212		12	0	24			0.17	0.13	0.35	0.1	0.3	200	0.46	22.2	21.9	1,800	0.7	
Airport Loop	AV 212	AV 208			0	0				0.00	0.00	0.1	0.3	200	0.56	24.5	24.2	2,000	0.8	
Airport Loop	AV 208	AV 209			0	0		100		0.26	0.52	0.9	2.3	250	4.11	120.6	118.2	10,000	2.5	
Airport Loop	AV 209	AV 210			0	0			0.09	0.03	0.08	0.9	2.4	250	1.49	72.6	70.2	6,900	1.5	
Airport Loop	AV 210	AV 211			0	0			1.10	0.32	0.95	1.3	3.4	250	0.47	40.9	37.5	3,400	0.8	

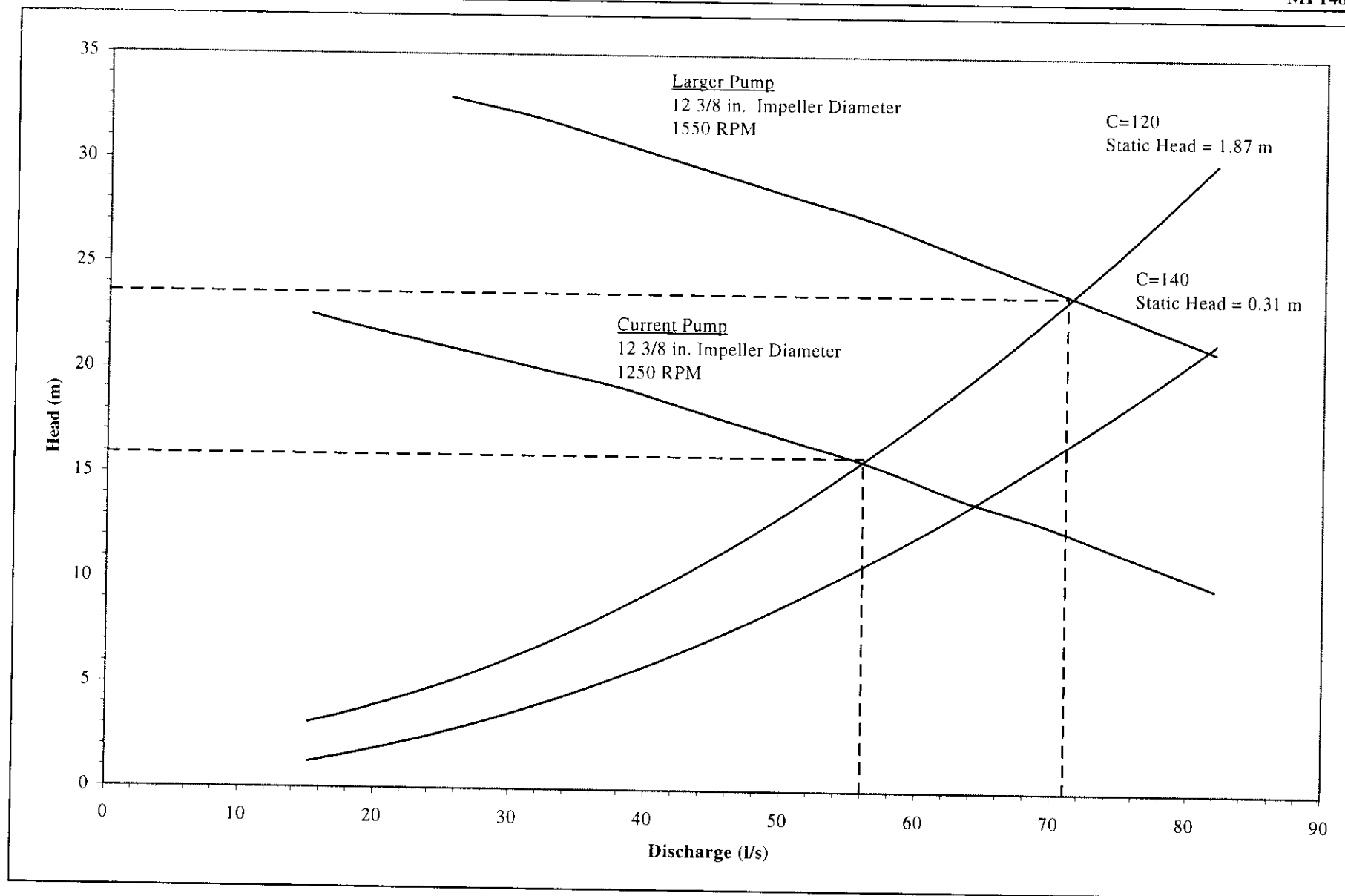
City of Iqaluit - Water and Sewer Study

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

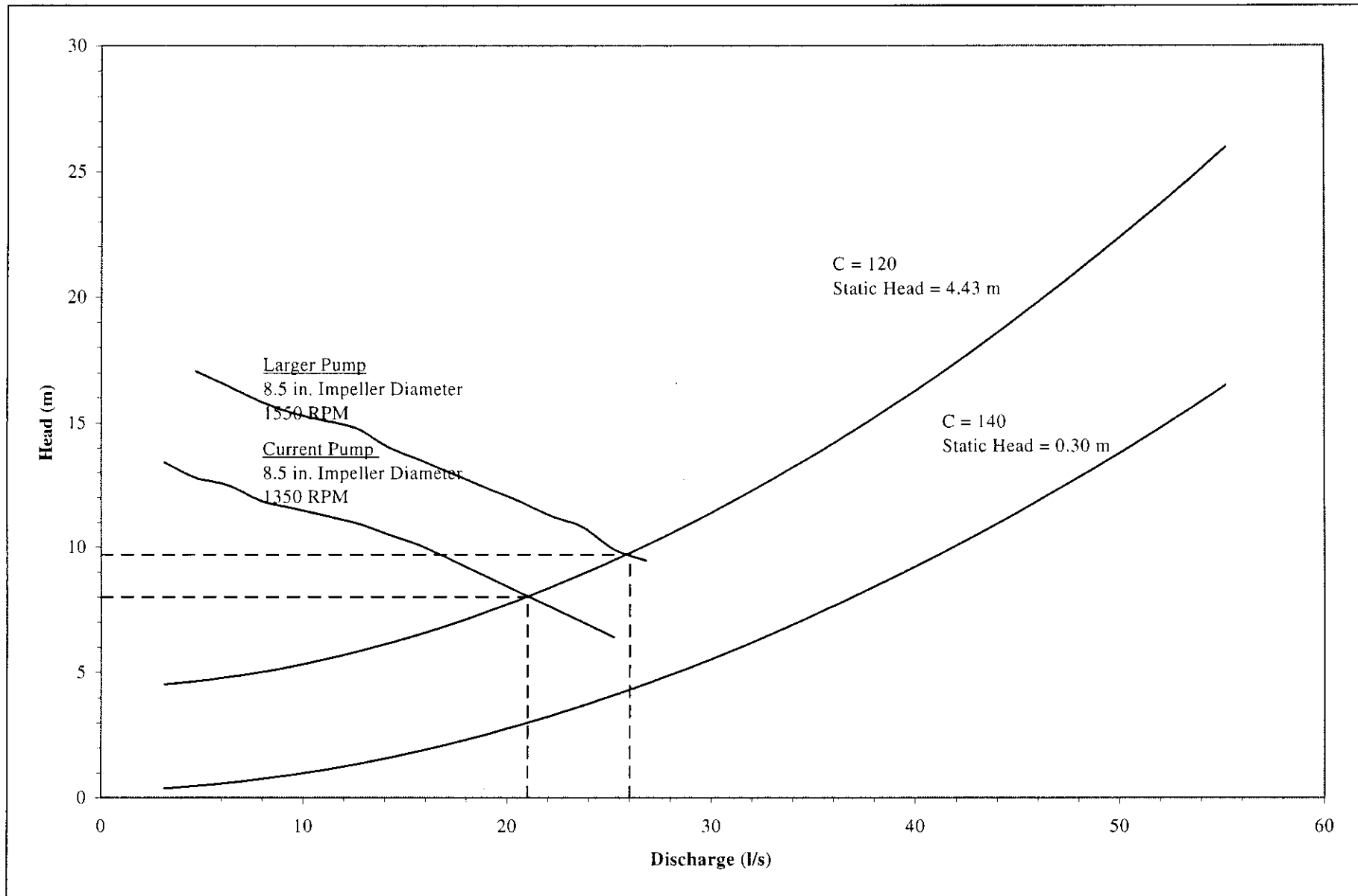
Residents per Unit:										n = 0.013										
Single Family Home 4.33										Average Flows:										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
Peaking Factors:										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Airport Loop	AV 210	AV 211			0	0			0.00	0.00	0.00	1.3	3.4	250	4.97	132.6	129.2	10,000	2.7	
Federal Building Loop	AV 5	PT E			0	0		400		1.04	2.08	1.0	2.1	200	0.60	25.4	23.3	2,000	0.8	
Federal Building Loop	PT E	AV 4			0	0				0.00	0.00	1.0	2.1	200	0.60	25.4	23.3	2,000	0.8	
Federal Building Loop	PT D3	PT C3			0	0			5.00	1.45	4.34	1.4	4.3	100	0.50	3.7	-0.7	0	0.5	Service Connection
Federal Building Loop	PT C3	PT B3			0	0				0.00	0.00	1.4	4.3	150	0.50	10.8	6.4	400	0.6	Service Connection
Federal Building Loop	PT B3	AV 4			0	0				0.00	0.00	1.4	4.3	150	0.50	10.8	6.4	400	0.6	Service Connection
Federal Building Loop	AV 4	AV 3			0	0				0.00	0.00	2.5	6.4	200	0.30	18.0	11.5	900	0.6	
Federal Building Loop	AV 3	AV 264			0	0				0.00	0.00	2.5	6.4	200	1.01	33.0	26.5	2,300	1.0	
Federal Building Loop	AV 264	AV 263			0	0				0.00	0.00	2.5	6.4	200	1.49	40.0	33.6	3,000	1.3	
Federal Building Loop	AV 263	AV 262			0	0				0.00	0.00	2.5	6.4	200	0.57	24.8	18.3	1,500	0.8	
Federal Building Loop	AV 262	AV 261			0	0				0.00	0.00	2.5	6.4	200	0.63	26.0	19.6	1,600	0.8	Exposed Pipes
Federal Building Loop	AV 261	AV 260			0	0				0.00	0.00	2.5	6.4	200	0.55	24.3	17.9	1,500	0.8	
Federal Building Loop	AV 260	AV 259			0	0				0.00	0.00	2.5	6.4	200	0.60	25.4	19.0	1,500	0.8	
Federal Building Loop	AV 259	AV 258			0	0				0.00	0.00	2.5	6.4	200	0.43	21.5	15.1	1,200	0.7	
Federal Building Loop	AV 258	AV 257			0	0				0.00	0.00	2.5	6.4	200	0.40	20.7	14.3	1,100	0.7	
Federal Building Loop	AV 257	AV 256			0	0				0.00	0.00	2.5	6.4	200	0.40	20.7	14.3	1,100	0.7	
Airport Loop	AV 256	AV 255			0	0			0.20	0.06	0.17	2.5	6.6	250	0.72	50.5	43.9	4,000	1.0	
Airport Loop	AV 255	AV 254			0	0			0.36	0.10	0.31	2.7	6.9	250	0.77	52.2	45.3	4,200	1.1	
Airport Loop	AV 254	AV 253			0	0				0.00	0.00	2.7	6.9	250	1.57	74.5	67.6	6,000	1.5	
Airport Loop	AV 253	AV 252			0	0			0.04	0.01	0.03	2.7	6.9	250	0.90	56.4	49.5	4,600	1.1	
Airport Loop	AV 252	AV 251			0	0				0.00	0.00	2.7	6.9	250	0.50	42.0	35.1	3,200	0.9	
Airport Loop	AV 251	AV 211			0	0			0.04	0.01	0.03	2.7	7.0	250	0.97	58.6	51.6	4,900	1.2	
Airport Loop	AV 211	AV 241			0	0				0.00	0.00	18.6	45.8	300	1.40	114.4	68.7	6,500	1.6	
Airport Loop	AV 241	AV 242			0	0				0.00	0.00	18.6	45.8	300	0.80	86.5	40.7	3,700	1.2	
Airport Loop	AV 242	AV 243			0	0				0.00	0.00	18.6	45.8	300	0.67	79.2	33.4	3,000	1.1	

Technical Annex 6 - Calculation of Sewage Flows using 277 L/c/d for Resident Population

<u>Residents per Unit:</u>										n = 0.013										
Single Family Home 4.33										<u>Average Flows:</u>										
Apartment 2										Single Family Homes 277 L/c/d										
										Apartments 277 L/c/d										
<u>Peaking Factors:</u>										Sports Facility 15 L/seat										
Residential 1+14/(4+P ^{0.5})										Office/Commercial 25,000 L/ha.d										
Sports Facility 2										Hospital 900 L/bed.d										
Office/Commercial/Retail 3										Schools 70 L/student.d										
Hotels/Hospitals/Schools/Dorms 2										Hotels/Residence 225 L/bed.d										
Area	From	To	S.F. Homes (units)	Apts (units)	Single Family Population (persons)	Apartment Population (persons)	Sports Facilities (seats)	Hotels Hospital Schools (persons)	Office Comm. Retail (ha)	Individual Average Flow (L/s)	Individual Peak Flow (L/s)	Cumulative Average Flow (L/s)	Cumulative Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Slope (%)	Design Capacity (L/s)	Remaining Capacity (L/s) (Persons)		Flow Velocity (m/s)	Notes
Airport Loop	AV 243	D.Station			0	0				0.00	0.00	18.6	45.8	300	0.42	62.7	16.9	1,400	0.9	
Airport Loop	D.Station	Lagoon			0	0				9.03	9.03	27.6	54.8	250						Truck discharge (8 h)



Sewage Pumping Station 1



Sewage Pumping Station 2

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
BUILDING 222													
Pump-Main	J-135	Steel	50	60	160	0.016	9.76	1.54	1	2	0	0	2
J-135	J-136	Steel	50	60	160	0.016	9.76	1.54	6	9	0	0	9
J-136	J-139	Steel	150	168	268	0.016	4.65	3.23	1	3	0	0	3
Pump-Atco	J-138	Steel	50	60	160	0.016	9.76	1.54	6	9	2	95	104
J-138	J-139	Steel	50	60	160	0.016	9.76	1.54	1	2	0	0	2
J-139	MH-13	Steel	150	168	268	0.016	4.65	3.23	1	3	0	0	3
MH-13	MH-22	DICL	150	175	275	0.016	4.50	3.34	15	50	1	47	97
MH-22	MH-21	DICL	150	175	275	0.016	4.50	3.34	64	214	4	189	403
MH-21	MH-20	DICL	150	175	275	0.016	4.50	3.34	74	247	6	284	530
MH-20	PT C1	DICL	150	175	275	0.016	4.50	3.34	53	177	4	189	366
PT C1	MH-19 HYD	HDPE	150	168	268	0.016	4.65	3.23	9	29	0	0	29
MH-19 HYD	PT D1	HDPE	150	168	268	0.016	4.65	3.23	9	29	3	142	171
PT D1	MH-23B	DICL	150	175	275	0.016	4.50	3.34	43	143	0	0	143
MH-23B	AV-23A	DICL	150	175	275	0.016	4.50	3.34	37	123	2	95	218
AV-23A	MH-30	DICL	150	175	275	0.016	4.50	3.34	47	157	2	95	251
MH-30	MH-31	DICL	150	175	275	0.016	4.50	3.34	48	160	0	0	160
MH-31	MH-32	DICL	150	175	275	0.016	4.50	3.34	66	220	2	95	315
MH-32	MH-32A HY	HDPE	150	168	268	0.016	4.65	3.23	57	184	4	189	373
MH-32A HY	J-160	HDPE	150	168	268	0.016	4.65	3.23	37.3	120	4	189	309
J-160	MH-32B HY	HDPE	150	168	268	0.016	4.65	3.23	56.7	183	3	142	325
MH-32B HY	J-63-1 (bleed	HDPE	150	168	268	0.016	4.65	3.23	133.3	430	4	189	619
J-63-1 (bleed	MH-63 HYD	HDPE	150	168	268	0.016	4.65	3.23	11.7	38	0	0	38
MH-63 HYD	MH-65	HDPE	150	168	268	0.016	4.65	3.23	72	232	5	236	469
MH-65	MH-66	HDPE	150	168	268	0.016	4.65	3.23	48	155	4	189	344
MH-66	MH-39	HDPE	150	168	268	0.016	4.65	3.23	18	58	0	0	58
MH-39	MH-38	HDPE	150	169	269	0.016	4.62	3.24	60	195	2	95	289
MH-38	MH-37	HDPE	150	168	268	0.016	4.65	3.23	50	161	3	142	303
MH-37	MH-36	HDPE	150	168	268	0.016	4.65	3.23	76	245	5	236	482
MH-36	MH-35	HDPE	150	168	268	0.016	4.65	3.23	57	184	5	236	420
MH-35	MH-24A	HDPE	150	168	268	0.016	4.65	3.23	25	81	0	0	81
MH-63 HYD	MH-62	HDPE	150	168	268	0.016	4.65	3.23	60	194	2	95	288
MH-62	MH-61	HDPE	150	168	268	0.016	4.65	3.23	56	181	3	142	323
MH-61	MH-60	HDPE	150	168	268	0.016	4.65	3.23	100	323	8	378	701
MH-60	MH-59	HDPE	150	168	268	0.016	4.65	3.2289	42	135.61	2	95	230

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity		Heat Loss							
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)					
			-	112	212	0.016	6.347	2.363	20	47					
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
MH-59	MH-48	HDPE	150	168	268	0.016	4.65	3.23	50	161	2	95	256		
MH-48	MH-47	HDPE	150	168	268	0.016	4.65	3.23	43	139	2	95	233		
MH-47	MH-46 HYD	HDPE	150	168	268	0.016	4.65	3.23	57	184	3	142	326		
MH-60	MH-58	HDPE	150	168	268	0.016	4.65	3.23	95	307	4	189	496		
MH-58	MH-46B	HDPE	150	168	268	0.016	4.65	3.23	39	126	2	95	220		
MH-46B	MH-46A	HDPE	150	168	268	0.016	4.65	3.23	75	242	2	95	337		
MH-46A	MH-46 HYD	HDPE	150	168	268	0.016	4.65	3.23	40	129	2	95	224		
MH-46 HYD	MH-45	HDPE	150	168	268	0.016	4.65	3.23	51	165	2	95	259		
MH-45	MH-43	HDPE	150	168	268	0.016	4.65	3.23	50	161	2	95	256		
MH-43	MH-42	HDPE	150	168	268	0.016	4.65	3.23	110	355	7	331	686		
MH-42	J-42	HDPE	150	168	268	0.016	4.65	3.23	1	3	0	0	3		
J-42	MH-41	HDPE	150	168	268	0.016	4.65	3.23	27	87	2	95	182		
MH-41	MH-40	HDPE	150	168	268	0.016	4.65	3.23	92.6	299	4	189	488		
MH-40	MH-40A	HDPE	150	168	268	0.016	4.65	3.23	91.5	295	2	95	390		
MH-40A	J-40	HDPE	150	168	268	0.016	4.65	3.23	95	307	0	0	307		
J-40	MH-24A	HDPE	150	168	268	0.016	4.65	3.23	62	200	2	95	295		
MH-24A	MH-24	DICL	150	175	275	0.016	4.50	3.34	15	50	0	0	50		
MH-24	PT F1	DICL	150	175	275	0.016	4.50	3.34	61	204	0	0	204		
PT F1	MH-25A HY	HDPE	150	168	268	0.016	4.65	3.23	14	45	2	95	140		
MH-25A HY	PT E1	HDPE	150	168	268	0.016	4.65	3.23	14	45	0	0	45		
PT E1	MH-26	DICL	150	175	275	0.016	4.50	3.34	104	347	6	284	631		
MH-26	MH-8	DICL	150	175	275	0.016	4.50	3.34	72	240	2	95	335		
MH-8	MH-7	DICL	150	175	275	0.016	4.50	3.34	89	297	9	425	722		
MH-7	PT A3	DICL	150	175	275	0.016	4.50	3.34	52	173	1	47	221		
PT A3	AV-400	HDPE	150	168	268	0.016	4.65	3.23	24.6	79	0	0	79		
AV-400	PT-K	HDPE	150	168	268	0.016	4.65	3.23	119.2	385	0	0	385		
PT K	PMP-PT-K-I	HDPE	50	60	160	0.016	9.76	1.54	12.1	19	0	0	19		
PMP-PT-K-C	AV-400	HDPE	50	60	160	0.016	9.76	1.54	104.2	160	0	0	160		
AV-400	AV-401 HY	HDPE	200	219	319	0.016	3.74	4.01	107	429	0	0	429		
AV-400	PT-B3	HDPE	150	168	268	0.016	4.65	3.23	18	58	0	0	58		
PT-B3	MH-14	DICL	150	175	275	0.016	4.50	3.34	51	170	1	47	217		
MH-14	MH-15	DICL	150	175	275	0.016	4.50	3.34	53.4	178	3	142	320		
MH-15	J-129	DICL	150	175	275	0.016	4.50	3.34	15	50	3	142	192		
J-129	J-140	Steel	150	168	268	0.016	4.65	3.23	1	3	0	0	3		
J-140	J-126	HDPE	50	60	160	0.016	9.76	1.54	20	30.7	4	189	220		
J-126	J-125	HDPE	50	60	160	0.016	9.76	1.54	39.2	60.3	5	236	297		
J-125	J-124	HDPE	50	60	160	0.016	9.76	1.54	40	61	6	284	345		

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.016	6.347	2.363	20	47						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
J-124	MH-29	HDPE	50	60	160	0.016	9.76	1.54	10	15.4	7	331	346			
MH-29	J-122	HDPE	50	60	160	0.016	9.76	1.54	110	169	8	378	547			
J-122	J-120	HDPE	50	60	160	0.016	9.76	1.54	40	61.5	9	425	487			
J-120	J-137	HDPE	50	60	160	0.016	9.76	1.54	40	61.5	10	473	534			
J-137	Pump-Atco	Steel	50	60	160	0.016	9.76	1.54	1	1.5	11	520	521			
J-140	J-150	Steel	50	60	160	0.016	9.76	1.54	0.8	1.2	3	142	143			
J-150	J-134	Steel	50	60	160	0.016	9.76	1.54	0.8	1.2	0	0	1			
J-134	Pump-Main	Steel	50	60	160	0.016	9.76	1.54	1	1.5	0	0	2			
TOTAL													21,070			

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
RE-HEAT STATION NO. 1													
ASTRO HILL													
PMP-Recirc	J-112	Copper	50	54	154	0.016	10.42	1.44	0.7	1	0	0	1
J-112	J-111	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
J-111	J-3061	Copper	50	54	154	0.016	10.42	1.44	1.6	2	0	0	2
J-3061	J-3051	HDPE	250	273	373	0.016	3.10	4.83	41	198	0	0	198
J-3051	PT A	AC	250	273	373	0.016	3.10	4.83	68	329	0	0	329
PT A	PT L	AC	250	273	373	0.016	3.10	4.83	69	333	0	0	333
PT L	J-12	Copper	75	79	179	0.016	8.14	1.84	37.1	68	0	0	68
PT L	PT L-1	Copper	19	22	122	0.016	17.04	0.88	1	1	0	0	1
PT L-1	PT A-1	Copper	38	41	141	0.016	12.29	1.22	76.9	94	0	0	94
PT A	PT O	AC	250	273	373	0.016	3.10	4.83	192	928	0	0	928
PT O	PT B	AC	250	273	373	0.016	3.10	4.83	35	169	0	0	169
PT B	PT D	AC	250	273	373	0.016	3.10	4.83	61	295	0	0	295
From Pt-D to Re-Heat Station No. 1													
PT D	PT A-1	Copper	50	67	167	0.016	9.08	1.65	291	480	0	0	480
PT A-1	J-3065	Copper	50	67	167	0.016	9.08	1.65	101	167	0	0	167
J-3065	PMP-Recirc	Copper	50	67	167	0.016	9.08	1.65	5.5	9	0	0	9
PT D	PT E	HDPE	250	273	373	0.016	3.10	4.83	35	169	1	47	216
PT E	PT F	HDPE	200	219	319	0.016	3.74	4.01	41	164	1	47	212
PT F	PT G	DICL	150	175	275	0.016	4.50	3.34	22	73	1	47	121
PT G	J-190	AC	150	168	268	0.016	4.65	3.23	80.7	261	0	0	261
J-190	PT H	AC	150	168	268	0.016	4.65	3.23	8.3	27	2	95	121
PT H	PT H-2	AC	150	168	268	0.016	4.65	3.23	3	10	2	95	104
PT H-2	J-3	AC	150	168	268	0.016	4.65	3.23	73.8	238	2	95	333
J-3	AV-9A	HDPE	150	168	268	0.016	4.65	3.23	16.2	52	0	0	52
												Subtotal	4,495
HAPPY VALLEY													
PMP-Recirc	J-114	Copper	50	54	154	0.016	10.42	1.44	2.7	4	0	0	4
J-114	J-113	Copper	50	54	154	0.016	10.42	1.44	1	1	0	0	1
J-113	J-3063	Copper	50	54	154	0.016	10.42	1.44	5.4	8	0	0	8
J-3063	AV-306	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4
J-3063	MH-104	HDPE	200	219	319	0.016	3.74	4.01	27.4	110	0	0	110
MH-104	MH-103	HDPE	200	219	319	0.016	3.74	4.01	109.9	441	1	47	488
MH-103	MH-95 HYD	HDPE	200	219	319	0.016	3.74	4.01	37.7	151	0	0	151
MH-95 HYD	MH-68	HDPE	200	219	319	0.016	3.74	4.0093	12	48.111	0	0	48

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)						
			-	112	212	0.016	6.347	2.363	20	47						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
MH-68	MH-69	HDPE	200	219	319	0.016	3.74	4.01	100	401	2	95	495			
MH-69	MH-70 HYD	HDPE	200	219	319	0.016	3.74	4.01	78	313	3	142	455			
MH-70 HYD	MH-71	HDPE	200	219	319	0.016	3.74	4.01	104	417	5	236	653			
MH-71	MH-72 HYD	HDPE	200	219	319	0.016	3.74	4.01	90	361	3	142	503			
MH-72 HYD	MH-100	HDPE	200	219	319	0.016	3.74	4.01	151	605	0	0	605			
MH-100	MH-99	HDPE	200	219	319	0.016	3.74	4.01	91	365	5	236	601			
MH-99	MH-98	HDPE	200	219	319	0.016	3.74	4.01	60	241	5	236	477			
MH-98	MH-97	HDPE	200	219	319	0.016	3.74	4.01	51	204	3	142	346			
MH-97	MH-96	HDPE	200	219	319	0.016	3.74	4.01	29	116	0	0	116			
MH-96	AV-216	HDPE	200	219	319	0.016	3.74	4.01	69	277	3	142	418			
AV-216	AV-217 HYD	HDPE	200	219	319	0.016	3.74	4.01	48	192	4	189	382			
AV-217 HYD	AV-237	HDPE	200	219	319	0.016	3.74	4.01	42	168	3	142	310			
AV-237	AV-238 HYD	HDPE	200	219	319	0.016	3.74	4.01	88	353	5	236	589			
AV-238 HYD	AV-227	HDPE	200	219	319	0.016	3.74	4.01	41	164	2	95	259			
AV-227	AV-228	HDPE	200	219	319	0.016	3.74	4.01	127	509	11	520	1,029			
AV-228	AV-229 HYD	HDPE	200	219	319	0.016	3.74	4.01	87	349	6	284	632			
AV-229 HYD	AV-230	HDPE	200	219	319	0.016	3.74	4.01	77	309	4	189	498			
AV-230	AV-231	HDPE	200	219	319	0.016	3.74	4.01	34	136	3	142	278			
AV-231	AV-232 HYD	HDPE	200	219	319	0.016	3.74	4.01	100	401	5	236	637			
AV-232 HYD	AV-233	HDPE	200	219	319	0.016	3.74	4.01	58	233	4	189	422			
AV-233	AV-234	HDPE	200	219	319	0.016	3.74	4.01	95	381	5	236	617			
AV-234	AV-235 HYD	HDPE	150	168	268	0.016	4.65	3.23	105	339	10	473	812			
AV-235 HYD	J-234-1	HDPE	50	60	160	0.016	9.76	1.54	112	172	0	0	172			
J-234-1	J-226-1	HDPE	75	89	189	0.016	7.49	2.00	70	140	0	0	140			
AV-234	AV-226	HDPE	200	219	319	0.016	3.74	4.01	67	269	2	95	363			
AV-226	J-227-1	HDPE	150	168	268	0.016	4.65	3.23	126	407	5	236	643			
J-227-1	J-226-1	HDPE	50	60	160	0.016	9.76	1.54	131	201	0	0	201			
AV-226	AV-225 HYD	HDPE	200	219	319	0.016	3.74	4.01	60	241	3	142	382			
J-226-1	J-225-2	HDPE	75	89	189	0.016	7.49	2.00	58	116	0	0	116			
AV-225 HYD	AV-239	HDPE	150	168	268	0.016	4.65	3.23	61	197	7	331	528			
AV-239	J-225-1	HDPE	50	60	160	0.016	9.76	1.54	65	100	0	0	100			
J-225-1	J-225-2	HDPE	50	60	160	0.016	9.76	1.54	0.5	1	0	0	1			
J-225-1	J-225-2	Copper	13	16	116	0.016	19.71	0.76	1	1	0	0	1			
AV-225 HYD	AV-224 HYD	HDPE	200	219	319	0.016	3.74	4.01	97	389	3	142	531			
J-225-2	J-224-1	HDPE	75	89	189	0.016	7.49	2.00	98	196	0	0	196			
AV-224 HYD	AV-240	HDPE	150	168	268	0.016	4.65	3.23	41	132	6	284	416			
AV-240	J-224-1	HDPE	50	60	160	0.016	9.76	1.54	43	66	0	0	66			
J-224-1	AV-223-2	HDPE	75	89	189	0.016	7.49	2.00	78.2	157	0	0	157			
AV-224 HYD	AV-223-3	HDPE	200	219	319	0.016	3.74	4.01	71.2	285	2	95	380			
AV-223-3	AV-223-2	Copper	13	16	116	0.016	19.71	0.76	2	2	0	0	2			

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
AV-223-2	PMP-AV223	Copper	75	79	179	0.016	8.14	1.84	1	2	0	0	2
PMP-AV223	AV-223	Copper	75	79	179	0.016	8.14	1.84	0.7	1	0	0	1
J-2231	AV-223 PRV	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4
AV-223 PRV	AV-223-3	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4
AV-223	J-96-1	HDPE	75	89	189	0.016	7.49	2.00	104	208	0	0	208
MH-96	J-96-1	HDPE	150	168	268	0.016	4.65	3.23	0.5	2	0	0	2
J-96-1	MH-93	HDPE	150	168	268	0.016	4.65	3.23	18	58	1	47	105
MH-93	MH-92	HDPE	150	168	268	0.016	4.65	3.23	82	265	4	189	454
MH-92	J-2231	HDPE	150	168	268	0.016	4.65	3.23	38	123	0	0	123
J-2231	MH-91 HYD	HDPE	150	168	268	0.016	4.65	3.23	53	171	3	142	313
MH-91 HYD	MH-89	HDPE	150	168	268	0.016	4.65	3.23	86	278	6	284	561
MH-89	MH-88	HDPE	150	168	268	0.016	4.65	3.23	107	345	1	47	393
MH-88	MH-87	HDPE	150	168	268	0.016	4.65	3.23	38	123	2	95	217
MH-87	MH-86	HDPE	150	168	268	0.016	4.65	3.23	55	178	6	284	461
MH-86	MH-85	HDPE	150	168	268	0.016	4.65	3.23	57	184	4	189	373
MH-85	MH-73 (bleed)	HDPE	150	168	268	0.016	4.65	3.23	53	171	2	95	266
MH-73 (bleed)	MH-74 HYD	HDPE	150	168	268	0.016	4.65	3.23	97	313	5	236	550
MH-74 HYD	MH-75	HDPE	150	168	268	0.016	4.65	3.23	98	316	8	378	695
MH-75	MH-90 HYD	HDPE	150	168	268	0.016	4.65	3.23	48	155	1	47	202
MH-90 HYD	MH-76 (bleed)	HDPE	150	168	268	0.016	4.65	3.23	34	110	1	47	157
MH-76 (bleed)	J-6901	HDPE	150	168	268	0.016	4.65	3.23	35	113	0	0	113
J-6901	J-3066	Copper	50	54	154	0.016	10.42	1.44	285.2	410	0	0	410
J-3066	PMP-Recirc	Copper	50	54	154	0.016	10.42	1.44	5.5	8	0	0	8
												Subtotal	21,966
												TOTAL	26,461

City of Iqaluit Water and Sewer Study <u>Annex 8a - Heat Loss Calculations</u> Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
BOOSTER STATION													
PMP-BS-P10	J-BS30	Steel	75	89	189	0.016	7.49	2.00	1.5	3	0	0	3
PMP-BS-P10	J-BS30	Steel	75	89	189	0.016	7.49	2.00	1	2	0	0	2
J-BS30	J-BS22	Steel	75	89	189	0.016	7.49	2.00	3	6	0	0	6
J-BS22	J-BS27	Steel	250	273	373	0.016	3.10	4.83	10	48	0	0	48
J-BS27	J-BS26	Steel	250	273	373	0.016	3.10	4.83	2	10	0	0	10
J-BS26	J-BS2	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4
J-BS2	J-326-5	HDPE	200	219	319	0.016	3.74	4.01	20	80	0	0	80
J-326-5	J-326-2	HDPE	200	219	319	0.016	3.74	4.01	4	16	0	0	16
J-326-2	AV-327 HY	HDPE	200	219	319	0.016	3.74	4.01	174	698	0	0	698
AV-327 HY	AV-328	HDPE	200	219	319	0.016	3.74	4.01	94	377	0	0	377
AV-328	J-500-1	HDPE	200	219	319	0.016	3.74	4.01	40.8	164	0	0	164
J-500-1	AV-500	HDPE	200	219	319	0.016	3.74	4.01	10.7	43	0	0	43
1999 Subdivision													
AV-500	J-500-6	HDPE	250	273	373	0.016	3.10	4.83	0.5	2	0	0	2
J-500-5	J-500-6	HDPE	250	273	373	0.016	3.10	4.83	0.5	2	0	0	2
PMP-500-In	J-500-6	HDPE	75	89	189	0.016	7.49	2.00	0.5	1	0	0	1
J-500-5	PMP-500-Out	HDPE	75	89	189	0.016	7.49	2.00	1	2	0	0	2
J-500-5	AV-501	HDPE	250	273	373	0.016	3.10	4.83	80	387	0	0	387
AV-501	AV-502	HDPE	250	273	373	0.016	3.10	4.83	119.72	578	0	0	578
AV-502	AV-503 HY	HDPE	250	273	373	0.016	3.10	4.83	96.8	468	1	47	515
AV-503 HY	AV-504	HDPE	250	273	373	0.016	3.10	4.83	117.03	565	4	189	754
AV-504	AV-505 HY	HDPE	250	273	373	0.016	3.10	4.83	61.8	299	2	95	393
AV-505 HY	AV-506	HDPE	250	273	373	0.016	3.10	4.83	95.5	461	5	236	698
AV-506	AV-507 HY	HDPE	250	273	373	0.016	3.10	4.83	123.74	598	10	473	1,071
AV-507 HY	AV-508	HDPE	250	273	373	0.016	3.10	4.83	116.75	564	9	425	989
AV-508	AV-509 HY	HDPE	250	273	373	0.016	3.10	4.83	119.9	579	10	473	1,052
AV-509 HY	AV-510	HDPE	250	273	373	0.016	3.10	4.83	68.4	330	6	284	614
AV-510	AV-511 HY	HDPE	250	273	373	0.016	3.10	4.83	109.7	530	7	331	861
AV-511 HY	AV-512	HDPE	250	273	373	0.016	3.10	4.83	111.8	540	9	425	966
AV-512	AV-513 HY	HDPE	250	273	373	0.016	3.10	4.83	96.42	466	8	378	844
AV-513 HY	AV-514	HDPE	250	273	373	0.016	3.10	4.83	90.63	438	6	284	721
AV-514	AV-505	HDPE	250	273	373	0.016	3.10	4.83	55.3	267	2	95	362
AV-505	J-504-2	HDPE	250	273	373	0.016	3.10	4.83	61.8	299	2	95	393
J-504-2	J-515	HDPE	250	273	373	0.016	3.10	4.83	76.9	372	0	0	372
AV-515	J-515	HDPE	250	273	373	0.016	3.10	4.83	1	5	0	0	5
AV-515	AV-504 HY	HDPE	250	273	373	0.016	3.10	4.83	75.9	367	2	95	461
J-503	AV-504 HY	HDPE	250	273	373	0.016	3.10	4.83	117	565	0	0	565

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nominal	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.016	6.347	2.363	20	47				
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
J-500-3	J-503	HDPE	250	273	373	0.016	3.10	4.83	297.5	1,437	0	0	1,437	
J-500-3	J-500-1	HDPE	250	273	373	0.016	3.10	4.83	1	5	0	0	5	
J-500-3	J-500-4	HDPE	75	89	189	0.016	7.49	2.00	3	6	0	0	6	
AV-500	J-500-4	HDPE	200	219	319	0.016	3.74	4.01	11.8	47	0	0	47	
J-500-4	AV-329 HY	HDPE	200	219	319	0.016	3.74	4.01	39.7	159	0	0	159	
AV-329 HY	AV-330	HDPE	200	219	319	0.016	3.74	4.01	94	377	6	284	660	
AV-330	AV-331 HY	HDPE	200	219	319	0.016	3.74	4.01	105	421	4	189	610	
AV-331 HY	AV-332 HY	HDPE	200	219	319	0.016	3.74	4.01	104	417	3	142	559	
AV-332 HY	J-331-1	HDPE	200	219	319	0.016	3.74	4.01	107	429	0	0	429	
J-331-1	AV-333	HDPE	200	219	319	0.016	3.74	4.01	47	188	1	47	236	
AV-333	AV-334 HY	HDPE	200	219	319	0.016	3.74	4.01	81	325	1	47	372	
AV-350 HY	AV-334 HY	HDPE	200	219	319	0.016	3.74	4.01	60.1	241	1	47	288	
AV-350 HY	AV-349	HDPE	200	219	319	0.016	3.74	4.01	74.9	300	3	142	442	
AV-349	AV-348 HY	HDPE	200	219	319	0.016	3.74	4.01	77.1	309	3	142	451	
AV-348 HY	AV-346 HY	HDPE	200	219	319	0.016	3.74	4.01	94.1	377	1	47	425	
AV-346 HY	AV-347 HY	HDPE	200	219	319	0.016	3.74	4.01	88.2	354	4	189	543	
AV-347 HY	J-346	HDPE	200	219	319	0.016	3.74	4.01	91	365	0	0	365	
J-346	AV-345	HDPE	200	219	319	0.016	3.74	4.01	64.1	257	1	47	304	
AV-345	AV-344	HDPE	200	219	319	0.016	3.74	4.01	82.1	329	2	95	424	
AV-344	J-345	HDPE	200	219	319	0.016	3.74	4.01	92.5	371	1	47	418	
J-345	AV-355	HDPE	200	219	319	0.016	3.74	4.01	98.7	396	0	0	396	
J-353	AV-355	HDPE	200	219	319	0.016	3.74	4.01	80.76	324	2	95	418	
AV-353 HY	AV-354	HDPE	200	219	319	0.016	3.74	4.01	59.36	238	2	95	333	
AV-354	J-353	HDPE	200	219	319	0.016	3.74	4.01	59.36	238	2	95	333	
AV-352	AV-353 HY	HDPE	200	219	319	0.016	3.74	4.01	62.78	252	1	47	299	
AV-351A	AV-352	HDPE	200	219	319	0.016	3.74	4.01	67.2	269	1	47	317	
AV-351	AV-351A	HDPE	200	219	319	0.016	3.74	4.01	30.54	122	0	0	122	
AV-351 HY	J-351-1	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4	
AV-351 HY	PT-N	HDPE	200	219	319	0.016	3.74	4.01	63.2	253	0	0	253	
PT-N	PMP-N-In	HDPE	200	219	319	0.016	3.74	4.01	13.6	55	0	0	55	
PMP-N-Out	J-351-2	HDPE	200	219	319	0.016	3.74	4.01	49.6	199	0	0	199	
J-351-2	J-351-1	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4	
To New French School and New Arena														
AV-351 HY	AV-356	HDPE	200	219	319	0.016	3.74	4.01	87	349	0	0	349	
AV-356	AV-357	HDPE	200	219	319	0.016	3.74	4.01	87	349	1	47	396	
AV-357	AV-358	HDPE	200	219	319	0.016	3.74	4.01	87	349	1	47	396	
AV-358	AV-351 HY	HDPE	200	219	319	0.016	3.74	4.01	260	1042.4	0	0	1,042	

City of Iqaluit Water and Sewer Study <u>Annex 8a - Heat Loss Calculations</u> Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.016	6.347	2.363	20	47						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
To Shunt Subdivision																
AV-351 HYL	AV-343	HDPE	200	219	319	0.016	3.74	4.01	67.3	270	1	47	317			
AV-342 HYL	AV-343	HDPE	200	219	319	0.016	3.74	4.01	58.04	233	2	95	327			
AV-341 HYL	AV-342 HYL	HDPE	200	219	319	0.016	3.74	4.01	83.19	334	3	142	475			
AV-340 HYL	AV-341 HYL	HDPE	200	219	319	0.016	3.74	4.01	72.2	289	5	236	526			
AV-339	AV-340 HYL	HDPE	200	219	319	0.016	3.74	4.01	83.34	334	2	95	429			
AV-334 HYL	AV-335	HDPE	200	219	319	0.016	3.74	4.01	98	393	2	95	487			
AV-335	AV-338 HYL	HDPE	200	219	319	0.016	3.74	4.01	67.4	270	1	47	317			
AV-338 HYL	AV-337	HDPE	200	219	319	0.016	3.74	4.01	68	273	2	95	367			
AV-337	AV-336 HYL	HDPE	200	219	319	0.016	3.74	4.01	95	381	1	47	428			
AV-336 HYL	J-337-1	HDPE	200	219	319	0.016	3.74	4.01	95	381	2	95	475			
J-337-1	AV-339	HDPE	177						131							
AV-339	J-339	HDPE	200	219	319	0.016	3.74	4.01	1	4	2	95	99			
J-339	J-335-1	HDPE	200	219	319	0.016	3.74	4.01	130.5	523	3	142	665			
J-335-1	J-334-1	HDPE	50	60	160	0.016	9.76	1.54	98	151	0	0	151			
J-326-3	J-334-1	HDPE	200	219	319	0.016	3.74	4.01	700	2806	0	0	2,806			
J-326-3	J-326-6	HDPE	200	219	319	0.016	3.74	4.01	4	16	0	0	16			
J-326-6	J-BS3	HDPE	200	219	319	0.016	3.74	4.01	20	80	0	0	80			
J-BS3	J-BS24	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4			
J-BS24	J-BS25	Steel	200	219	319	0.016	3.74	4.01	2	8	0	0	8			
J-BS25	J-BS28	Steel	100	114	214	0.016	6.26	2.39	10	24	0	0	24			
J-BS28	J-BS29	Steel	75	89	189	0.016	7.49	2.00	2	4	0	0	4			
J-BS29	PMP-BS-P10	Steel	100	114	214	0.016	6.26	2.39	1	2	0	0	2			
J-BS29	PMP-BS-P10	Steel	75	89	189	0.016	7.49	2.00	1.5	3	0	0	3			
TOTAL												35,166				

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
TRIGRAM BUILDING													
Trigram-P1-C	J-29	Copper	50	54	154	0.016	10.42	1.44	0.3	0	0	0	0
J-29	J-25	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
J-23	Trigram-P2-C	Copper	50	54	154	0.016	10.42	1.44	0.3	0	0	0	0
J-25	J-23	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
J-25	J-27	Copper	50	54	154	0.016	10.42	1.44	0.3	0	0	0	0
J-27	J-1	Copper	50	54	154	0.016	10.42	1.44	3	4	0	0	4
J-1	J-28	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
J-27	J-2	Copper	50	54	154	0.016	10.42	1.44	3	4	0	0	4
J-2	J-28	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
J-28	J-33	Copper	50	54	154	0.016	10.42	1.44	4	6	0	0	6
J-33	J-8202	Copper	50	54	154	0.016	10.42	1.44	2	3	0	0	3
J-8202	AV-200 (blee	HDPE	100	114	214	0.016	6.26	2.39	43	103	0	0	103
AV-200 (blee	J-44	HDPE	200	219	319	0.016	3.74	4.01	74.7	299	3	142	441
J-44	AV-201 HY	HDPE	200	219	319	0.016	3.74	4.01	9.3	37	0	0	37
AV-201 HY	J-56	HDPE	200	219	319	0.016	3.74	4.01	94.8	380	2	95	475
J-56	AV-202 HY	HDPE	200	219	319	0.016	3.74	4.01	30.2	121	0	0	121
AV-202 HY	AV-203	HDPE	200	219	319	0.016	3.74	4.01	58	233	1	47	280
AV-203	J-105	HDPE	200	219	319	0.016	3.74	4.01	33.2	133	1	47	180
J-105	AV-204 HY	HDPE	200	219	319	0.016	3.74	4.01	40.8	164	0	0	164
AV-204 HY	J-57	HDPE	200	219	319	0.016	3.74	4.01	24.1	97	1	47	144
J-57	AV-205	HDPE	200	219	319	0.016	3.74	4.01	54.9	220	0	0	220
AV-201 HY	J-94	HDPE	250	273	373	0.016	3.10	4.83	68.6	331	2	95	426
J-94	AV-414 HY	HDPE	250	273	373	0.016	3.10	4.83	31.4	152	0	0	152
AV-414 HY	AV-415	HDPE	200	219	319	0.016	3.74	4.01	45	180	0	0	180
AV-414 HY	J-175	HDPE	150	168	268	0.016	4.65	3.23	0.4	1	0	0	1
AV-415	J-175	HDPE	200	219	319	0.016	3.74	4.01	45	180	0	0	180
J-175	AV-413	HDPE	150	168	268	0.016	4.65	3.23	89.6	289	2	95	384
AV-413	J-64	HDPE	150	168	268	0.016	4.65	3.23	14.8	48	1	47	95
J-64	AV-205-1	HDPE	150	168	268	0.016	4.65	3.23	67.2	217	0	0	217
AV-205-1	AV-205	HDPE	150	168	268	0.016	4.65	3.23	2	6	0	0	6
AV-205	J-108	HDPE	200	219	319	0.016	3.74	4.01	41.9	168	0	0	168

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nomina	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
	-	112	212	0.016	6.347	2.363	20	47									
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
J-108	AV-206 HY	HDPE	200	219	319	0.016	3.74	4.01	82.1	329	2	95	424				
AV-206 HY	J-109	HDPE	200	219	319	0.016	3.74	4.01	10.8	43	0	0	43				
J-109	J-110	HDPE	200	219	319	0.016	3.74	4.01	27.4	110	0	0	110				
J-110	AV-207 HY	HDPE	200	219	319	0.016	3.74	4.01	55.8	224	5	236	460				
AV-207 HY	J-72	HDPE	200	219	319	0.016	3.74	4.01	14.8	59	0	0	59				
J-72	J-107	HDPE	200	219	319	0.016	3.74	4.01	61.8	248	0	0	248				
J-107	AV-208 HY	HDPE	200	219	319	0.016	3.74	4.01	17.4	70	2	95	164				
AV-208 HY	AV-209	HDPE	150	168	268	0.016	4.65	3.23	65	210	0	0	210				
AV-209	J-80	HDPE	150	168	268	0.016	4.65	3.23	20.3	66	0	0	66				
J-80	AV-210 HY	HDPE	150	168	268	0.016	4.65	3.23	57.7	186	3	142	328				
AV-210 HY	J-189	HDPE	50	60	160	0.016	9.76	1.54	139.9	215	2	95	310				
J-189	FCV-AV208	HDPE	50	60	160	0.016	9.76	1.54	0.1	0	0	0	0				
FCV-AV208	J-2081	HDPE	50	60	160	0.016	9.76	1.54	1	2	0	0	2				
AV-208 HY	J-77	HDPE	200	219	319	0.016	3.74	4.01	43	172	0	0	172				
J-77	AV-212	HDPE	200	219	319	0.016	3.74	4.01	38	152	1	47	200				
AV-212	J-78	HDPE	200	219	319	0.016	3.74	4.01	38.6	155	0	0	155				
J-78	AV-213 HY	HDPE	200	219	319	0.016	3.74	4.01	54.4	218	2	95	313				
AV-213 HY	J-79	HDPE	200	219	319	0.016	3.74	4.01	44.7	179	0	0	179				
J-79	AV-214 HY	HDPE	200	219	319	0.016	3.74	4.01	71.3	286	3	142	428				
AV-214 HY	AV-215 HY	HDPE	200	219	319	0.016	3.74	4.01	113	453	0	0	453				
AV-215 HY	AV-255	HDPE	200	219	319	0.016	3.74	4.01	55	221	3	142	362				
AV-255	J-81	HDPE	200	219	319	0.016	3.74	4.01	35.6	143	0	0	143				
J-81	AV-256 HY	HDPE	200	219	319	0.016	3.74	4.01	55.4	222	3	142	364				
AV-256 HY	AV-257	HDPE	200	219	319	0.016	3.74	4.01	99	397	1	47	444				
AV-257	AV-258 HY	HDPE	200	219	319	0.016	3.74	4.01	89	357	0	0	357				
AV-258 HY	AV-259	HDPE	200	219	319	0.016	3.74	4.01	92.6	371	0	0	371				
AV-259	AV-260	HDPE	200	219	319	0.016	3.74	4.01	71	285	0	0	285				
AV-260	J-261	HDPE	200	219	319	0.016	3.74	4.01	93	373	1	47	420				
J-261	AV-262	HDPE	200	219	319	0.016	3.74	4.01	29	116	0	0	116				
AV-262-1	AV-259-1	HDPE	75	89	189	0.016	7.49	2.00	194	388	0	0	388				
AV-259-1	AV-257-1	HDPE	75	89	189	0.016	7.49	2.00	186	372	0	0	372				
AV-257-1	J-188	HDPE	50	60	160	0.016	9.76	1.54	644.9	991	0	0	991				
J-188	FCV-AV208	HDPE	50	60	160	0.016	9.76	1.54	0.1	0	0	0	0				
FCV-AV208	J-2081	HDPE	50	60	160	0.016	9.76	1.54	1	2	0	0	2				
J-2081	J-169	HDPE	75	89	189	0.016	7.49	2.00	100	200	0	0	200				
J-169	J-171	HDPE	75	89	189	0.016	7.49	2.00	3	6	0	0	6				
J-171	J-173	HDPE	75	89	189	0.016	7.49	2.00	1	2	0	0	2				

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-173	AV-205-3	HDPE	75	89	189	0.016	7.49	2.00	210	420	0	0	420
AV-205-3	J-8201	HDPE	75	89	189	0.016	7.49	2.00	465	931	0	0	931
J-8201	J-17	Copper	50	54	154	0.016	10.42	1.44	2	3	0	0	3
J-17	J-18	Copper	50	54	154	0.016	10.42	1.44	4	6	0	0	6
J-18	J-19	Copper	50	54	154	0.016	10.42	1.44	0.3	0	0	0	0
J-19	Trigram-P1-I	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
Trigram-P2-I	J-19	Copper	50	54	154	0.016	10.42	1.44	0.5	1	0	0	1
AV-305	J-6	HDPE	250	273	373	0.016	3.10	4.83	59.3	287	0	0	287
J-6	AV-304 HYD	HDPE	250	273	373	0.016	3.10	4.83	12.7	61	0	0	61
AV-304 HYD	AV-303 HYD	HDPE	250	273	373	0.016	3.10	4.83	84	406	0	0	406
AV-303 HYD	AV-301	HDPE	250	273	373	0.016	3.10	4.83	93	449	0	0	449
AV-301	AV-301-I	HDPE	250	273	373	0.016	3.10	4.83	1	5	0	0	5
AV-301	AV-302 HYD	HDPE	200	219	319	0.016	3.74	4.01	32	128	0	0	128
AV-302 HYD	J-3021	HDPE	150	168	268	0.016	4.65	3.23	34	110	0	0	110
J-3021	J-145	HDPE	150	168	268	0.016	4.65	3.23	1	3	0	0	3
J-145	J-144	HDPE	50	60	160	0.016	9.76	1.54	24	37	0	0	37
AV-302 HYD	AV-303B	HDPE	200	219	319	0.016	3.74	4.01	49.2	197	2	95	292
AV-303B	AV-304B	HDPE	200	219	319	0.016	3.74	4.01	109.1	437	3	142	579
AV-304B	J-147	HDPE	50	60	160	0.016	9.76	1.54	1	2	4	189	191
J-147	J-146	HDPE	50	60	160	0.016	9.76	1.54	109	168	5	236	404
J-146	J-144	HDPE	50	60	160	0.016	9.76	1.54	49.2	76	6	284	359
J-144	AV-301-I	HDPE	50	60	160	0.016	9.76	1.54	32	49	6	284	333
AV-301-I	AV-300 HYD	HDPE	200	219	319	0.016	3.74	4.01	84	337	0	0	337
AV-300 HYD	J-13	HDPE	250	273	373	0.016	3.10	4.83	83.4	403	0	0	403
J-13	J-34	HDPE	250	273	373	0.016	3.10	4.83	91.3	441	0	0	441
J-34	AV-406	HDPE	250	273	373	0.016	3.10	4.83	28.3	137	0	0	137
AV-406	AV-200 (ble)	HDPE	200	219	319	0.016	3.74	4.01	13	52	0	0	52
TOTAL													19,519

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
MAIN DISTRIBUTION													
Main Res	J-RES-1	PVC	300	335	435	0.016	2.60	5.77	1.8	10.4	0	0	10
J-RES-1	J-RES-2	PVC	300	335	435	0.016	2.60	5.77	18	103.9	0	0	104
J-RES-2	J-RES-3	PVC	300	335	435	0.016	2.60	5.77	6.3	36.4	0	0	36
J-RES-3	J-RES-5	PVC	300	335	435	0.016	2.60	5.77	4	23.1	0	0	23
J-RES-5	J-RES-7	PVC	300	335	435	0.016	2.60	5.77	2.2	12.7	0	0	13
J-RES-7	J-5	HDPE	250	273	373	0.016	3.10	4.83	2.5	12.1	0	0	12
J-5	J-3071	HDPE	250	273	373	0.016	3.10	4.83	318.5	1539	0	0	1,539
J-3071	J-3072	HDPE	100	114	214	0.016	6.26	2.39	14	33.5	0	0	34
AV-307	J-3072	HDPE	100	114	214	0.016	6.26	2.39	14	33.5	1	47	81
J-3071	AV-307	HDPE	250	273	373	0.016	3.10	4.83	1	4.8	0	0	5
AV-307	AV-306	HDPE	250	273	373	0.016	3.10	4.83	73	353	2	95	447
J-RES-5	J-RES-6	PVC	300	335	435	0.016	2.60	5.77	3.1	18	0	0	18
J-RES-6	AV-306	HDPE	250	273	373	0.016	3.10	4.83	396	1913	0	0	1,913
AV-306	AV-305	HDPE	250	273	373	0.016	3.10	4.83	43	208	0	0	208
AV-306	J-3061	HDPE	250	273	373	0.016	3.10	4.83	1	5	0	0	5
AV-306	TAC-1	HDPE	250	273	373	0.016	3.10	4.83	113	546	1	47	593
TAC-1	TAC-2	HDPE	250	273	373	0.016	3.10	4.83	89	430	2	95	525
TAC-2	TAC-3	HDPE	250	273	373	0.016	3.10	4.83	98.4	475	8	378	854
TAC-3	TAC-4	HDPE	250	273	373	0.016	3.10	4.83	107.2	518	5	236	754
TAC-4	AV-326	HDPE	250	273	373	0.016	3.10	4.83	99.4	480	7	331	811
AV-326	J-326-4	HDPE	250	273	373	0.016	3.10	4.83	4	19	0	0	19
J-326-4	J-BS1	HDPE	250	273	373	0.016	3.10	4.83	20	97	0	0	97
J-BS5	J-BS1	HDPE	250	273	373	0.016	3.10	4.83	1	5	0	0	5
J-BS5	J-BS6	Steel	250	273	373	0.016	3.10	4.83	3.7	18	0	0	18
J-BS6	J-BS23	Steel	200	219	319	0.016	3.74	4.01	21	84	0	0	84
J-BS23	J-BS4	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4
J-BS4	J-326-7	HDPE	200	219	319	0.016	3.74	4.01	20	80	0	0	80
J-326-7	MH-72 HYD	HDPE	200	219	319	0.016	3.74	4.01	20	80	0	0	80
J-BS6	J-BS7	Steel	250	273	373	0.016	3.10	4.83	2.5	12.1	0	0	12
J-BS7	J-BS9	Steel	75	89	188.9	0.016	7.50	2.00	1.5	3.0	0	0	3
J-BS9	PMP-BS-P10	Steel	75	89	188.9	0.016	7.50	2.00	1	2.0	0	0	2
PMP-BS-P10	J-BS10	Steel	75	89	189	0.016	7.49	2.00	1	2	0	0	2

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity		Heat Loss							
			Nomina	Inside	Outside	k	R	q	l	Q					
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
			-	112	212	0.016	6.347	2.363	20	47					
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
J-BS10	J-BS8	Steel	75	89	189	0.016	7.49	2.00	3	6	0	0	6		
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.016	7.50	2.00	2	4.0	0	0	4		
PMP-BS-P10	J-BS11	Steel	75	89	188.9	0.016	7.50	2.00	1	2.0	0	0	2		
J-BS8	J-BS11	Steel	75	89	188.9	0.016	7.50	2.00	5	10.0	0	0	10		
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.016	7.50	2.00	1	2.0	0	0	2		
J-BS12	PMP-BS-P10	Steel	75	89	188.9	0.016	7.50	2.00	1	2.0	0	0	2		
J-BS14	J-BS12	Steel	75	89	188.9	0.016	7.50	2.00	5	10.0	0	0	10		
J-BS8	J-BS13	Steel	75	89	189	0.016	7.49	2.00	2	4.0	0	0	4		
J-BS13	J-BS14	Steel	150	168	268	0.016	4.65	3.23	1.5	4.8	0	0	5		
J-BS14	J-BS15	Steel	150	168	268	0.016	4.64	3.23	3.5	11.3	0	0	11		
J-BS15	J-BS18	Steel	150	168	268	0.016	4.64	3.23	1.5	4.9	0	0	5		
J-BS18	J-BS19	Steel	150	168	268	0.016	4.64	3.23	2.3	7.4	0	0	7		
J-BS19	J-BS21	Steel	200	219	319	0.016	3.74	4.01	4.2	16.8	0	0	17		
J-BS21	J-BS22	Steel	250	273	373	0.016	3.10	4.83	3	14.5	0	0	14		
Part of Airport Loop															
AV-262	AV-263	HDPE	200	219	319	0.016	3.74	4.01	60	241	0	0	241		
AV-263	J-84	HDPE	200	219	319	0.016	3.74	4.01	12.1	49	0	0	49		
J-84	AV-264 HYD	HDPE	200	219	319	0.016	3.74	4.01	101.9	409	0	0	409		
AV-264 HYD	J-83	HDPE	200	219	319	0.016	3.74	4.01	27.7	111	0	0	111		
J-83	AV-3 HYD	HDPE	200	219	319	0.016	3.74	4.01	85.3	342	1	47	389		
AV-3 HYD	AV-2 HYD	HDPE	200	219	319	0.016	3.74	4.01	98	393	0	0	393		
AV-2 HYD	AV-1	HDPE	200	219	319	0.016	3.74	4.01	104	417	2	95	511		
AV-1	J-106	HDPE	200	219	319	0.016	3.74	4.01	32.4	130	1	47	177		
J-106	PT 53	HDPE	200	219	319	0.016	3.74	4.01	57.6	231	0	0	231		
PT 53	J-82	HDPE	200	219	319	0.016	3.74	4.01	90.6	363	0	0	363		
J-82	J-115	Copper	50	67	167	0.016	9.08	1.65	7.8	13	0	0	13		
J-115	J-116	Copper	50	67	167	0.016	9.08	1.65	8.2	14	0	0	14		
J-116	J-117	Copper	50	67	167	0.016	9.08	1.65	6.8	11	0	0	11		
J-117	AV-262-1	HDPE	75	89	189	0.016	7.49	2.00	234	469	0	0	469		
AV-3 HYD	AV-4 HYD	HDPE	200	219	319	0.016	3.74	4.01	128	513	3	142	655		
AV-4 HYD	J-2646	HDPE	200	219	319	0.016	3.74	4.01	82	329	5	236	565		
J-2646	AV-5 HYD	HDPE	200	219	319	0.016	3.74	4.01	26	104	6	284	388		
AV-4 HYD	PT B3	HDPE	150	168	268	0.016	4.65	3.23	87	281	8	378	659		

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nomina	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
-	112	212	0.016	6.347	2.363	20	47										
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
J-4105	AV-5 HYD	HDPE	150	168	268	0.016	4.65	3.23	161	520	10	473	993				
PT B3	J-4105	HDPE	150	168	268	0.016	4.65	3.23	27	87	11	520	607				
PT B3	PT C3	HDPE	150	168	268	0.016	4.65	3.23	7	23	13	614	637				
PT C3	PT D3	HDPE	150	168	268	0.016	4.65	3.23	72	232	14	662	894				
Part of Uivaq Loop																	
PT I	PT J	HDPE	50	60	160	0.016	9.76	1.54	21	32	0	0	32				
PT J	MH-16	HDPE	50	60	160	0.016	9.76	1.54	21.4	33	0	0	33				
MH-16	MH-10	DICL	100	114	214	0.016	6.26	2.39	42	101	3	142	242				
MH-10	MH-49	DICL	100	114	214	0.016	6.26	2.39	20	48	0	0	48				
MH-49	MH-11	DICL	100	114	214	0.016	6.26	2.39	75	180	4	189	369				
MH-11	MH-8	DICL	100	114	214	0.016	6.26	2.39	60	144	0	0					
AV-9A	MH-8	DICL	150	175	275	0.016	4.50	3.34	90	300	0	0	300				
AV-401 HYD	J-159	HDPE	200	219	319	0.016	3.74	4.01	74.7	299	0	0	299				
J-159	AV-402 HYD	HDPE	200	219	319	0.016	3.74	4.01	53.9	216	1	47	263				
AV-402 HYD	J-192	HDPE	200	219	319	0.016	3.74	4.01	128.9	517	0	0	517				
J-192	AV-404 HYD	HDPE	200	219	319	0.016	3.74	4.01	0.1	0	3	142	142				
AV-404 HYD	J-176	HDPE	200	219	319	0.016	3.74	4.01	0.5	2	0	0	2				
J-176	J-67	HDPE	200	219	319	0.016	3.74	4.01	52.8	212	6	284	495				
J-67	AV-405 HYD	HDPE	200	219	319	0.016	3.74	4.01	46.7	187	0	0	187				
AV-405 HYD	AV-205-2	HDPE	200	219	319	0.016	3.74	4.01	101	405	3	142	547				
AV-205	AV-205-2	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4				
Lower Base Phase I																	
J-187	J-192	HDPE	200	219	319	0.016	3.74	4.01	13.7	55	0	0	55				
AV-404 HYD	AV-404 PRV	HDPE	100	114	214	0.016	6.26	2.39	1	2	0	0	2				
AV-404 PRV	J-187	HDPE	100	114	214	0.016	6.26	2.39	1	2	0	0	2				
AV-404 HYD	J-177	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4				
J-176	J-177	Copper	19	27	127	0.016	15.40	0.97	3	3	0	0	3				
J-411	J-177	HDPE	200	219	319	0.016	3.74	4.01	117	469	0	0	469				
J-435	J-411	HDPE	200	219	319	0.016	3.74	4.01	101	405	0	0	405				
AV-435	J-435	HDPE	200	219	319	0.016	3.74	4.01	1	4	7	331	335				
AV-411 HYD	AV-435	HDPE	200	219	319	0.016	3.74	4.01	102	409	10	473	882				
AV-411 HYD	AV-410 HYD	HDPE	200	219	319	0.016	3.74	4.01	70.5	283	0	0	283				
Lower Base Phase II (Not in Service)																	
AV-410 HYD	AV-440	HDPE	200	219	319	0.016	3.74	4.01	92.55	371	9	425	796				
AV-440	AV-439	HDPE	200	219	319	0.016	3.74	4.01	68.2	273	2	95	368				
AV-439	AV-438	HDPE	200	219	319	0.016	3.74	4.01	85	341	8	378	719				
AV-438	AV-437	HDPE	200	219	319	0.016	3.74	4.01	79.4	318	7	331	649				

City of Iqaluit Water and Sewer Study Annex 8a - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.016 W/m.C			Ta = -10 C Tw = 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.016	6.347	2.363	20	47			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-183	AV-437	HDPE	200	219	319	0.016	3.74	4.01	72.6	291	3	142	433
AV-410 HYD	J-183	HDPE	200	219	319	0.016	3.74	4.01	102.5	411	3	142	553
AV-409 HYD	J-183	HDPE	200	219	319	0.016	3.74	4.01	1	4	0	0	4
AV-410 HYD	AV-409 HYD	HDPE	200	219	319	0.016	3.74	4.01	103.5	415	2	95	509
AV-408	AV-409 HYD	HDPE	200	219	319	0.016	3.74	4.01	124.5	499	9	425	925
AV-408	AV-407 HYD	HDPE	200	219	319	0.016	3.74	4.01	62.8	252	6	284	535
AV-407 HYD	J-172	HDPE	200	219	319	0.016	3.74	4.01	122.2	490	8	378	868
J-172	J-173	Copper	19	27	127	0.016	15.40	0.97	3	3	0	0	3
J-172	AV-207-PRV	HDPE	200	219	319	0.016	3.74	4.01	1.3	5	0	0	5
AV-207-PRV	AV-207 HYD	HDPE	200	219	319	0.016	3.74	4.01	1.7	7	0	0	7
To Bleeder at MH-55													
J-501	PT H	HDPE	150	168	268	0.016	4.65	3.23	168	542	4	189	732
PT I	J-501	AC	50	60	160	0.016	9.76	1.54	18	28	0	0	28
J-501	MH-50	HDPE	150	168	268	0.016	4.65	3.23	8	26	0	0	26
MH-50	MH-51	HDPE	150	168	268	0.016	4.65	3.23	71	229	0	0	229
MH-51	MH-52	HDPE	150	168	268	0.016	4.65	3.23	30	97	0	0	97
MH-52	MH-53 HYD	HDPE	150	168	268	0.016	4.65	3.23	114	368	5	236	604
MH-53 HYD	MH-54	HDPE	150	168	268	0.016	4.65	3.23	102	329	2	95	424
MH-54	MH-55 (blee	HDPE	150	168	268	0.016	4.65	3.23	108	349	2	95	443
Subtotal												32,146	
BUILDING 222												21,070	
RE-HEAT STATION NO. 1												26,461	
BOOSTER STATION												35,166	
TRIGRAM BUILDING												19,519	
TOTAL												134,362	

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina	Inside	Outside	k	R	q	I	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.024	4.231	3.545	20	71				
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	I (m)	Q (W)	No. SCs	Q (W)	Q (W)	
BUILDING 222														
Pump-Main	J-135	Steel	50	60	160	0.024	6.50	2.31	1	2	0	0	2	
J-135	J-136	Steel	50	60	160	0.024	6.50	2.31	6	14	0	0	14	
J-136	J-139	Steel	150	168	268	0.024	3.10	4.84	1	5	0	0	5	
Pump-Atco	J-138	Steel	50	60	160	0.024	6.50	2.31	6	14	2	142	156	
J-138	J-139	Steel	50	60	160	0.024	6.50	2.31	1	2	0	0	2	
J-139	MH-13	Steel	150	168	268	0.024	3.10	4.84	1	5	0	0	5	
MH-13	MH-22	DICL	150	175	275	0.024	3.00	5.00	15	75	1	71	146	
MH-22	MH-21	DICL	150	175	275	0.024	3.00	5.00	64	320	4	284	604	
MH-21	MH-20	DICL	150	175	275	0.024	3.00	5.00	74	370	6	425	796	
MH-20	PT C1	DICL	150	175	275	0.024	3.00	5.00	53	265	4	284	549	
PT C1	MH-19 HYD	HDPE	150	168	268	0.024	3.10	4.84	9	44	0	0	44	
MH-19 HYD	PT D1	HDPE	150	168	268	0.024	3.10	4.84	9	44	3	213	256	
PT D1	MH-23B	DICL	150	175	275	0.024	3.00	5.00	43	215	0	0	215	
MH-23B	AV-23A	DICL	150	175	275	0.024	3.00	5.00	37	185	2	142	327	
AV-23A	MH-30	DICL	150	175	275	0.024	3.00	5.00	47	235	2	142	377	
MH-30	MH-31	DICL	150	175	275	0.024	3.00	5.00	48	240	0	0	240	
MH-31	MH-32	DICL	150	175	275	0.024	3.00	5.00	66	330	2	142	472	
MH-32	MH-32A HY	HDPE	150	168	268	0.024	3.10	4.84	57	276	4	284	560	
MH-32A HY	J-160	HDPE	150	168	268	0.024	3.10	4.84	37.3	181	4	284	464	
J-160	MH-32B HY	HDPE	150	168	268	0.024	3.10	4.84	56.7	275	3	213	487	
MH-32B HY	J-63-1 (bleed	HDPE	150	168	268	0.024	3.10	4.84	133.3	646	4	284	929	
J-63-1 (bleed	MH-63 HYD	HDPE	150	168	268	0.024	3.10	4.84	11.7	57	0	0	57	
MH-63 HYD	MH-65	HDPE	150	168	268	0.024	3.10	4.84	72	349	5	354	703	
MH-65	MH-66	HDPE	150	168	268	0.024	3.10	4.84	48	232	4	284	516	
MH-66	MH-39	HDPE	150	168	268	0.024	3.10	4.84	18	87	0	0	87	
MH-39	MH-38	HDPE	150	169	269	0.024	3.08	4.87	60	292	2	142	434	
MH-38	MH-37	HDPE	150	168	268	0.024	3.10	4.84	50	242	3	213	455	
MH-37	MH-36	HDPE	150	168	268	0.024	3.10	4.84	76	368	5	354	723	
MH-36	MH-35	HDPE	150	168	268	0.024	3.10	4.84	57	276	5	354	631	
MH-35	MH-24A	HDPE	150	168	268	0.024	3.10	4.84	25	121	0	0	121	
MH-63 HYD	MH-62	HDPE	150	168	268	0.024	3.10	4.84	60	291	2	142	432	
MH-62	MH-61	HDPE	150	168	268	0.024	3.10	4.84	56	271	3	213	484	
MH-61	MH-60	HDPE	150	168	268	0.024	3.10	4.84	100	484	8	567	1,052	
MH-60	MH-59	HDPE	150	168	268	0.024	3.10	4.8433	42	203.42	2	142	345	

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.024	4.231	3.545	20	71						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
MH-59	MH-48	HDPE	150	168	268	0.024	3.10	4.84	50	242	2	142	384			
MH-48	MH-47	HDPE	150	168	268	0.024	3.10	4.84	43	208	2	142	350			
MH-47	MH-46 HYD	HDPE	150	168	268	0.024	3.10	4.84	57	276	3	213	489			
MH-60	MH-58	HDPE	150	168	268	0.024	3.10	4.84	95	460	4	284	744			
MH-58	MH-46B	HDPE	150	168	268	0.024	3.10	4.84	39	189	2	142	331			
MH-46B	MH-46A	HDPE	150	168	268	0.024	3.10	4.84	75	363	2	142	505			
MH-46A	MH-46 HYD	HDPE	150	168	268	0.024	3.10	4.84	40	194	2	142	336			
MH-46 HYD	MH-45	HDPE	150	168	268	0.024	3.10	4.84	51	247	2	142	389			
MH-45	MH-43	HDPE	150	168	268	0.024	3.10	4.84	50	242	2	142	384			
MH-43	MH-42	HDPE	150	168	268	0.024	3.10	4.84	110	533	7	496	1,029			
MH-42	J-42	HDPE	150	168	268	0.024	3.10	4.84	1	5	0	0	5			
J-42	MH-41	HDPE	150	168	268	0.024	3.10	4.84	27	131	2	142	273			
MH-41	MH-40	HDPE	150	168	268	0.024	3.10	4.84	92.6	448	4	284	732			
MH-40	MH-40A	HDPE	150	168	268	0.024	3.10	4.84	91.5	443	2	142	585			
MH-40A	J-40	HDPE	150	168	268	0.024	3.10	4.84	95	460	0	0	460			
J-40	MH-24A	HDPE	150	168	268	0.024	3.10	4.84	62	300	2	142	442			
MH-24A	MH-24	DICL	150	175	275	0.024	3.00	5.00	15	75	0	0	75			
MH-24	PT F1	DICL	150	175	275	0.024	3.00	5.00	61	305	0	0	305			
PT F1	MH-25A HYD	HDPE	150	168	268	0.024	3.10	4.84	14	68	2	142	210			
MH-25A HYD	PT E1	HDPE	150	168	268	0.024	3.10	4.84	14	68	0	0	68			
PT E1	MH-26	DICL	150	175	275	0.024	3.00	5.00	104	520	6	425	946			
MH-26	MH-8	DICL	150	175	275	0.024	3.00	5.00	72	360	2	142	502			
MH-8	MH-7	DICL	150	175	275	0.024	3.00	5.00	89	445	9	638	1,083			
MH-7	PT A3	DICL	150	175	275	0.024	3.00	5.00	52	260	1	71	331			
PT A3	AV-400	HDPE	150	168	268	0.024	3.10	4.84	24.6	119	0	0	119			
AV-400	PT-K	HDPE	150	168	268	0.024	3.10	4.84	119.2	577	0	0	577			
PT K	PMP-PT-K-C	HDPE	50	60	160	0.024	6.50	2.31	12.1	28	0	0	28			
PMP-PT-K-C	AV-400	HDPE	50	60	160	0.024	6.50	2.31	104.2	240	0	0	240			
AV-400	AV-401 HYD	HDPE	200	219	319	0.024	2.49	6.01	107	643	0	0	643			
AV-400	PT-B3	HDPE	150	168	268	0.024	3.10	4.84	18	87	0	0	87			
PT-B3	MH-14	DICL	150	175	275	0.024	3.00	5.00	51	255	1	71	326			
MH-14	MH-15	DICL	150	175	275	0.024	3.00	5.00	53.4	267	3	213	480			
MH-15	J-129	DICL	150	175	275	0.024	3.00	5.00	15	75	3	213	288			
J-129	J-140	Steel	150	168	268	0.024	3.10	4.84	1	5	0	0	5			
J-140	J-126	HDPE	50	60	160	0.024	6.50	2.31	20	46.1	4	284	330			
J-126	J-125	HDPE	50	60	160	0.024	6.50	2.31	39.2	90.4	5	354	445			
J-125	J-124	HDPE	50	60	160	0.024	6.50	2.31	40	92	6	425	518			

City of Iqaluit Water and Sewer Study <u>Annex 8b - Heat Loss Calculations</u> Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity		Heat Loss							
			Nomina	Inside	Outside	k	R	q	l	Q					
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
			-	112	212	0.024	4.231	3.545	20	71					
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
J-124	MH-29	HDPE	50	60	160	0.024	6.50	2.31	10	23.1	7	496	519		
MH-29	J-122	HDPE	50	60	160	0.024	6.50	2.31	110	254	8	567	821		
J-122	J-120	HDPE	50	60	160	0.024	6.50	2.31	40	92.2	9	638	730		
J-120	J-137	HDPE	50	60	160	0.024	6.50	2.31	40	92.2	10	709	801		
J-137	Pump-Atco	Steel	50	60	160	0.024	6.50	2.31	1	2.3	11	780	782		
J-140	J-150	Steel	50	60	160	0.024	6.50	2.31	0.8	1.8	3	213	215		
J-150	J-134	Steel	50	60	160	0.024	6.50	2.31	0.8	1.8	0	0	2		
J-134	Pump-Main	Steel	50	60	160	0.024	6.50	2.31	1	2.3	0	0	2		
TOTAL													31,604		

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)				
			-	112	212	0.024	4.231	3.545	20	71				
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
RE-HEAT STATION NO. 1														
ASTRO HILL														
PMP-Recirc	J-112	Copper	50	54	154	0.024	6.95	2.16	0.7	2	0	0	2	
J-112	J-111	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1	
J-111	J-3061	Copper	50	54	154	0.024	6.95	2.16	1.6	3	0	0	3	
J-3061	J-3051	HDPE	250	273	373	0.024	2.07	7.25	41	297	0	0	297	
J-3051	PT A	AC	250	273	373	0.024	2.07	7.25	68	493	0	0	493	
PT A	PT L	AC	250	273	373	0.024	2.07	7.25	69	500	0	0	500	
PT L	J-12	Copper	75	79	179	0.024	5.42	2.77	37.1	103	0	0	103	
PT L	PT L-1	Copper	19	22	122	0.024	11.36	1.32	1	1	0	0	1	
PT L-1	PT A-1	Copper	38	41	141	0.024	8.19	1.83	76.9	141	0	0	141	
PT A	PT O	AC	250	273	373	0.024	2.07	7.25	192	1391	0	0	1,391	
PT O	PT B	AC	250	273	373	0.024	2.07	7.25	35	254	0	0	254	
PT B	PT D	AC	250	273	373	0.024	2.07	7.25	61	442	0	0	442	
From Pt-D to Re-Heat Station No. 1														
PT D	PT A-1	Copper	50	67	167	0.024	6.06	2.48	291	721	0	0	721	
PT A-1	J-3065	Copper	50	67	167	0.024	6.06	2.48	101	250	0	0	250	
J-3065	PMP-Recirc	Copper	50	67	167	0.024	6.06	2.48	5.5	14	0	0	14	
PT D	PT E	HDPE	250	273	373	0.024	2.07	7.25	35	254	1	71	325	
PT E	PT F	HDPE	200	219	319	0.024	2.49	6.01	41	247	1	71	317	
PT F	PT G	DICL	150	175	275	0.024	3.00	5.00	22	110	1	71	181	
PT G	J-190	AC	150	168	268	0.024	3.10	4.84	80.7	391	0	0	391	
J-190	PT H	AC	150	168	268	0.024	3.10	4.84	8.3	40	2	142	182	
PT H	PT H-2	AC	150	168	268	0.024	3.10	4.84	3	15	2	142	156	
PT H-2	J-3	AC	150	168	268	0.024	3.10	4.84	73.8	357	2	142	499	
J-3	AV-9A	HDPE	150	168	268	0.024	3.10	4.84	16.2	78	0	0	78	
											Subtotal		6,742	
HAPPY VALLEY														
PMP-Recirc	J-114	Copper	50	54	154	0.024	6.95	2.16	2.7	6	0	0	6	
J-114	J-113	Copper	50	54	154	0.024	6.95	2.16	1	2	0	0	2	
J-113	J-3063	Copper	50	54	154	0.024	6.95	2.16	5.4	12	0	0	12	
J-3063	AV-306	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6	
J-3063	MH-104	HDPE	200	219	319	0.024	2.49	6.01	27.4	165	0	0	165	
MH-104	MH-103	HDPE	200	219	319	0.024	2.49	6.01	109.9	661	1	71	732	
MH-103	MH-95 HYD	HDPE	200	219	319	0.024	2.49	6.01	37.7	227	0	0	227	
MH-95 HYD	MH-68	HDPE	200	219	319	0.024	2.49	6.0139	12	72.167	0	0	72	

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.024	4.231	3.545	20	71			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
MH-68	MH-69	HDPE	200	219	319	0.024	2.49	6.01	100	601	2	142	743
MH-69	MH-70 HYD	HDPE	200	219	319	0.024	2.49	6.01	78	469	3	213	682
MH-70 HYD	MH-71	HDPE	200	219	319	0.024	2.49	6.01	104	625	5	354	980
MH-71	MH-72 HYD	HDPE	200	219	319	0.024	2.49	6.01	90	541	3	213	754
MH-72 HYD	MH-100	HDPE	200	219	319	0.024	2.49	6.01	151	908	0	0	908
MH-100	MH-99	HDPE	200	219	319	0.024	2.49	6.01	91	547	5	354	902
MH-99	MH-98	HDPE	200	219	319	0.024	2.49	6.01	60	361	5	354	715
MH-98	MH-97	HDPE	200	219	319	0.024	2.49	6.01	51	307	3	213	519
MH-97	MH-96	HDPE	200	219	319	0.024	2.49	6.01	29	174	0	0	174
MH-96	AV-216	HDPE	200	219	319	0.024	2.49	6.01	69	415	3	213	628
AV-216	AV-217 HYD	HDPE	200	219	319	0.024	2.49	6.01	48	289	4	284	572
AV-217 HYD	AV-237	HDPE	200	219	319	0.024	2.49	6.01	42	253	3	213	465
AV-237	AV-238 HYD	HDPE	200	219	319	0.024	2.49	6.01	88	529	5	354	884
AV-238 HYD	AV-227	HDPE	200	219	319	0.024	2.49	6.01	41	247	2	142	388
AV-227	AV-228	HDPE	200	219	319	0.024	2.49	6.01	127	764	11	780	1,544
AV-228	AV-229 HYD	HDPE	200	219	319	0.024	2.49	6.01	87	523	6	425	949
AV-229 HYD	AV-230	HDPE	200	219	319	0.024	2.49	6.01	77	463	4	284	747
AV-230	AV-231	HDPE	200	219	319	0.024	2.49	6.01	34	204	3	213	417
AV-231	AV-232 HYD	HDPE	200	219	319	0.024	2.49	6.01	100	601	5	354	956
AV-232 HYD	AV-233	HDPE	200	219	319	0.024	2.49	6.01	58	349	4	284	632
AV-233	AV-234	HDPE	200	219	319	0.024	2.49	6.01	95	571	5	354	926
AV-234	AV-235 HYD	HDPE	150	168	268	0.024	3.10	4.84	105	509	10	709	1,218
AV-235 HYD	J-234-1	HDPE	50	60	160	0.024	6.50	2.31	112	258	0	0	258
J-234-1	J-226-1	HDPE	75	89	189	0.024	4.99	3.00	70	210	0	0	210
AV-234	AV-226	HDPE	200	219	319	0.024	2.49	6.01	67	403	2	142	545
AV-226	J-227-1	HDPE	150	168	268	0.024	3.10	4.84	126	610	5	354	965
J-227-1	J-226-1	HDPE	50	60	160	0.024	6.50	2.31	131	302	0	0	302
AV-226	AV-225 HYD	HDPE	200	219	319	0.024	2.49	6.01	60	361	3	213	574
J-226-1	J-225-2	HDPE	75	89	189	0.024	4.99	3.00	58	174	0	0	174
AV-225 HYD	AV-239	HDPE	150	168	268	0.024	3.10	4.84	61	295	7	496	792
AV-239	J-225-1	HDPE	50	60	160	0.024	6.50	2.31	65	150	0	0	150
J-225-1	J-225-2	HDPE	50	60	160	0.024	6.50	2.31	0.5	1	0	0	1
J-225-1	J-225-2	Copper	13	16	116	0.024	13.14	1.14	1	1	0	0	1
AV-225 HYD	AV-224 HYD	HDPE	200	219	319	0.024	2.49	6.01	97	583	3	213	796
J-225-2	J-224-1	HDPE	75	89	189	0.024	4.99	3.00	98	294	0	0	294
AV-224 HYD	AV-240	HDPE	150	168	268	0.024	3.10	4.84	41	199	6	425	624
AV-240	J-224-1	HDPE	50	60	160	0.024	6.50	2.31	43	99	0	0	99
J-224-1	AV-223-2	HDPE	75	89	189	0.024	4.99	3.00	78.2	235	0	0	235
AV-224 HYD	AV-223-3	HDPE	200	219	319	0.024	2.49	6.01	71.2	428	2	142	570
AV-223-3	AV-223-2	Copper	13	16	116	0.024	13.14	1.14	2	2	0	0	2

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nomina	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
			-	112	212	0.024	4.231	3.545	20	71							
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
AV-223-2	PMP-AV223	Copper	75	79	179	0.024	5.42	2.77	1	3	0	0	3				
PMP-AV223	AV-223	Copper	75	79	179	0.024	5.42	2.77	0.7	2	0	0	2				
J-2231	AV-223 PRV	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6				
AV-223 PRV	AV-223-3	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6				
AV-223	J-96-1	HDPE	75	89	189	0.024	4.99	3.00	104	312	0	0	312				
MH-96	J-96-1	HDPE	150	168	268	0.024	3.10	4.84	0.5	2	0	0	2				
J-96-1	MH-93	HDPE	150	168	268	0.024	3.10	4.84	18	87	1	71	158				
MH-93	MH-92	HDPE	150	168	268	0.024	3.10	4.84	82	397	4	284	681				
MH-92	J-2231	HDPE	150	168	268	0.024	3.10	4.84	38	184	0	0	184				
J-2231	MH-91 HYD	HDPE	150	168	268	0.024	3.10	4.84	53	257	3	213	469				
MH-91 HYD	MH-89	HDPE	150	168	268	0.024	3.10	4.84	86	417	6	425	842				
MH-89	MH-88	HDPE	150	168	268	0.024	3.10	4.84	107	518	1	71	589				
MH-88	MH-87	HDPE	150	168	268	0.024	3.10	4.84	38	184	2	142	326				
MH-87	MH-86	HDPE	150	168	268	0.024	3.10	4.84	55	266	6	425	692				
MH-86	MH-85	HDPE	150	168	268	0.024	3.10	4.84	57	276	4	284	560				
MH-85	MH-73 (bleed)	HDPE	150	168	268	0.024	3.10	4.84	53	257	2	142	398				
MH-73 (bleed)	MH-74 HYD	HDPE	150	168	268	0.024	3.10	4.84	97	470	5	354	824				
MH-74 HYD	MH-75	HDPE	150	168	268	0.024	3.10	4.84	98	475	8	567	1,042				
MH-75	MH-90 HYD	HDPE	150	168	268	0.024	3.10	4.84	48	232	1	71	303				
MH-90 HYD	MH-76 (bleed)	HDPE	150	168	268	0.024	3.10	4.84	34	165	1	71	236				
MH-76 (bleed)	J-6901	HDPE	150	168	268	0.024	3.10	4.84	35	170	0	0	170				
J-6901	J-3066	Copper	50	54	154	0.024	6.95	2.16	285.2	616	0	0	616				
J-3066	PMP-Recirc	Copper	50	54	154	0.024	6.95	2.16	5.5	12	0	0	12				
												Subtotal	32,949				
												TOTAL	39,691				

City of Iqaluit Water and Sewer Study			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nomina (mm) Inside (mm) Outside (mm) Conductivity k (W/m.C) R (m.C/W) Heat Loss q (W/m) l (m) Q (W)								 MP14882A		
Annex 8b - Heat Loss Calculations			Ambient Temperature = -10 C										
Conductivity = 0.024 W/m.C			- 112 212 0.024 4.231 3.545 20 71										
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
BOOSTER STATION													
PMP-BS-P10	J-BS30	Steel	75	89	189	0.024	4.99	3.00	1.5	5	0	0	5
PMP-BS-P10	J-BS30	Steel	75	89	189	0.024	4.99	3.00	1	3	0	0	3
J-BS30	J-BS22	Steel	75	89	189	0.024	4.99	3.00	3	9	0	0	9
J-BS22	J-BS27	Steel	250	273	373	0.024	2.07	7.25	10	72	0	0	72
J-BS27	J-BS26	Steel	250	273	373	0.024	2.07	7.25	2	14	0	0	14
J-BS26	J-BS2	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6
J-BS2	J-326-5	HDPE	200	219	319	0.024	2.49	6.01	20	120	0	0	120
J-326-5	J-326-2	HDPE	200	219	319	0.024	2.49	6.01	4	24	0	0	24
J-326-2	AV-327 HY	HDPE	200	219	319	0.024	2.49	6.01	174	1046	0	0	1,046
AV-327 HY	AV-328	HDPE	200	219	319	0.024	2.49	6.01	94	565	0	0	565
AV-328	J-500-1	HDPE	200	219	319	0.024	2.49	6.01	40.8	245	0	0	245
J-500-1	AV-500	HDPE	200	219	319	0.024	2.49	6.01	10.7	64	0	0	64
1999 Subdivision													
AV-500	J-500-6	HDPE	250	273	373	0.024	2.07	7.25	0.5	4	0	0	4
J-500-5	J-500-6	HDPE	250	273	373	0.024	2.07	7.25	0.5	4	0	0	4
PMP-500-In	J-500-6	HDPE	75	89	189	0.024	4.99	3.00	0.5	2	0	0	2
J-500-5	PMP-500-O	HDPE	75	89	189	0.024	4.99	3.00	1	3	0	0	3
J-500-5	AV-501	HDPE	250	273	373	0.024	2.07	7.25	80	580	0	0	580
AV-501	AV-502	HDPE	250	273	373	0.024	2.07	7.25	119.72	868	0	0	868
AV-502	AV-503 HY	HDPE	250	273	373	0.024	2.07	7.25	96.8	702	1	71	772
AV-503 HY	AV-504	HDPE	250	273	373	0.024	2.07	7.25	117.03	848	4	284	1,132
AV-504	AV-505 HY	HDPE	250	273	373	0.024	2.07	7.25	61.8	448	2	142	590
AV-505 HY	AV-506	HDPE	250	273	373	0.024	2.07	7.25	95.5	692	5	354	1,047
AV-506	AV-507 HY	HDPE	250	273	373	0.024	2.07	7.25	123.74	897	10	709	1,606
AV-507 HY	AV-508	HDPE	250	273	373	0.024	2.07	7.25	116.75	846	9	638	1,484
AV-508	AV-509 HY	HDPE	250	273	373	0.024	2.07	7.25	119.9	869	10	709	1,578
AV-509 HY	AV-510	HDPE	250	273	373	0.024	2.07	7.25	68.4	496	6	425	921
AV-510	AV-511 HY	HDPE	250	273	373	0.024	2.07	7.25	109.7	795	7	496	1,291
AV-511 HY	AV-512	HDPE	250	273	373	0.024	2.07	7.25	111.8	810	9	638	1,448
AV-512	AV-513 HY	HDPE	250	273	373	0.024	2.07	7.25	96.42	699	8	567	1,266
AV-513 HY	AV-514	HDPE	250	273	373	0.024	2.07	7.25	90.63	657	6	425	1,082
AV-514	AV-505	HDPE	250	273	373	0.024	2.07	7.25	55.3	401	2	142	543
AV-505	J-504-2	HDPE	250	273	373	0.024	2.07	7.25	61.8	448	2	142	590
J-504-2	J-515	HDPE	250	273	373	0.024	2.07	7.25	76.9	557	0	0	557
AV-515	J-515	HDPE	250	273	373	0.024	2.07	7.25	1	7	0	0	7
AV-515	AV-504 HY	HDPE	250	273	373	0.024	2.07	7.25	75.9	550	2	142	692
J-503	AV-504 HY	HDPE	250	273	373	0.024	2.07	7.25	117	848	0	0	848

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.024	4.231	3.545	20	71			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-500-3	J-503	HDPE	250	273	373	0.024	2.07	7.25	297.5	2,156	0	0	2,156
J-500-3	J-500-1	HDPE	250	273	373	0.024	2.07	7.25	1	7	0	0	7
J-500-3	J-500-4	HDPE	75	89	189	0.024	4.99	3.00	3	9	0	0	9
AV-500	J-500-4	HDPE	200	219	319	0.024	2.49	6.01	11.8	71	0	0	71
J-500-4	AV-329 HY	HDPE	200	219	319	0.024	2.49	6.01	39.7	239	0	0	239
AV-329 HY	AV-330	HDPE	200	219	319	0.024	2.49	6.01	94	565	6	425	991
AV-330	AV-331 HY	HDPE	200	219	319	0.024	2.49	6.01	105	631	4	284	915
AV-331 HY	AV-332 HY	HDPE	200	219	319	0.024	2.49	6.01	104	625	3	213	838
AV-332 HY	J-331-1	HDPE	200	219	319	0.024	2.49	6.01	107	643	0	0	643
J-331-1	AV-333	HDPE	200	219	319	0.024	2.49	6.01	47	283	1	71	354
AV-333	AV-334 HY	HDPE	200	219	319	0.024	2.49	6.01	81	487	1	71	558
AV-350 HY	AV-334 HY	HDPE	200	219	319	0.024	2.49	6.01	60.1	361	1	71	432
AV-350 HY	AV-349	HDPE	200	219	319	0.024	2.49	6.01	74.9	450	3	213	663
AV-349	AV-348 HY	HDPE	200	219	319	0.024	2.49	6.01	77.1	464	3	213	676
AV-348 HY	AV-346 HY	HDPE	200	219	319	0.024	2.49	6.01	94.1	566	1	71	637
AV-346 HY	AV-347 HY	HDPE	200	219	319	0.024	2.49	6.01	88.2	530	4	284	814
AV-347 HY	J-346	HDPE	200	219	319	0.024	2.49	6.01	91	547	0	0	547
J-346	AV-345	HDPE	200	219	319	0.024	2.49	6.01	64.1	385	1	71	456
AV-345	AV-344	HDPE	200	219	319	0.024	2.49	6.01	82.1	494	2	142	636
AV-344	J-345	HDPE	200	219	319	0.024	2.49	6.01	92.5	556	1	71	627
J-345	AV-355	HDPE	200	219	319	0.024	2.49	6.01	98.7	594	0	0	594
J-353	AV-355	HDPE	200	219	319	0.024	2.49	6.01	80.76	486	2	142	627
AV-353 HY	AV-354	HDPE	200	219	319	0.024	2.49	6.01	59.36	357	2	142	499
AV-354	J-353	HDPE	200	219	319	0.024	2.49	6.01	59.36	357	2	142	499
AV-352	AV-353 HY	HDPE	200	219	319	0.024	2.49	6.01	62.78	378	1	71	448
AV-351A	AV-352	HDPE	200	219	319	0.024	2.49	6.01	67.2	404	1	71	475
AV-351	AV-351A	HDPE	200	219	319	0.024	2.49	6.01	30.54	184	0	0	184
AV-351 HY	J-351-1	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6
AV-351 HY	PT-N	HDPE	200	219	319	0.024	2.49	6.01	63.2	380	0	0	380
PT-N	PMP-N-In	HDPE	200	219	319	0.024	2.49	6.01	13.6	82	0	0	82
PMP-N-Out	J-351-2	HDPE	200	219	319	0.024	2.49	6.01	49.6	298	0	0	298
J-351-2	J-351-1	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6
To New French School and New Arena													
AV-351 HY	AV-356	HDPE	200	219	319	0.024	2.49	6.01	87	523	0	0	523
AV-356	AV-357	HDPE	200	219	319	0.024	2.49	6.01	87	523	1	71	594
AV-357	AV-358	HDPE	200	219	319	0.024	2.49	6.01	87	523	1	71	594
AV-358	AV-351 HY	HDPE	200	219	319	0.024	2.49	6.01	260	1563.6	0	0	1,564

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.024	4.231	3.545	20	71						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
To Shunt Subdivision																
AV-351 HYI	AV-343	HDPE	200	219	319	0.024	2.49	6.01	67.3	405	1	71	476			
AV-342 HYI	AV-343	HDPE	200	219	319	0.024	2.49	6.01	58.04	349	2	142	491			
AV-341 HYI	AV-342 HYI	HDPE	200	219	319	0.024	2.49	6.01	83.19	500	3	213	713			
AV-340 HYI	AV-341 HYI	HDPE	200	219	319	0.024	2.49	6.01	72.2	434	5	354	789			
AV-339	AV-340 HYI	HDPE	200	219	319	0.024	2.49	6.01	83.34	501	2	142	643			
AV-334 HYI	AV-335	HDPE	200	219	319	0.024	2.49	6.01	98	589	2	142	731			
AV-335	AV-338 HYI	HDPE	200	219	319	0.024	2.49	6.01	67.4	405	1	71	476			
AV-338 HYI	AV-337	HDPE	200	219	319	0.024	2.49	6.01	68	409	2	142	551			
AV-337	AV-336 HYI	HDPE	200	219	319	0.024	2.49	6.01	95	571	1	71	642			
AV-336 HYI	J-337-1	HDPE	200	219	319	0.024	2.49	6.01	95	571	2	142	713			
J-337-1	AV-339	HDPE	177						131							
AV-339	J-339	HDPE	200	219	319	0.024	2.49	6.01	1	6	2	142	148			
J-339	J-335-1	HDPE	200	219	319	0.024	2.49	6.01	130.5	785	3	213	998			
J-335-1	J-334-1	HDPE	50	60	160	0.024	6.50	2.31	98	226	0	0	226			
J-326-3	J-334-1	HDPE	200	219	319	0.024	2.49	6.01	700	4210	0	0	4,210			
J-326-3	J-326-6	HDPE	200	219	319	0.024	2.49	6.01	4	24	0	0	24			
J-326-6	J-BS3	HDPE	200	219	319	0.024	2.49	6.01	20	120	0	0	120			
J-BS3	J-BS24	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6			
J-BS24	J-BS25	Steel	200	219	319	0.024	2.49	6.01	2	12	0	0	12			
J-BS25	J-BS28	Steel	100	114	214	0.024	4.18	3.59	10	36	0	0	36			
J-BS28	J-BS29	Steel	75	89	189	0.024	4.99	3.00	2	6	0	0	6			
J-BS29	PMP-BS-P10	Steel	100	114	214	0.024	4.18	3.59	1	4	0	0	4			
J-BS29	PMP-BS-P10	Steel	75	89	189	0.024	4.99	3.00	1.5	5	0	0	5			
TOTAL												52,749				

City of Iqaluit Water and Sewer Study			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nomina Inside Outside Conductivity k R Heat Loss q l Q								 Trow MP14882A		
Annex 8b - Heat Loss Calculations			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
Ambient Temperature = -10 C			-	112	212	0.024	4.231	3.545	20	71			
Conductivity = 0.024 W/m.C													
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
TRIGRAM BUILDING													
Trigram-P1-C	J-29	Copper	50	54	154	0.024	6.95	2.16	0.3	1	0	0	1
J-29	J-25	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1
J-23	Trigram-P2-C	Copper	50	54	154	0.024	6.95	2.16	0.3	1	0	0	1
J-25	J-23	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1
J-25	J-27	Copper	50	54	154	0.024	6.95	2.16	0.3	1	0	0	1
J-27	J-1	Copper	50	54	154	0.024	6.95	2.16	3	6	0	0	6
J-1	J-28	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1
J-27	J-2	Copper	50	54	154	0.024	6.95	2.16	3	6	0	0	6
J-2	J-28	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1
J-28	J-33	Copper	50	54	154	0.024	6.95	2.16	4	9	0	0	9
J-33	J-8202	Copper	50	54	154	0.024	6.95	2.16	2	4	0	0	4
J-8202	AV-200 (ble	HDPE	100	114	214	0.024	4.18	3.59	43	154	0	0	154
AV-200 (blee	J-44	HDPE	200	219	319	0.024	2.49	6.01	74.7	449	3	213	662
J-44	AV-201 HY	HDPE	200	219	319	0.024	2.49	6.01	9.3	56	0	0	56
AV-201 HY	J-56	HDPE	200	219	319	0.024	2.49	6.01	94.8	570	2	142	712
J-56	AV-202 HY	HDPE	200	219	319	0.024	2.49	6.01	30.2	182	0	0	182
AV-202 HY	AV-203	HDPE	200	219	319	0.024	2.49	6.01	58	349	1	71	420
AV-203	J-105	HDPE	200	219	319	0.024	2.49	6.01	33.2	200	1	71	271
J-105	AV-204 HY	HDPE	200	219	319	0.024	2.49	6.01	40.8	245	0	0	245
AV-204 HY	J-57	HDPE	200	219	319	0.024	2.49	6.01	24.1	145	1	71	216
J-57	AV-205	HDPE	200	219	319	0.024	2.49	6.01	54.9	330	0	0	330
AV-201 HY	J-94	HDPE	250	273	373	0.024	2.07	7.25	68.6	497	2	142	639
J-94	AV-414 HY	HDPE	250	273	373	0.024	2.07	7.25	31.4	228	0	0	228
AV-414 HY	AV-415	HDPE	200	219	319	0.024	2.49	6.01	45	271	0	0	271
AV-414 HY	J-175	HDPE	150	168	268	0.024	3.10	4.84	0.4	2	0	0	2
AV-415	J-175	HDPE	200	219	319	0.024	2.49	6.01	45	271	0	0	271
J-175	AV-413	HDPE	150	168	268	0.024	3.10	4.84	89.6	434	2	142	576
AV-413	J-64	HDPE	150	168	268	0.024	3.10	4.84	14.8	72	1	71	143
J-64	AV-205-1	HDPE	150	168	268	0.024	3.10	4.84	67.2	325	0	0	325
AV-205-1	AV-205	HDPE	150	168	268	0.024	3.10	4.84	2	10	0	0	10
AV-205	J-108	HDPE	200	219	319	0.024	2.49	6.01	41.9	252	0	0	252

City of Iqaluit Water and Sewer Study <u>Annex 8b - Heat Loss Calculations</u> Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Conductivity Heat Loss Nomina Inside Outside k R q l Q (mm) (mm) (mm) (W/m.C) (m.C/W) (W/m) (m) (W) - 112 212 0.024 4.231 3.545 20 71
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City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.024	4.231	3.545	20	71			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-173	AV-205-3	HDPE	75	89	189	0.024	4.99	3.00	210	631	0	0	631
AV-205-3	J-8201	HDPE	75	89	189	0.024	4.99	3.00	465	1397	0	0	1,397
J-8201	J-17	Copper	50	54	154	0.024	6.95	2.16	2	4	0	0	4
J-17	J-18	Copper	50	54	154	0.024	6.95	2.16	4	9	0	0	9
J-18	J-19	Copper	50	54	154	0.024	6.95	2.16	0.3	1	0	0	1
J-19	Trigram-P1	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1
Trigram-P2-1	J-19	Copper	50	54	154	0.024	6.95	2.16	0.5	1	0	0	1
AV-305	J-6	HDPE	250	273	373	0.024	2.07	7.25	59.3	430	0	0	430
J-6	AV-304 HY	HDPE	250	273	373	0.024	2.07	7.25	12.7	92	0	0	92
AV-304 HY	AV-303 HY	HDPE	250	273	373	0.024	2.07	7.25	84	609	0	0	609
AV-303 HY	AV-301	HDPE	250	273	373	0.024	2.07	7.25	93	674	0	0	674
AV-301	AV-301-1	HDPE	250	273	373	0.024	2.07	7.25	1	7	0	0	7
AV-301	AV-302 HY	HDPE	200	219	319	0.024	2.49	6.01	32	192	0	0	192
AV-302 HY	J-3021	HDPE	150	168	268	0.024	3.10	4.84	34	165	0	0	165
J-3021	J-145	HDPE	150	168	268	0.024	3.10	4.84	1	5	0	0	5
J-145	J-144	HDPE	50	60	160	0.024	6.50	2.31	24	55	0	0	55
AV-302 HY	AV-303B	HDPE	200	219	319	0.024	2.49	6.01	49.2	296	2	142	438
AV-303B	AV-304B	HDPE	200	219	319	0.024	2.49	6.01	109.1	656	3	213	869
AV-304B	J-147	HDPE	50	60	160	0.024	6.50	2.31	1	2	4	284	286
J-147	J-146	HDPE	50	60	160	0.024	6.50	2.31	109	251	5	354	606
J-146	J-144	HDPE	50	60	160	0.024	6.50	2.31	49.2	113	6	425	539
J-144	AV-301-1	HDPE	50	60	160	0.024	6.50	2.31	32	74	6	425	499
												0	
AV-301-1	AV-300 HY	HDPE	200	219	319	0.024	2.49	6.01	84	505	0	0	505
AV-300 HY	J-13	HDPE	250	273	373	0.024	2.07	7.25	83.4	604	0	0	604
J-13	J-34	HDPE	250	273	373	0.024	2.07	7.25	91.3	662	0	0	662
J-34	AV-406	HDPE	250	273	373	0.024	2.07	7.25	28.3	205	0	0	205
AV-406	AV-200 (ble	HDPE	200	219	319	0.024	2.49	6.01	13	78	0	0	78
TOTAL													29,278

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.024	4.231	3.545	20	71			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
MAIN DISTRIBUTION													
Main Res	J-RES-1	PVC	300	335	435	0.024	1.73	8.66	1.8	15.6	0	0	16
J-RES-1	J-RES-2	PVC	300	335	435	0.024	1.73	8.66	18	155.9	0	0	156
J-RES-2	J-RES-3	PVC	300	335	435	0.024	1.73	8.66	6.3	54.6	0	0	55
J-RES-3	J-RES-5	PVC	300	335	435	0.024	1.73	8.66	4	34.6	0	0	35
J-RES-5	J-RES-7	PVC	300	335	435	0.024	1.73	8.66	2.2	19.1	0	0	19
J-RES-7	J-5	HDPE	250	273	373	0.024	2.07	7.25	2.5	18.1	0	0	18
J-5	J-3071	HDPE	250	273	373	0.024	2.07	7.25	318.5	2308	0	0	2,308
J-3071	J-3072	HDPE	100	114	214	0.024	4.18	3.59	14	50.3	0	0	50
AV-307	J-3072	HDPE	100	114	214	0.024	4.18	3.59	14	50.3	1	71	121
J-3071	AV-307	HDPE	250	273	373	0.024	2.07	7.25	1	7.2	0	0	7
AV-307	AV-306	HDPE	250	273	373	0.024	2.07	7.25	73	529	2	142	671
J-RES-5	J-RES-6	PVC	300	335	435	0.024	1.73	8.66	3.1	27	0	0	27
J-RES-6	AV-306	HDPE	250	273	373	0.024	2.07	7.25	396	2870	0	0	2,870
AV-306	AV-305	HDPE	250	273	373	0.024	2.07	7.25	43	312	0	0	312
AV-306	J-3061	HDPE	250	273	373	0.024	2.07	7.25	1	7	0	0	7
AV-306	TAC-1	HDPE	250	273	373	0.024	2.07	7.25	113	819	1	71	890
TAC-1	TAC-2	HDPE	250	273	373	0.024	2.07	7.25	89	645	2	142	787
TAC-2	TAC-3	HDPE	250	273	373	0.024	2.07	7.25	98.4	713	8	567	1,280
TAC-3	TAC-4	HDPE	250	273	373	0.024	2.07	7.25	107.2	777	5	354	1,131
TAC-4	AV-326	HDPE	250	273	373	0.024	2.07	7.25	99.4	720	7	496	1,217
AV-326	J-326-4	HDPE	250	273	373	0.024	2.07	7.25	4	29	0	0	29
J-326-4	J-BS1	HDPE	250	273	373	0.024	2.07	7.25	20	145	0	0	145
J-BS5	J-BS1	HDPE	250	273	373	0.024	2.07	7.25	1	7	0	0	7
J-BS5	J-BS6	Steel	250	273	373	0.024	2.07	7.25	3.7	27	0	0	27
J-BS6	J-BS23	Steel	200	219	319	0.024	2.49	6.01	21	126	0	0	126
J-BS23	J-BS4	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6
J-BS4	J-326-7	HDPE	200	219	319	0.024	2.49	6.01	20	120	0	0	120
J-326-7	MH-72 HYE	HDPE	200	219	319	0.024	2.49	6.01	20	120	0	0	120
J-BS6	J-BS7	Steel	250	273	373	0.024	2.07	7.25	2.5	18.1	0	0	18
J-BS7	J-BS9	Steel	75	89	188.9	0.024	5.00	3.00	1.5	4.5	0	0	5
J-BS9	PMP-BS-P10	Steel	75	89	188.9	0.024	5.00	3.00	1	3.0	0	0	3
PMP-BS-P10	J-BS10	Steel	75	89	189	0.024	4.99	3.00	1	3	0	0	3

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.024	4.231	3.545	20	71			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-BS10	J-BS8	Steel	75	89	189	0.024	4.99	3.00	3	9	0	0	9
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.024	5.00	3.00	2	6.0	0	0	6
PMP-BS-P10	J-BS11	Steel	75	89	188.9	0.024	5.00	3.00	1	3.0	0	0	3
J-BS8	J-BS11	Steel	75	89	188.9	0.024	5.00	3.00	5	15.0	0	0	15
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.024	5.00	3.00	1	3.0	0	0	3
J-BS12	PMP-BS-P10	Steel	75	89	188.9	0.024	5.00	3.00	1	3.0	0	0	3
J-BS14	J-BS12	Steel	75	89	188.9	0.024	5.00	3.00	5	15.0	0	0	15
J-BS8	J-BS13	Steel	75	89	189	0.024	4.99	3.00	2	6.0	0	0	6
J-BS13	J-BS14	Steel	150	168	268	0.024	3.10	4.84	1.5	7.3	0	0	7
J-BS14	J-BS15	Steel	150	168	268	0.024	3.09	4.85	3.5	17.0	0	0	17
J-BS15	J-BS18	Steel	150	168	268	0.024	3.09	4.85	1.5	7.3	0	0	7
J-BS18	J-BS19	Steel	150	168	268	0.024	3.09	4.85	2.3	11.2	0	0	11
J-BS19	J-BS21	Steel	200	219	319	0.024	2.49	6.02	4.2	25.3	0	0	25
J-BS21	J-BS22	Steel	250	273	373	0.024	2.07	7.25	3	21.7	0	0	22
Part of Airport Loop													
AV-262	AV-263	HDPE	200	219	319	0.024	2.49	6.01	60	361	0	0	361
AV-263	J-84	HDPE	200	219	319	0.024	2.49	6.01	12.1	73	0	0	73
J-84	AV-264 HYD	HDPE	200	219	319	0.024	2.49	6.01	101.9	613	0	0	613
AV-264 HYD	J-83	HDPE	200	219	319	0.024	2.49	6.01	27.7	167	0	0	167
J-83	AV-3 HYD	HDPE	200	219	319	0.024	2.49	6.01	85.3	513	1	71	584
AV-3 HYD	AV-2 HYD	HDPE	200	219	319	0.024	2.49	6.01	98	589	0	0	589
AV-2 HYD	AV-1	HDPE	200	219	319	0.024	2.49	6.01	104	625	2	142	767
AV-1	J-106	HDPE	200	219	319	0.024	2.49	6.01	32.4	195	1	71	266
J-106	PT 53	HDPE	200	219	319	0.024	2.49	6.01	57.6	346	0	0	346
PT 53	J-82	HDPE	200	219	319	0.024	2.49	6.01	90.6	545	0	0	545
J-82	J-115	Copper	50	67	167	0.024	6.06	2.48	7.8	19	0	0	19
J-115	J-116	Copper	50	67	167	0.024	6.06	2.48	8.2	20	0	0	20
J-116	J-117	Copper	50	67	167	0.024	6.06	2.48	6.8	17	0	0	17
J-117	AV-262-1	HDPE	75	89	189	0.024	4.99	3.00	234	703	0	0	703
AV-3 HYD	AV-4 HYD	HDPE	200	219	319	0.024	2.49	6.01	128	770	3	213	982
AV-4 HYD	J-2646	HDPE	200	219	319	0.024	2.49	6.01	82	493	5	354	848
J-2646	AV-5 HYD	HDPE	200	219	319	0.024	2.49	6.01	26	156	6	425	582
AV-4 HYD	PT B3	HDPE	150	168	268	0.024	3.10	4.84	87	421	8	567	989

City of Iqaluit Water and Sewer Study <u>Annex 8b - Heat Loss Calculations</u> Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Conductivity Heat Loss Nomina Inside Outside k R q l Q (mm) (mm) (mm) (W/m.C) (m.C/W) (W/m) (m) (W) - 112 212 0.024 4.231 3.545 20 71								 MP14882A		
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-4105	AV-5 HYD	HDPE	150	168	268	0.024	3.10	4.84	161	780	10	709	1,489
PT B3	J-4105	HDPE	150	168	268	0.024	3.10	4.84	27	131	11	780	911
PT B3	PT C3	HDPE	150	168	268	0.024	3.10	4.84	7	34	13	922	956
PT C3	PT D3	HDPE	150	168	268	0.024	3.10	4.84	72	349	14	993	1,341
Part of Uivag Loop													
PT I	PT J	HDPE	50	60	160	0.024	6.50	2.31	21	48	0	0	48
PT J	MH-16	HDPE	50	60	160	0.024	6.50	2.31	21.4	49	0	0	49
MH-16	MH-10	DICL	100	114	214	0.024	4.18	3.59	42	151	3	213	364
MH-10	MH-49	DICL	100	114	214	0.024	4.18	3.59	20	72	0	0	72
MH-49	MH-11	DICL	100	114	214	0.024	4.18	3.59	75	269	4	284	553
MH-11	MH-8	DICL	100	114	214	0.024	4.18	3.59	60	215	0	0	
AV-9A	MH-8	DICL	150	175	275	0.024	3.00	5.00	90	450	0	0	450
AV-401 HYD	J-159	HDPE	200	219	319	0.024	2.49	6.01	74.7	449	0	0	449
J-159	AV-402 HYD	HDPE	200	219	319	0.024	2.49	6.01	53.9	324	1	71	395
AV-402 HYD	J-192	HDPE	200	219	319	0.024	2.49	6.01	128.9	775	0	0	775
J-192	AV-404 HYD	HDPE	200	219	319	0.024	2.49	6.01	0.1	1	3	213	213
AV-404 HYD	J-176	HDPE	200	219	319	0.024	2.49	6.01	0.5	3	0	0	3
J-176	J-67	HDPE	200	219	319	0.024	2.49	6.01	52.8	318	6	425	743
J-67	AV-405 HYD	HDPE	200	219	319	0.024	2.49	6.01	46.7	281	0	0	281
AV-405 HYD	AV-205-2	HDPE	200	219	319	0.024	2.49	6.01	101	607	3	213	820
AV-205	AV-205-2	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6
Lower Base Phase I													
J-187	J-192	HDPE	200	219	319	0.024	2.49	6.01	13.7	82	0	0	82
AV-404 HYD	AV-404 PRV	HDPE	100	114	214	0.024	4.18	3.59	1	4	0	0	4
AV-404 PRV	J-187	HDPE	100	114	214	0.024	4.18	3.59	1	4	0	0	4
AV-404 HYD	J-177	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6
J-176	J-177	Copper	19	27	127	0.024	10.27	1.46	3	4	0	0	4
J-411	J-177	HDPE	200	219	319	0.024	2.49	6.01	117	704	0	0	704
J-435	J-411	HDPE	200	219	319	0.024	2.49	6.01	101	607	0	0	607
AV-435	J-435	HDPE	200	219	319	0.024	2.49	6.01	1	6	7	496	502
AV-411 HYD	AV-435	HDPE	200	219	319	0.024	2.49	6.01	102	613	10	709	1,322
AV-411 HYD	AV-410 HYD	HDPE	200	219	319	0.024	2.49	6.01	70.5	424	0	0	424
Lower Base Phase II (Not in Service)													
AV-410 HYD	AV-440	HDPE	200	219	319	0.024	2.49	6.01	92.55	557	9	638	1,195
AV-440	AV-439	HDPE	200	219	319	0.024	2.49	6.01	68.2	410	2	142	552
AV-439	AV-438	HDPE	200	219	319	0.024	2.49	6.01	85	511	8	567	1,078
AV-438	AV-437	HDPE	200	219	319	0.024	2.49	6.01	79.4	478	7	496	974

City of Iqaluit Water and Sewer Study Annex 8b - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.024 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.024	4.231	3.545	20	71						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nomina	Pipe	Outside	k	R	q	l	Q	No.	Q	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)	SCs	(W)	(W)			
J-183	AV-437	HDPE	200	219	319	0.024	2.49	6.01	72.6	437	3	213	649			
AV-410 HYI	J-183	HDPE	200	219	319	0.024	2.49	6.01	102.5	616	3	213	829			
AV-409 HYI	J-183	HDPE	200	219	319	0.024	2.49	6.01	1	6	0	0	6			
AV-410 HYI	AV-409 HY	HDPE	200	219	319	0.024	2.49	6.01	103.5	622	2	142	764			
AV-408	AV-409 HY	HDPE	200	219	319	0.024	2.49	6.01	124.5	749	9	638	1,387			
AV-408	AV-407 HY	HDPE	200	219	319	0.024	2.49	6.01	62.8	378	6	425	803			
AV-407 HYI	J-172	HDPE	200	219	319	0.024	2.49	6.01	122.2	735	8	567	1,302			
J-172	J-173	Copper	19	27	127	0.024	10.27	1.46	3	4	0	0	4			
J-172	AV 207-PRV	HDPE	200	219	319	0.024	2.49	6.01	1.3	8	0	0	8			
AV 207-PRV	AV-207 HY	HDPE	200	219	319	0.024	2.49	6.01	1.7	10	0	0	10			
To Bleeder at MH-55																
J-501	PT H	HDPE	150	168	268	0.024	3.10	4.84	168	814	4	284	1,097			
PT I	J-501	AC	50	60	160	0.024	6.50	2.31	18	42	0	0	42			
J-501	MH-50	HDPE	150	168	268	0.024	3.10	4.84	8	39	0	0	39			
MH-50	MH-51	HDPE	150	168	268	0.024	3.10	4.84	71	344	0	0	344			
MH-51	MH-52	HDPE	150	168	268	0.024	3.10	4.84	30	145	0	0	145			
MH-52	MH-53 HYI	HDPE	150	168	268	0.024	3.10	4.84	114	552	5	354	907			
MH-53 HYD	MH-54	HDPE	150	168	268	0.024	3.10	4.84	102	494	2	142	636			
MH-54	MH-55 (blee	HDPE	150	168	268	0.024	3.10	4.84	108	523	2	142	665			
Subtotal												48,220				
BUILDING 222												31,604				
RE-HEAT STATION NO. 1												39,691				
BOOSTER STATION												52,749				
TRIGRAM BUILDING												29,278				
TOTAL												201,543				

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)						
			-	112	212	0.048	2.116	7.090	20	142						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
BUILDING 222																
Pump-Main	J-135	Steel	50	60	160	0.048	3.25	4.61	1	5	0	0	5			
J-135	J-136	Steel	50	60	160	0.048	3.25	4.61	6	28	0	0	28			
J-136	J-139	Steel	150	168	268	0.048	1.55	9.69	1	10	0	0	10			
Pump-Atco	J-138	Steel	50	60	160	0.048	3.25	4.61	6	28	2	284	311			
J-138	J-139	Steel	50	60	160	0.048	3.25	4.61	1	5	0	0	5			
J-139	MH-13	Steel	150	168	268	0.048	1.55	9.69	1	10	0	0	10			
MH-13	MH-22	DICL	150	175	275	0.048	1.50	10.01	15	150	1	142	292			
MH-22	MH-21	DICL	150	175	275	0.048	1.50	10.01	64	641	4	567	1,208			
MH-21	MH-20	DICL	150	175	275	0.048	1.50	10.01	74	741	6	851	1,591			
MH-20	PT C1	DICL	150	175	275	0.048	1.50	10.01	53	530	4	567	1,098			
PT C1	MH-19 HYD	HDPE	150	168	268	0.048	1.55	9.69	9	87	0	0	87			
MH-19 HYD	PT D1	HDPE	150	168	268	0.048	1.55	9.69	9	87	3	425	513			
PT D1	MH-23B	DICL	150	175	275	0.048	1.50	10.01	43	430	0	0	430			
MH-23B	AV-23A	DICL	150	175	275	0.048	1.50	10.01	37	370	2	284	654			
AV-23A	MH-30	DICL	150	175	275	0.048	1.50	10.01	47	470	2	284	754			
MH-30	MH-31	DICL	150	175	275	0.048	1.50	10.01	48	480	0	0	480			
MH-31	MH-32	DICL	150	175	275	0.048	1.50	10.01	66	661	2	284	944			
MH-32	MH-32A HYD	HDPE	150	168	268	0.048	1.55	9.69	57	552	4	567	1,119			
MH-32A HYD	J-160	HDPE	150	168	268	0.048	1.55	9.69	37.3	361	4	567	928			
J-160	MH-32B HYD	HDPE	150	168	268	0.048	1.55	9.69	56.7	549	3	425	975			
MH-32B HYD	J-63-1 (bleed)	HDPE	150	168	268	0.048	1.55	9.69	133.3	1,291	4	567	1,858			
J-63-1 (bleed)	MH-63 HYD	HDPE	150	168	268	0.048	1.55	9.69	11.7	113	0	0	113			
MH-63 HYD	MH-65	HDPE	150	168	268	0.048	1.55	9.69	72	697	5	709	1,406			
MH-65	MH-66	HDPE	150	168	268	0.048	1.55	9.69	48	465	4	567	1,032			
MH-66	MH-39	HDPE	150	168	268	0.048	1.55	9.69	18	174	0	0	174			
MH-39	MH-38	HDPE	150	169	269	0.048	1.54	9.73	60	584	2	284	868			
MH-38	MH-37	HDPE	150	168	268	0.048	1.55	9.69	50	484	3	425	910			
MH-37	MH-36	HDPE	150	168	268	0.048	1.55	9.69	76	736	5	709	1,445			
MH-36	MH-35	HDPE	150	168	268	0.048	1.55	9.69	57	552	5	709	1,261			
MH-35	MH-24A	HDPE	150	168	268	0.048	1.55	9.69	25	242	0	0	242			
MH-63 HYD	MH-62	HDPE	150	168	268	0.048	1.55	9.69	60	581	2	284	865			
MH-62	MH-61	HDPE	150	168	268	0.048	1.55	9.69	56	542	3	425	968			
MH-61	MH-60	HDPE	150	168	268	0.048	1.55	9.69	100	969	8	1,134	2,103			
MH-60	MH-59	HDPE	150	168	268	0.048	1.55	9.68665	42	406.84	2	284	690			

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)						
			-	112	212	0.048	2.116	7.090	20	142						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
MH-59	MH-48	HDPE	150	168	268	0.048	1.55	9.69	50	484	2	284	768			
MH-48	MH-47	HDPE	150	168	268	0.048	1.55	9.69	43	417	2	284	700			
MH-47	MH-46 HYD	HDPE	150	168	268	0.048	1.55	9.69	57	552	3	425	978			
MH-60	MH-58	HDPE	150	168	268	0.048	1.55	9.69	95	920	4	567	1,487			
MH-58	MH-46B	HDPE	150	168	268	0.048	1.55	9.69	39	378	2	284	661			
MH-46B	MH-46A	HDPE	150	168	268	0.048	1.55	9.69	75	726	2	284	1,010			
MH-46A	MH-46 HYD	HDPE	150	168	268	0.048	1.55	9.69	40	387	2	284	671			
MH-46 HYD	MH-45	HDPE	150	168	268	0.048	1.55	9.69	51	494	2	284	778			
MH-45	MH-43	HDPE	150	168	268	0.048	1.55	9.69	50	484	2	284	768			
MH-43	MH-42	HDPE	150	168	268	0.048	1.55	9.69	110	1,066	7	993	2,058			
MH-42	J-42	HDPE	150	168	268	0.048	1.55	9.69	1	10	0	0	10			
J-42	MH-41	HDPE	150	168	268	0.048	1.55	9.69	27	262	2	284	545			
MH-41	MH-40	HDPE	150	168	268	0.048	1.55	9.69	92.6	897	4	567	1,464			
MH-40	MH-40A	HDPE	150	168	268	0.048	1.55	9.69	91.5	886	2	284	1,170			
MH-40A	J-40	HDPE	150	168	268	0.048	1.55	9.69	95	920	0	0	920			
J-40	MH-24A	HDPE	150	168	268	0.048	1.55	9.69	62	601	2	284	884			
MH-24A	MH-24	DICL	150	175	275	0.048	1.50	10.01	15	150	0	0	150			
MH-24	PT F1	DICL	150	175	275	0.048	1.50	10.01	61	611	0	0	611			
PT F1	MH-25A HYD	HDPE	150	168	268	0.048	1.55	9.69	14	136	2	284	419			
MH-25A HYD	PT E1	HDPE	150	168	268	0.048	1.55	9.69	14	136	0	0	136			
PT E1	MH-26	DICL	150	175	275	0.048	1.50	10.01	104	1,041	6	851	1,892			
MH-26	MH-8	DICL	150	175	275	0.048	1.50	10.01	72	721	2	284	1,004			
MH-8	MH-7	DICL	150	175	275	0.048	1.50	10.01	89	891	9	1,276	2,167			
MH-7	PT A3	DICL	150	175	275	0.048	1.50	10.01	52	520	1	142	662			
PT A3	AV-400	HDPE	150	168	268	0.048	1.55	9.69	24.6	238	0	0	238			
AV-400	PT-K	HDPE	150	168	268	0.048	1.55	9.69	119.2	1,155	0	0	1,155			
PT K	PMP-PT-K-C	HDPE	50	60	160	0.048	3.25	4.61	12.1	56	0	0	56			
PMP-PT-K-C	AV-400	HDPE	50	60	160	0.048	3.25	4.61	104.2	481	0	0	481			
AV-400	AV-401 HYD	HDPE	200	219	319	0.048	1.25	12.03	107	1,287	0	0	1,287			
AV-400	PT-B3	HDPE	150	168	268	0.048	1.55	9.69	18	174	0	0	174			
PT-B3	MH-14	DICL	150	175	275	0.048	1.50	10.01	51	510	1	142	652			
MH-14	MH-15	DICL	150	175	275	0.048	1.50	10.01	53.4	534	3	425	960			
MH-15	J-129	DICL	150	175	275	0.048	1.50	10.01	15	150	3	425	576			
J-129	J-140	Steel	150	168	268	0.048	1.55	9.69	1	10	0	0	10			
J-140	J-126	HDPE	50	60	160	0.048	3.25	4.61	20	92.2	4	567	659			
J-126	J-125	HDPE	50	60	160	0.048	3.25	4.61	39.2	180.8	5	709	890			
J-125	J-124	HDPE	50	60	160	0.048	3.25	4.61	40	184	6	851	1,035			

City of Iqaluit Water and Sewer Study <u>Annex 8c - Heat Loss Calculations</u> Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.048	2.116	7.090	20	142						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
J-124	MH-29	HDPE	50	60	160	0.048	3.25	4.61	10	46.1	7	993	1,039			
MH-29	J-122	HDPE	50	60	160	0.048	3.25	4.61	110	507	8	1,134	1,642			
J-122	J-120	HDPE	50	60	160	0.048	3.25	4.61	40	184.5	9	1,276	1,461			
J-120	J-137	HDPE	50	60	160	0.048	3.25	4.61	40	184.5	10	1,418	1,602			
J-137	Pump-Atco	Steel	50	60	160	0.048	3.25	4.61	1	4.6	11	1,560	1,564			
J-140	J-150	Steel	50	60	160	0.048	3.25	4.61	0.8	3.7	3	425	429			
J-150	J-134	Steel	50	60	160	0.048	3.25	4.61	0.8	3.7	0	0	4			
J-134	Pump-Main	Steel	50	60	160	0.048	3.25	4.61	1	4.6	0	0	5			
TOTAL													63,209			

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.048	2.116	7.090	20	142			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
RE-HEAT STATION NO. 1													
ASTRO HILL													
PMP-Recirc	J-112	Copper	50	54	154	0.048	3.47	4.32	0.7	3	0	0	3
J-112	J-111	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
J-111	J-3061	Copper	50	54	154	0.048	3.47	4.32	1.6	7	0	0	7
J-3061	J-3051	HDPE	250	273	373	0.048	1.03	14.49	41	594	0	0	594
J-3051	PT A	AC	250	273	373	0.048	1.03	14.49	68	986	0	0	986
PT A	PT L	AC	250	273	373	0.048	1.03	14.49	69	1000	0	0	1,000
PT L	J-12	Copper	75	79	179	0.048	2.71	5.53	37.1	205	0	0	205
PT L	PT L-1	Copper	19	22	122	0.048	5.68	2.64	1	3	0	0	3
PT L-1	PT A-1	Copper	38	41	141	0.048	4.10	3.66	76.9	282	0	0	282
PT A	PT O	AC	250	273	373	0.048	1.03	14.49	192	2783	0	0	2,783
PT O	PT B	AC	250	273	373	0.048	1.03	14.49	35	507	0	0	507
PT B	PT D	AC	250	273	373	0.048	1.03	14.49	61	884	0	0	884
From Pt-D to Re-Heat Station No. 1													
PT D	PT A-1	Copper	50	67	167	0.048	3.03	4.95	291	1441	0	0	1,441
PT A-1	J-3065	Copper	50	67	167	0.048	3.03	4.95	101	500	0	0	500
J-3065	PMP-Recirc	Copper	50	67	167	0.048	3.03	4.95	5.5	27	0	0	27
PT D	PT E	HDPE	250	273	373	0.048	1.03	14.49	35	507	1	142	649
PT E	PT F	HDPE	200	219	319	0.048	1.25	12.03	41	493	1	142	635
PT F	PT G	DIOL	150	175	275	0.048	1.50	10.01	22	220	1	142	362
PT G	J-190	AC	150	168	268	0.048	1.55	9.69	80.7	782	0	0	782
J-190	PT H	AC	150	168	268	0.048	1.55	9.69	8.3	80	2	284	364
PT H	PT H-2	AC	150	168	268	0.048	1.55	9.69	3	29	2	284	313
PT H-2	J-3	AC	150	168	268	0.048	1.55	9.69	73.8	715	2	284	998
J-3	AV-9A	HDPE	150	168	268	0.048	1.55	9.69	16.2	157	0	0	157
											Subtotal		13,485
HAPPY VALLEY													
PMP-Recirc	J-114	Copper	50	54	154	0.048	3.47	4.32	2.7	12	0	0	12
J-114	J-113	Copper	50	54	154	0.048	3.47	4.32	1	4	0	0	4
J-113	J-3063	Copper	50	54	154	0.048	3.47	4.32	5.4	23	0	0	23
J-3063	AV-306	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12
J-3063	MH-104	HDPE	200	219	319	0.048	1.25	12.03	27.4	330	0	0	330
MH-104	MH-103	HDPE	200	219	319	0.048	1.25	12.03	109.9	1322	1	142	1,464
MH-103	MH-95 HYD	HDPE	200	219	319	0.048	1.25	12.03	37.7	453	0	0	453
MH-95 HYD	MH-68	HDPE	200	219	319	0.048	1.25	12.0278	12	144.33	0	0	144

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.048	2.116	7.090	20	142						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
MH-68	MH-69	HDPE	200	219	319	0.048	1.25	12.03	100	1,203	2	284	1,486			
MH-69	MH-70 HYD	HDPE	200	219	319	0.048	1.25	12.03	78	938	3	425	1,364			
MH-70 HYD	MH-71	HDPE	200	219	319	0.048	1.25	12.03	104	1251	5	709	1,960			
MH-71	MH-72 HYD	HDPE	200	219	319	0.048	1.25	12.03	90	1083	3	425	1,508			
MH-72 HYD	MH-100	HDPE	200	219	319	0.048	1.25	12.03	151	1816	0	0	1,816			
MH-100	MH-99	HDPE	200	219	319	0.048	1.25	12.03	91	1095	5	709	1,804			
MH-99	MH-98	HDPE	200	219	319	0.048	1.25	12.03	60	722	5	709	1,431			
MH-98	MH-97	HDPE	200	219	319	0.048	1.25	12.03	51	613	3	425	1,039			
MH-97	MH-96	HDPE	200	219	319	0.048	1.25	12.03	29	349	0	0	349			
MH-96	AV-216	HDPE	200	219	319	0.048	1.25	12.03	69	830	3	425	1,255			
AV-216	AV-217 HYD	HDPE	200	219	319	0.048	1.25	12.03	48	577	4	567	1,145			
AV-217 HYD	AV-237	HDPE	200	219	319	0.048	1.25	12.03	42	505	3	425	931			
AV-237	AV-238 HYD	HDPE	200	219	319	0.048	1.25	12.03	88	1058	5	709	1,767			
AV-238 HYD	AV-227	HDPE	200	219	319	0.048	1.25	12.03	41	493	2	284	777			
AV-227	AV-228	HDPE	200	219	319	0.048	1.25	12.03	127	1528	11	1,560	3,087			
AV-228	AV-229 HYD	HDPE	200	219	319	0.048	1.25	12.03	87	1046	6	851	1,897			
AV-229 HYD	AV-230	HDPE	200	219	319	0.048	1.25	12.03	77	926	4	567	1,493			
AV-230	AV-231	HDPE	200	219	319	0.048	1.25	12.03	34	409	3	425	834			
AV-231	AV-232 HYD	HDPE	200	219	319	0.048	1.25	12.03	100	1203	5	709	1,912			
AV-232 HYD	AV-233	HDPE	200	219	319	0.048	1.25	12.03	58	698	4	567	1,265			
AV-233	AV-234	HDPE	200	219	319	0.048	1.25	12.03	95	1143	5	709	1,852			
AV-234	AV-235 HYD	HDPE	150	168	268	0.048	1.55	9.69	105	1017	10	1,418	2,435			
AV-235 HYD	J-234-1	HDPE	50	60	160	0.048	3.25	4.61	112	517	0	0	517			
J-234-1	J-226-1	HDPE	75	89	189	0.048	2.50	6.01	70	420	0	0	420			
AV-234	AV-226	HDPE	200	219	319	0.048	1.25	12.03	67	806	2	284	1,089			
AV-226	J-227-1	HDPE	150	168	268	0.048	1.55	9.69	126	1221	5	709	1,929			
J-227-1	J-226-1	HDPE	50	60	160	0.048	3.25	4.61	131	604	0	0	604			
AV-226	AV-225 HYD	HDPE	200	219	319	0.048	1.25	12.03	60	722	3	425	1,147			
J-226-1	J-225-2	HDPE	75	89	189	0.048	2.50	6.01	58	348	0	0	348			
AV-225 HYD	AV-239	HDPE	150	168	268	0.048	1.55	9.69	61	591	7	993	1,583			
AV-239	J-225-1	HDPE	50	60	160	0.048	3.25	4.61	65	300	0	0	300			
J-225-1	J-225-2	HDPE	50	60	160	0.048	3.25	4.61	0.5	2	0	0	2			
J-225-1	J-225-2	Copper	13	16	116	0.048	6.57	2.28	1	2	0	0	2			
AV-225 HYD	AV-224 HYD	HDPE	200	219	319	0.048	1.25	12.03	97	1167	3	425	1,592			
J-225-2	J-224-1	HDPE	75	89	189	0.048	2.50	6.01	98	589	0	0	589			
AV-224 HYD	AV-240	HDPE	150	168	268	0.048	1.55	9.69	41	397	6	851	1,248			
AV-240	J-224-1	HDPE	50	60	160	0.048	3.25	4.61	43	198	0	0	198			
J-224-1	AV-223-2	HDPE	75	89	189	0.048	2.50	6.01	78.2	470	0	0	470			
AV-224 HYD	AV-223-3	HDPE	200	219	319	0.048	1.25	12.03	71.2	856	2	284	1,140			
AV-223-3	AV-223-2	Copper	13	16	116	0.048	6.57	2.28	2	5	0	0	5			

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.048	2.116	7.090	20	142						
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
AV-223-2	PMP-AV223	Copper	75	79	179	0.048	2.71	5.53	1	6	0	0	6			
PMP-AV223	AV-223	Copper	75	79	179	0.048	2.71	5.53	0.7	4	0	0	4			
J-2231	AV-223 PRV	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12			
AV-223 PRV	AV-223-3	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12			
AV-223	J-96-1	HDPE	75	89	189	0.048	2.50	6.01	104	625	0	0	625			
MH-96	J-96-1	HDPE	150	168	268	0.048	1.55	9.69	0.5	5	0	0	5			
J-96-1	MH-93	HDPE	150	168	268	0.048	1.55	9.69	18	174	1	142	316			
MH-93	MH-92	HDPE	150	168	268	0.048	1.55	9.69	82	794	4	567	1,361			
MH-92	J-2231	HDPE	150	168	268	0.048	1.55	9.69	38	368	0	0	368			
J-2231	MH-91 HYD	HDPE	150	168	268	0.048	1.55	9.69	53	513	3	425	939			
MH-91 HYD	MH-89	HDPE	150	168	268	0.048	1.55	9.69	86	833	6	851	1,684			
MH-89	MH-88	HDPE	150	168	268	0.048	1.55	9.69	107	1036	1	142	1,178			
MH-88	MH-87	HDPE	150	168	268	0.048	1.55	9.69	38	368	2	284	652			
MH-87	MH-86	HDPE	150	168	268	0.048	1.55	9.69	55	533	6	851	1,384			
MH-86	MH-85	HDPE	150	168	268	0.048	1.55	9.69	57	552	4	567	1,119			
MH-85	MH-73 (bleed)	HDPE	150	168	268	0.048	1.55	9.69	53	513	2	284	797			
MH-73 (bleed)	MH-74 HYD	HDPE	150	168	268	0.048	1.55	9.69	97	940	5	709	1,649			
MH-74 HYD	MH-75	HDPE	150	168	268	0.048	1.55	9.69	98	949	8	1,134	2,084			
MH-75	MH-90 HYD	HDPE	150	168	268	0.048	1.55	9.69	48	465	1	142	607			
MH-90 HYD	MH-76 (bleed)	HDPE	150	168	268	0.048	1.55	9.69	34	329	1	142	471			
MH-76 (bleed)	J-6901	HDPE	150	168	268	0.048	1.55	9.69	35	339	0	0	339			
J-6901	J-3066	Copper	50	54	154	0.048	3.47	4.32	285.2	1231	0	0	1,231			
J-3066	PMP-Recirc	Copper	50	54	154	0.048	3.47	4.32	5.5	24	0	0	24			
											Subtotal		65,898			
											TOTAL		79,383			

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nomina	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
	-	112	212	0.048	2.116	7.090	20	142									
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
BOOSTER STATION																	
PMP-BS-P10	J-BS30	Steel	75	89	189	0.048	2.50	6.01	1.5	9	0	0	9				
PMP-BS-P10	J-BS30	Steel	75	89	189	0.048	2.50	6.01	1	6	0	0	6				
J-BS30	J-BS22	Steel	75	89	189	0.048	2.50	6.01	3	18	0	0	18				
J-BS22	J-BS27	Steel	250	273	373	0.048	1.03	14.49	10	145	0	0	145				
J-BS27	J-BS26	Steel	250	273	373	0.048	1.03	14.49	2	29	0	0	29				
J-BS26	J-BS2	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12				
J-BS2	J-326-5	HDPE	200	219	319	0.048	1.25	12.03	20	241	0	0	241				
J-326-5	J-326-2	HDPE	200	219	319	0.048	1.25	12.03	4	48	0	0	48				
J-326-2	AV-327 HY	HDPE	200	219	319	0.048	1.25	12.03	174	2093	0	0	2,093				
AV-327 HY	AV-328	HDPE	200	219	319	0.048	1.25	12.03	94	1131	0	0	1,131				
AV-328	J-500-1	HDPE	200	219	319	0.048	1.25	12.03	40.8	491	0	0	491				
J-500-1	AV-500	HDPE	200	219	319	0.048	1.25	12.03	10.7	129	0	0	129				
1999 Subdivision																	
AV-500	J-500-6	HDPE	250	273	373	0.048	1.03	14.49	0.5	7	0	0	7				
J-500-5	J-500-6	HDPE	250	273	373	0.048	1.03	14.49	0.5	7	0	0	7				
PMP-500-In	J-500-6	HDPE	75	89	189	0.048	2.50	6.01	0.5	3	0	0	3				
J-500-5	PMP-500-Out	HDPE	75	89	189	0.048	2.50	6.01	1	6	0	0	6				
J-500-5	AV-501	HDPE	250	273	373	0.048	1.03	14.49	80	1160	0	0	1,160				
AV-501	AV-502	HDPE	250	273	373	0.048	1.03	14.49	119.72	1735	0	0	1,735				
AV-502	AV-503 HY	HDPE	250	273	373	0.048	1.03	14.49	96.8	1403	1	142	1,545				
AV-503 HY	AV-504	HDPE	250	273	373	0.048	1.03	14.49	117.03	1696	4	567	2,263				
AV-504	AV-505 HY	HDPE	250	273	373	0.048	1.03	14.49	61.8	896	2	284	1,179				
AV-505 HY	AV-506	HDPE	250	273	373	0.048	1.03	14.49	95.5	1384	5	709	2,093				
AV-506	AV-507 HY	HDPE	250	273	373	0.048	1.03	14.49	123.74	1794	10	1,418	3,212				
AV-507 HY	AV-508	HDPE	250	273	373	0.048	1.03	14.49	116.75	1692	9	1,276	2,968				
AV-508	AV-509 HY	HDPE	250	273	373	0.048	1.03	14.49	119.9	1738	10	1,418	3,156				
AV-509 HY	AV-510	HDPE	250	273	373	0.048	1.03	14.49	68.4	991	6	851	1,842				
AV-510	AV-511 HY	HDPE	250	273	373	0.048	1.03	14.49	109.7	1590	7	993	2,583				
AV-511 HY	AV-512	HDPE	250	273	373	0.048	1.03	14.49	111.8	1621	9	1,276	2,897				
AV-512	AV-513 HY	HDPE	250	273	373	0.048	1.03	14.49	96.42	1398	8	1,134	2,532				
AV-513 HY	AV-514	HDPE	250	273	373	0.048	1.03	14.49	90.63	1314	6	851	2,164				
AV-514	AV-505	HDPE	250	273	373	0.048	1.03	14.49	55.3	802	2	284	1,085				
AV-505	J-504-2	HDPE	250	273	373	0.048	1.03	14.49	61.8	896	2	284	1,179				
J-504-2	J-515	HDPE	250	273	373	0.048	1.03	14.49	76.9	1115	0	0	1,115				
AV-515	J-515	HDPE	250	273	373	0.048	1.03	14.49	1	14	0	0	14				
AV-515	AV-504 HY	HDPE	250	273	373	0.048	1.03	14.49	75.9	1,100	2	284	1,384				
J-503	AV-504 HY	HDPE	250	273	373	0.048	1.03	14.49	117	1696	0	0	1696				

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Conductivity Heat Loss Nomina Inside Outside k R q l Q (mm) (mm) (mm) (W/m.C) (m.C/W) (W/m) (m) (W) - 112 212 0.048 2.116 7.090 20 142								 Trow MP14882A		
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-500-3	J-503	HDPE	250	273	373	0.048	1.03	14.49	297.5	4,312	0	0	4,312
J-500-3	J-500-1	HDPE	250	273	373	0.048	1.03	14.49	1	14	0	0	14
J-500-3	J-500-4	HDPE	75	89	189	0.048	2.50	6.01	3	18	0	0	18
AV-500	J-500-4	HDPE	200	219	319	0.048	1.25	12.03	11.8	142	0	0	142
J-500-4	AV-329 HY	HDPE	200	219	319	0.048	1.25	12.03	39.7	478	0	0	478
AV-329 HY	AV-330	HDPE	200	219	319	0.048	1.25	12.03	94	1131	6	851	1,981
AV-330	AV-331 HY	HDPE	200	219	319	0.048	1.25	12.03	105	1263	4	567	1,830
AV-331 HY	AV-332 HY	HDPE	200	219	319	0.048	1.25	12.03	104	1251	3	425	1,676
AV-332 HY	J-331-1	HDPE	200	219	319	0.048	1.25	12.03	107	1287	0	0	1,287
J-331-1	AV-333	HDPE	200	219	319	0.048	1.25	12.03	47	565	1	142	707
AV-333	AV-334 HY	HDPE	200	219	319	0.048	1.25	12.03	81	974	1	142	1,116
AV-350 HY	AV-334 HY	HDPE	200	219	319	0.048	1.25	12.03	60.1	723	1	142	865
AV-350 HY	AV-349	HDPE	200	219	319	0.048	1.25	12.03	74.9	901	3	425	1,326
AV-349	AV-348 HY	HDPE	200	219	319	0.048	1.25	12.03	77.1	927	3	425	1,353
AV-348 HY	AV-346 HY	HDPE	200	219	319	0.048	1.25	12.03	94.1	1132	1	142	1,274
AV-346 HY	AV-347 HY	HDPE	200	219	319	0.048	1.25	12.03	88.2	1061	4	567	1,628
AV-347 HY	J-346	HDPE	200	219	319	0.048	1.25	12.03	91	1095	0	0	1,095
J-346	AV-345	HDPE	200	219	319	0.048	1.25	12.03	64.1	771	1	142	913
AV-345	AV-344	HDPE	200	219	319	0.048	1.25	12.03	82.1	987	2	284	1,271
AV-344	J-345	HDPE	200	219	319	0.048	1.25	12.03	92.5	1113	1	142	1,254
J-345	AV-355	HDPE	200	219	319	0.048	1.25	12.03	98.7	1187	0	0	1,187
J-353	AV-355	HDPE	200	219	319	0.048	1.25	12.03	80.76	971	2	284	1,255
AV-353 HY	AV-354	HDPE	200	219	319	0.048	1.25	12.03	59.36	714	2	284	998
AV-354	J-353	HDPE	200	219	319	0.048	1.25	12.03	59.36	714	2	284	998
AV-352	AV-353 HY	HDPE	200	219	319	0.048	1.25	12.03	62.78	755	1	142	897
AV-351A	AV-352	HDPE	200	219	319	0.048	1.25	12.03	67.2	808	1	142	950
AV-351	AV-351A	HDPE	200	219	319	0.048	1.25	12.03	30.54	367	0	0	367
AV-351 HY	J-351-1	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12
AV-351 HY	PT-N	HDPE	200	219	319	0.048	1.25	12.03	63.2	760	0	0	760
PT-N	PMP-N-In	HDPE	200	219	319	0.048	1.25	12.03	13.6	164	0	0	164
PMP-N-Out	J-351-2	HDPE	200	219	319	0.048	1.25	12.03	49.6	597	0	0	597
J-351-2	J-351-1	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12
To New French School and New Arena													
AV-351 HY	AV-356	HDPE	200	219	319	0.048	1.25	12.03	87	1046	0	0	1,046
AV-356	AV-357	HDPE	200	219	319	0.048	1.25	12.03	87	1046	1	142	1,188
AV-357	AV-358	HDPE	200	219	319	0.048	1.25	12.03	87	1046	1	142	1,188
AV-358	AV-351 HY	HDPE	200	219	319	0.048	1.25	12.03	260	3127.2	0	0	3,127

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.048	2.116	7.090	20	142				
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
To Shunt Subdivision														
AV-351 HYI	AV-343	HDPE	200	219	319	0.048	1.25	12.03	67.3	809	1	142	951	
AV-342 HYI	AV-343	HDPE	200	219	319	0.048	1.25	12.03	58.04	698	2	284	982	
AV-341 HYI	AV-342 HY	HDPE	200	219	319	0.048	1.25	12.03	83.19	1001	3	425	1,426	
AV-340 HYI	AV-341 HY	HDPE	200	219	319	0.048	1.25	12.03	72.2	868	5	709	1,577	
AV-339	AV-340 HY	HDPE	200	219	319	0.048	1.25	12.03	83.34	1002	2	284	1,286	
AV-334 HYI	AV-335	HDPE	200	219	319	0.048	1.25	12.03	98	1179	2	284	1,462	
AV-335	AV-338 HY	HDPE	200	219	319	0.048	1.25	12.03	67.4	811	1	142	952	
AV-338 HYI	AV-337	HDPE	200	219	319	0.048	1.25	12.03	68	818	2	284	1,101	
AV-337	AV-336 HY	HDPE	200	219	319	0.048	1.25	12.03	95	1143	1	142	1,284	
AV-336 HYI	J-337-1	HDPE	200	219	319	0.048	1.25	12.03	95	1143	2	284	1,426	
J-337-1	AV-339	HDPE	177						131					
AV-339	J-339	HDPE	200	219	319	0.048	1.25	12.03	1	12	2	284	296	
J-339	J-335-1	HDPE	200	219	319	0.048	1.25	12.03	130.5	1570	3	425	1,995	
J-335-1	J-334-1	HDPE	50	60	160	0.048	3.25	4.61	98	452	0	0	452	
J-326-3	J-334-1	HDPE	200	219	319	0.048	1.25	12.03	700	8419	0	0	8,419	
J-326-3	J-326-6	HDPE	200	219	319	0.048	1.25	12.03	4	48	0	0	48	
J-326-6	J-BS3	HDPE	200	219	319	0.048	1.25	12.03	20	241	0	0	241	
J-BS3	J-BS24	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12	
J-BS24	J-BS25	Steel	200	219	319	0.048	1.25	12.03	2	24	0	0	24	
J-BS25	J-BS28	Steel	100	114	214	0.048	2.09	7.18	10	72	0	0	72	
J-BS28	J-BS29	Steel	75	89	189	0.048	2.50	6.01	2	12	0	0	12	
J-BS29	PMP-BS-P10	Steel	100	114	214	0.048	2.09	7.18	1	7	0	0	7	
J-BS29	PMP-BS-P10	Steel	75	89	189	0.048	2.50	6.01	1.5	9	0	0	9	
TOTAL													105,499	

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Conductivity Heat Loss Nomina Inside Outside k R q l Q (mm) (mm) (mm) (W/m.C) (m.C/W) (W/m) (m) (W) - 112 212 0.048 2.116 7.090 20 142								 Trow MP14882A		
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nomina	Pipe	Outside	k	R	q	l	Q	No.	Q	Q
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)	SCs	(W)	(W)
TRIGRAM BUILDING													
Trigram-P1-J-29	J-29	Copper	50	54	154	0.048	3.47	4.32	0.3	1	0	0	1
J-29	J-25	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
J-23	Trigram-P2-J-23	Copper	50	54	154	0.048	3.47	4.32	0.3	1	0	0	1
J-25	J-23	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
J-25	J-27	Copper	50	54	154	0.048	3.47	4.32	0.3	1	0	0	1
J-27	J-1	Copper	50	54	154	0.048	3.47	4.32	3	13	0	0	13
J-1	J-28	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
J-27	J-2	Copper	50	54	154	0.048	3.47	4.32	3	13	0	0	13
J-2	J-28	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
J-28	J-33	Copper	50	54	154	0.048	3.47	4.32	4	17	0	0	17
J-33	J-8202	Copper	50	54	154	0.048	3.47	4.32	2	9	0	0	9
J-8202	AV-200 (ble)	HDPE	100	114	214	0.048	2.09	7.18	43	309	0	0	309
AV-200 (ble)	J-44	HDPE	200	219	319	0.048	1.25	12.03	74.7	898	3	425	1,324
J-44	AV-201 HY	HDPE	200	219	319	0.048	1.25	12.03	9.3	112	0	0	112
AV-201 HY	J-56	HDPE	200	219	319	0.048	1.25	12.03	94.8	1140	2	284	1,424
J-56	AV-202 HY	HDPE	200	219	319	0.048	1.25	12.03	30.2	363	0	0	363
AV-202 HY	AV-203	HDPE	200	219	319	0.048	1.25	12.03	58	698	1	142	839
AV-203	J-105	HDPE	200	219	319	0.048	1.25	12.03	33.2	399	1	142	541
J-105	AV-204 HY	HDPE	200	219	319	0.048	1.25	12.03	40.8	491	0	0	491
AV-204 HY	J-57	HDPE	200	219	319	0.048	1.25	12.03	24.1	290	1	142	432
J-57	AV-205	HDPE	200	219	319	0.048	1.25	12.03	54.9	660	0	0	660
AV-201 HY	J-94	HDPE	250	273	373	0.048	1.03	14.49	68.6	994	2	284	1,278
J-94	AV-414 HY	HDPE	250	273	373	0.048	1.03	14.49	31.4	455	0	0	455
AV-414 HY	AV-415	HDPE	200	219	319	0.048	1.25	12.03	45	541	0	0	541
AV-414 HY	J-175	HDPE	150	168	268	0.048	1.55	9.69	0.4	4	0	0	4
AV-415	J-175	HDPE	200	219	319	0.048	1.25	12.03	45	541	0	0	541
J-175	AV-413	HDPE	150	168	268	0.048	1.55	9.69	89.6	868	2	284	1,152
AV-413	J-64	HDPE	150	168	268	0.048	1.55	9.69	14.8	143	1	142	285
J-64	AV-205-1	HDPE	150	168	268	0.048	1.55	9.69	67.2	651	0	0	651
AV-205-1	AV-205	HDPE	150	168	268	0.048	1.55	9.69	2	19	0	0	19
AV-205	J-108	HDPE	200	219	319	0.048	1.25	12.03	41.9	504	0	0	504

City of Iqaluit Water and Sewer Study			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nomina Inside Outside (mm) (mm) (mm) Conductivity k R (W/m.C) (m.C/W) Heat Loss q l Q (W/m) (m) (W)								 MP14882A		
Annex 8c - Heat Loss Calculations			- 112 212 0.048 2.116 7.090 20 142										
Ambient Temperature = -10 C													
Conductivity = 0.048 W/m.C													
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-108	AV-206 HY	HDPE	200	219	319	0.048	1.25	12.03	82.1	987	2	284	1,271
AV-206 HY	J-109	HDPE	200	219	319	0.048	1.25	12.03	10.8	130	0	0	130
J-109	J-110	HDPE	200	219	319	0.048	1.25	12.03	27.4	330	0	0	330
J-110	AV-207 HY	HDPE	200	219	319	0.048	1.25	12.03	55.8	671	5	709	1,380
AV-207 HY	J-72	HDPE	200	219	319	0.048	1.25	12.03	14.8	178	0	0	178
J-72	J-107	HDPE	200	219	319	0.048	1.25	12.03	61.8	743	0	0	743
J-107	AV-208 HY	HDPE	200	219	319	0.048	1.25	12.03	17.4	209	2	284	493
AV-208 HY	AV-209	HDPE	150	168	268	0.048	1.55	9.69	65	630	0	0	630
AV-209	J-80	HDPE	150	168	268	0.048	1.55	9.69	20.3	197	0	0	197
J-80	AV-210 HY	HDPE	150	168	268	0.048	1.55	9.69	57.7	559	3	425	984
AV-210 HY	J-189	HDPE	50	60	160	0.048	3.25	4.61	139.9	645	2	284	929
J-189	FCV-AV208	HDPE	50	60	160	0.048	3.25	4.61	0.1	0	0	0	0
FCV-AV208	J-2081	HDPE	50	60	160	0.048	3.25	4.61	1	5	0	0	5
AV-208 HY	J-77	HDPE	200	219	319	0.048	1.25	12.03	43	517	0	0	517
J-77	AV-212	HDPE	200	219	319	0.048	1.25	12.03	38	457	1	142	599
AV-212	J-78	HDPE	200	219	319	0.048	1.25	12.03	38.6	464	0	0	464
J-78	AV-213 HY	HDPE	200	219	319	0.048	1.25	12.03	54.4	654	2	284	938
AV-213 HY	J-79	HDPE	200	219	319	0.048	1.25	12.03	44.7	538	0	0	538
J-79	AV-214 HY	HDPE	200	219	319	0.048	1.25	12.03	71.3	858	3	425	1,283
AV-214 HY	AV-215 HY	HDPE	200	219	319	0.048	1.25	12.03	113	1359	0	0	1,359
AV-215 HY	AV-255	HDPE	200	219	319	0.048	1.25	12.03	55	662	3	425	1,087
AV-255	J-81	HDPE	200	219	319	0.048	1.25	12.03	35.6	428	0	0	428
J-81	AV-256 HY	HDPE	200	219	319	0.048	1.25	12.03	55.4	666	3	425	1,092
AV-256 HY	AV-257	HDPE	200	219	319	0.048	1.25	12.03	99	1191	1	142	1,333
AV-257	AV-258 HY	HDPE	200	219	319	0.048	1.25	12.03	89	1070	0	0	1,070
AV-258 HY	AV-259	HDPE	200	219	319	0.048	1.25	12.03	92.6	1114	0	0	1,114
AV-259	AV-260	HDPE	200	219	319	0.048	1.25	12.03	71	854	0	0	854
AV-260	J-261	HDPE	200	219	319	0.048	1.25	12.03	93	1119	1	142	1,260
J-261	AV-262	HDPE	200	219	319	0.048	1.25	12.03	29	349	0	0	349
AV-262-1	AV-259-1	HDPE	75	89	189	0.048	2.50	6.01	194	1165	0	0	1,165
AV-259-1	AV-257-1	HDPE	75	89	189	0.048	2.50	6.01	186	1117	0	0	1,117
AV-257-1	J-188	HDPE	50	60	160	0.048	3.25	4.61	644.9	2974	0	0	2,974
J-188	FCV-AV208	HDPE	50	60	160	0.048	3.25	4.61	0.1	0	0	0	0
FCV-AV208	J-2081	HDPE	50	60	160	0.048	3.25	4.61	1	5	0	0	5
J-2081	J-169	HDPE	75	89	189	0.048	2.50	6.01	100	601	0	0	601
J-169	J-171	HDPE	75	89	189	0.048	2.50	6.01	3	18	0	0	18
J-171	J-173	HDPE	75	89	189	0.048	2.50	6.01	1	6	0	0	6

City of Iqaluit Water and Sewer Study			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nomina Inside Outside (mm) (mm) (mm) Conductivity k R (W/m.C) (m.C/W) Heat Loss q l Q (W/m) (m) (W)								 Trow MP14882A		
Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			-	112	212	0.048	2.116	7.090	20	142			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-173	AV-205-3	HDPE	75	89	189	0.048	2.50	6.01	210	1261	0	0	1,261
AV-205-3	J-8201	HDPE	75	89	189	0.048	2.50	6.01	465	2793	0	0	2,793
J-8201	J-17	Copper	50	54	154	0.048	3.47	4.32	2	9	0	0	9
J-17	J-18	Copper	50	54	154	0.048	3.47	4.32	4	17	0	0	17
J-18	J-19	Copper	50	54	154	0.048	3.47	4.32	0.3	1	0	0	1
J-19	Trigram-P1-	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
Trigram-P2-I	J-19	Copper	50	54	154	0.048	3.47	4.32	0.5	2	0	0	2
AV-305	J-6	HDPE	250	273	373	0.048	1.03	14.49	59.3	860	0	0	860
J-6	AV-304 HY	HDPE	250	273	373	0.048	1.03	14.49	12.7	184	0	0	184
AV-304 HY	AV-303 HY	HDPE	250	273	373	0.048	1.03	14.49	84	1218	0	0	1,218
AV-303 HY	AV-301	HDPE	250	273	373	0.048	1.03	14.49	93	1348	0	0	1,348
AV-301	AV-301-1	HDPE	250	273	373	0.048	1.03	14.49	1	14	0	0	14
AV-301	AV-302 HY	HDPE	200	219	319	0.048	1.25	12.03	32	385	0	0	385
AV-302 HY	J-3021	HDPE	150	168	268	0.048	1.55	9.69	34	329	0	0	329
J-3021	J-145	HDPE	150	168	268	0.048	1.55	9.69	1	10	0	0	10
J-145	J-144	HDPE	50	60	160	0.048	3.25	4.61	24	111	0	0	111
AV-302 HY	AV-303B	HDPE	200	219	319	0.048	1.25	12.03	49.2	592	2	284	875
AV-303B	AV-304B	HDPE	200	219	319	0.048	1.25	12.03	109.1	1312	3	425	1,738
AV-304B	J-147	HDPE	50	60	160	0.048	3.25	4.61	1	5	4	567	572
J-147	J-146	HDPE	50	60	160	0.048	3.25	4.61	109	503	5	709	1,212
J-146	J-144	HDPE	50	60	160	0.048	3.25	4.61	49.2	227	6	851	1,078
J-144	AV-301-1	HDPE	50	60	160	0.048	3.25	4.61	32	148	6	851	998
AV-301-1	AV-300 HY	HDPE	200	219	319	0.048	1.25	12.03	84	1010	0	0	1,010
AV-300 HY	J-13	HDPE	250	273	373	0.048	1.03	14.49	83.4	1209	0	0	1,209
J-13	J-34	HDPE	250	273	373	0.048	1.03	14.49	91.3	1323	0	0	1,323
J-34	AV-406	HDPE	250	273	373	0.048	1.03	14.49	28.3	410	0	0	410
AV-406	AV-200 (ble	HDPE	200	219	319	0.048	1.25	12.03	13	156	0	0	156
TOTAL													58,557

City of Iqaluit Water and Sewer Study			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nomina Inside Outside (mm) (mm) (mm) Conductivity k R (W/m.C) (m.C/W) Heat Loss q l Q (W/m) (m) (W)								 MP14882A		
Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			-	112	212	0.048	2.116	7.090	20	142			
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
MAIN DISTRIBUTION													
Main Res	J-RES-1	PVC	300	335	435	0.048	0.87	17.32	1.8	31.2	0	0	31
J-RES-1	J-RES-2	PVC	300	335	435	0.048	0.87	17.32	18	311.7	0	0	312
J-RES-2	J-RES-3	PVC	300	335	435	0.048	0.87	17.32	6.3	109.1	0	0	109
J-RES-3	J-RES-5	PVC	300	335	435	0.048	0.87	17.32	4	69.3	0	0	69
J-RES-5	J-RES-7	PVC	300	335	435	0.048	0.87	17.32	2.2	38.1	0	0	38
J-RES-7	J-5	HDPE	250	273	373	0.048	1.03	14.49	2.5	36.2	0	0	36
J-5	J-3071	HDPE	250	273	373	0.048	1.03	14.49	318.5	4617	0	0	4,617
J-3071	J-3072	HDPE	100	114	214	0.048	2.09	7.18	14	100.6	0	0	101
AV-307	J-3072	HDPE	100	114	214	0.048	2.09	7.18	14	100.6	1	142	242
J-3071	AV-307	HDPE	250	273	373	0.048	1.03	14.49	1	14.5	0	0	14
AV-307	AV-306	HDPE	250	273	373	0.048	1.03	14.49	73	1058	2	284	1,342
J-RES-5	J-RES-6	PVC	300	335	435	0.048	0.87	17.32	3.1	54	0	0	54
J-RES-6	AV-306	HDPE	250	273	373	0.048	1.03	14.49	396	5740	0	0	5,740
AV-306	AV-305	HDPE	250	273	373	0.048	1.03	14.49	43	623	0	0	623
AV-306	J-3061	HDPE	250	273	373	0.048	1.03	14.49	1	14	0	0	14
AV-306	TAC-1	HDPE	250	273	373	0.048	1.03	14.49	113	1638	1	142	1,780
TAC-1	TAC-2	HDPE	250	273	373	0.048	1.03	14.49	89	1290	2	284	1,574
TAC-2	TAC-3	HDPE	250	273	373	0.048	1.03	14.49	98.4	1426	8	1,134	2,561
TAC-3	TAC-4	HDPE	250	273	373	0.048	1.03	14.49	107.2	1554	5	709	2,263
TAC-4	AV-326	HDPE	250	273	373	0.048	1.03	14.49	99.4	1441	7	993	2,433
AV-326	J-326-4	HDPE	250	273	373	0.048	1.03	14.49	4	58	0	0	58
J-326-4	J-BS1	HDPE	250	273	373	0.048	1.03	14.49	20	290	0	0	290
J-BS5	J-BS1	HDPE	250	273	373	0.048	1.03	14.49	1	14	0	0	14
J-BS5	J-BS6	Steel	250	273	373	0.048	1.03	14.49	3.7	54	0	0	54
J-BS6	J-BS23	Steel	200	219	319	0.048	1.25	12.03	21	253	0	0	253
J-BS23	J-BS4	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12
J-BS4	J-326-7	HDPE	200	219	319	0.048	1.25	12.03	20	241	0	0	241
J-326-7	MH-72 HYD	HDPE	200	219	319	0.048	1.25	12.03	20	241	0	0	241
J-BS6	J-BS7	Steel	250	273	373	0.048	1.03	14.49	2.5	36.2	0	0	36
J-BS7	J-BS9	Steel	75	89	188.9	0.048	2.50	6.00	1.5	9.0	0	0	9
J-BS9	PMP-BS-P10	Steel	75	89	188.9	0.048	2.50	6.00	1	6.0	0	0	6
PMP-BS-P10	J-BS10	Steel	75	89	189	0.048	2.50	6.01	1	6	0	0	6

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Conductivity Heat Loss Nomina Inside Outside k R q l Q (mm) (mm) (mm) (W/m.C) (m.C/W) (W/m) (m) (W) - 112 212 0.048 2.116 7.090 20 142								 Trow MP14882A		
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-BS10	J-BS8	Steel	75	89	189	0.048	2.50	6.01	3	18	0	0	18
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.048	2.50	6.00	2	12.0	0	0	12
PMP-BS-P10	J-BS11	Steel	75	89	188.9	0.048	2.50	6.00	1	6.0	0	0	6
J-BS8	J-BS11	Steel	75	89	188.9	0.048	2.50	6.00	5	30.0	0	0	30
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.048	2.50	6.00	1	6.0	0	0	6
J-BS12	PMP-BS-P10	Steel	75	89	188.9	0.048	2.50	6.00	1	6.0	0	0	6
J-BS14	J-BS12	Steel	75	89	188.9	0.048	2.50	6.00	5	30.0	0	0	30
J-BS8	J-BS13	Steel	75	89	189	0.048	2.50	6.01	2	12.0	0	0	12
J-BS13	J-BS14	Steel	150	168	268	0.048	1.55	9.69	1.5	14.5	0	0	15
J-BS14	J-BS15	Steel	150	168	268	0.048	1.55	9.70	3.5	34.0	0	0	34
J-BS15	J-BS18	Steel	150	168	268	0.048	1.55	9.70	1.5	14.6	0	0	15
J-BS18	J-BS19	Steel	150	168	268	0.048	1.55	9.70	2.3	22.3	0	0	22
J-BS19	J-BS21	Steel	200	219	319	0.048	1.25	12.03	4.2	50.5	0	0	51
J-BS21	J-BS22	Steel	250	273	373	0.048	1.03	14.50	3	43.5	0	0	43
Part of Airport Loop													
AV-262	AV-263	HDPE	200	219	319	0.048	1.25	12.03	60	722	0	0	722
AV-263	J-84	HDPE	200	219	319	0.048	1.25	12.03	12.1	146	0	0	146
J-84	AV-264 HYD	HDPE	200	219	319	0.048	1.25	12.03	101.9	1226	0	0	1,226
AV-264 HYD	J-83	HDPE	200	219	319	0.048	1.25	12.03	27.7	333	0	0	333
J-83	AV-3 HYD	HDPE	200	219	319	0.048	1.25	12.03	85.3	1026	1	142	1,168
AV-3 HYD	AV-2 HYD	HDPE	200	219	319	0.048	1.25	12.03	98	1179	0	0	1,179
AV-2 HYD	AV-1	HDPE	200	219	319	0.048	1.25	12.03	104	1251	2	284	1,534
AV-1	J-106	HDPE	200	219	319	0.048	1.25	12.03	32.4	390	1	142	531
J-106	PT 53	HDPE	200	219	319	0.048	1.25	12.03	57.6	693	0	0	693
PT 53	J-82	HDPE	200	219	319	0.048	1.25	12.03	90.6	1090	0	0	1,090
J-82	J-115	Copper	50	67	167	0.048	3.03	4.95	7.8	39	0	0	39
J-115	J-116	Copper	50	67	167	0.048	3.03	4.95	8.2	41	0	0	41
J-116	J-117	Copper	50	67	167	0.048	3.03	4.95	6.8	34	0	0	34
J-117	AV-262-1	HDPE	75	89	189	0.048	2.50	6.01	234	1406	0	0	1,406
AV-3 HYD	AV-4 HYD	HDPE	200	219	319	0.048	1.25	12.03	128	1540	3	425	1,965
AV-4 HYD	J-2646	HDPE	200	219	319	0.048	1.25	12.03	82	986	5	709	1,695
J-2646	AV-5 HYD	HDPE	200	219	319	0.048	1.25	12.03	26	313	6	851	1,163
AV-4 HYD	PT B3	HDPE	150	168	268	0.048	1.55	9.69	87	843	8	1,134	1,977

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -10 C Conductivity = 0.048 W/m.C			Ta -10 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)				
			-	112	212	0.048	2.116	7.090	20	142				
Pipe Location			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
J-183	AV-437	HDPE	200	219	319	0.048	1.25	12.03	72.6	873	3	425	1,299	
AV-410 HYD	J-183	HDPE	200	219	319	0.048	1.25	12.03	102.5	1233	3	425	1,658	
AV-409 HYD	J-183	HDPE	200	219	319	0.048	1.25	12.03	1	12	0	0	12	
AV-410 HYD	AV-409 HYD	HDPE	200	219	319	0.048	1.25	12.03	103.5	1245	2	284	1,528	
AV-408	AV-409 HYD	HDPE	200	219	319	0.048	1.25	12.03	124.5	1497	9	1,276	2,774	
AV-408	AV-407 HYD	HDPE	200	219	319	0.048	1.25	12.03	62.8	755	6	851	1,606	
AV-407 HYD	J-172	HDPE	200	219	319	0.048	1.25	12.03	122.2	1470	8	1,134	2,604	
J-172	J-173	Copper	19	27	127	0.048	5.13	2.92	3	9	0	0	9	
J-172	AV 207-PRV	HDPE	200	219	319	0.048	1.25	12.03	1.3	16	0	0	16	
AV 207-PRV	AV-207 HYD	HDPE	200	219	319	0.048	1.25	12.03	1.7	20	0	0	20	
To Bleeder at MH-55														
J-501	PT H	HDPE	150	168	268	0.048	1.55	9.69	168	1627	4	567	2,195	
PT I	J-501	AC	50	60	160	0.048	3.25	4.61	18	83	0	0	83	
J-501	MH-50	HDPE	150	168	268	0.048	1.55	9.69	8	77	0	0	77	
MH-50	MH-51	HDPE	150	168	268	0.048	1.55	9.69	71	688	0	0	688	
MH-51	MH-52	HDPE	150	168	268	0.048	1.55	9.69	30	291	0	0	291	
MH-52	MH-53 HYD	HDPE	150	168	268	0.048	1.55	9.69	114	1104	5	709	1,813	
MH-53 HYD	MH-54	HDPE	150	168	268	0.048	1.55	9.69	102	988	2	284	1,272	
MH-54	MH-55 (bleed	HDPE	150	168	268	0.048	1.55	9.69	108	1046	2	284	1,330	
Subtotal													96,439	
BUILDING 222													63,209	
RE-HEAT STATION NO. 1													79,383	
BOOSTER STATION													105,499	
TRIGRAM BUILDING													58,557	
TOTAL													403,087	

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
	-	112	212	0.016	6.347	3.151	20	63						
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
BUILDING 222														
Pump-Main	J-135	Steel	50	60	160	0.016	9.76	2.05	1	2	0	0	2	
J-135	J-136	Steel	50	60	160	0.016	9.76	2.05	6	12	0	0	12	
J-136	J-139	Steel	150	168	268	0.016	4.65	4.31	1	4	0	0	4	
Pump-Atco	J-138	Steel	50	60	160	0.016	9.76	2.05	6	12	2	126	138	
J-138	J-139	Steel	50	60	160	0.016	9.76	2.05	1	2	0	0	2	
J-139	MH-13	Steel	150	168	268	0.016	4.65	4.31	1	4	0	0	4	
MH-13	MH-22	DICL	150	175	275	0.016	4.50	4.45	15	67	1	63	130	
MH-22	MH-21	DICL	150	175	275	0.016	4.50	4.45	64	285	4	252	537	
MH-21	MH-20	DICL	150	175	275	0.016	4.50	4.45	74	329	6	378	707	
MH-20	PT C1	DICL	150	175	275	0.016	4.50	4.45	53	236	4	252	488	
PT C1	MH-19 HYD	HDPE	150	168	268	0.016	4.65	4.31	9	39	0	0	39	
MH-19 HYD	PT D1	HDPE	150	168	268	0.016	4.65	4.31	9	39	3	189	228	
PT D1	MH-23B	DICL	150	175	275	0.016	4.50	4.45	43	191	0	0	191	
MH-23B	AV-23A	DICL	150	175	275	0.016	4.50	4.45	37	165	2	126	291	
AV-23A	MH-30	DICL	150	175	275	0.016	4.50	4.45	47	209	2	126	335	
MH-30	MH-31	DICL	150	175	275	0.016	4.50	4.45	48	214	0	0	214	
MH-31	MH-32	DICL	150	175	275	0.016	4.50	4.45	66	294	2	126	420	
MH-32	MH-32A HYD	HDPE	150	168	268	0.016	4.65	4.31	57	245	4	252	497	
MH-32A HYD	J-160	HDPE	150	168	268	0.016	4.65	4.31	37.3	161	4	252	413	
J-160	MH-32B HYD	HDPE	150	168	268	0.016	4.65	4.31	56.7	244	3	189	433	
MH-32B HYD	J-63-1 (bleed)	HDPE	150	168	268	0.016	4.65	4.31	133.3	574	4	252	826	
J-63-1 (bleed)	MH-63 HYD	HDPE	150	168	268	0.016	4.65	4.31	11.7	50	0	0	50	
MH-63 HYD	MH-65	HDPE	150	168	268	0.016	4.65	4.31	72	310	5	315	625	
MH-65	MH-66	HDPE	150	168	268	0.016	4.65	4.31	48	207	4	252	459	
MH-66	MH-39	HDPE	150	168	268	0.016	4.65	4.31	18	77	0	0	77	
MH-39	MH-38	HDPE	150	169	269	0.016	4.62	4.33	60	260	2	126	386	
MH-38	MH-37	HDPE	150	168	268	0.016	4.65	4.31	50	215	3	189	404	
MH-37	MH-36	HDPE	150	168	268	0.016	4.65	4.31	76	327	5	315	642	
MH-36	MH-35	HDPE	150	168	268	0.016	4.65	4.31	57	245	5	315	560	
MH-35	MH-24A	HDPE	150	168	268	0.016	4.65	4.31	25	108	0	0	108	
MH-63 HYD	MH-62	HDPE	150	168	268	0.016	4.65	4.31	60	258	2	126	384	
MH-62	MH-61	HDPE	150	168	268	0.016	4.65	4.31	56	241	3	189	430	
MH-61	MH-60	HDPE	150	168	268	0.016	4.65	4.31	100	431	8	504	935	
MH-60	MH-59	HDPE	150	168	268	0.016	4.65	4.3052	42	180.82	2	126	307	

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	3.151	20	63			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
MH-59	MH-48	HDPE	150	168	268	0.016	4.65	4.31	50	215	2	126	341
MH-48	MH-47	HDPE	150	168	268	0.016	4.65	4.31	43	185	2	126	311
MH-47	MH-46 HYD	HDPE	150	168	268	0.016	4.65	4.31	57	245	3	189	434
MH-60	MH-58	HDPE	150	168	268	0.016	4.65	4.31	95	409	4	252	661
MH-58	MH-46B	HDPE	150	168	268	0.016	4.65	4.31	39	168	2	126	294
MH-46B	MH-46A	HDPE	150	168	268	0.016	4.65	4.31	75	323	2	126	449
MH-46A	MH-46 HYD	HDPE	150	168	268	0.016	4.65	4.31	40	172	2	126	298
MH-46 HYD	MH-45	HDPE	150	168	268	0.016	4.65	4.31	51	220	2	126	346
MH-45	MH-43	HDPE	150	168	268	0.016	4.65	4.31	50	215	2	126	341
MH-43	MH-42	HDPE	150	168	268	0.016	4.65	4.31	110	474	7	441	915
MH-42	J-42	HDPE	150	168	268	0.016	4.65	4.31	1	4	0	0	4
J-42	MH-41	HDPE	150	168	268	0.016	4.65	4.31	27	116	2	126	242
MH-41	MH-40	HDPE	150	168	268	0.016	4.65	4.31	92.6	399	4	252	651
MH-40	MH-40A	HDPE	150	168	268	0.016	4.65	4.31	91.5	394	2	126	520
MH-40A	J-40	HDPE	150	168	268	0.016	4.65	4.31	95	409	0	0	409
J-40	MH-24A	HDPE	150	168	268	0.016	4.65	4.31	62	267	2	126	393
MH-24A	MH-24	DICL	150	175	275	0.016	4.50	4.45	15	67	0	0	67
MH-24	PT F1	DICL	150	175	275	0.016	4.50	4.45	61	271	0	0	271
PT F1	MH-25A HYD	HDPE	150	168	268	0.016	4.65	4.31	14	60	2	126	186
MH-25A HYD	PT E1	HDPE	150	168	268	0.016	4.65	4.31	14	60	0	0	60
PT E1	MH-26	DICL	150	175	275	0.016	4.50	4.45	104	463	6	378	841
MH-26	MH-8	DICL	150	175	275	0.016	4.50	4.45	72	320	2	126	446
MH-8	MH-7	DICL	150	175	275	0.016	4.50	4.45	89	396	9	567	963
MH-7	PT A3	DICL	150	175	275	0.016	4.50	4.45	52	231	1	63	294
PT A3	AV-400	HDPE	150	168	268	0.016	4.65	4.31	24.6	106	0	0	106
AV-400	PT-K	HDPE	150	168	268	0.016	4.65	4.31	119.2	513	0	0	513
PT K	PMP-PT-K-C	HDPE	50	60	160	0.016	9.76	2.05	12.1	25	0	0	25
PMP-PT-K-C	AV-400	HDPE	50	60	160	0.016	9.76	2.05	104.2	214	0	0	214
AV-400	AV-401 HYD	HDPE	200	219	319	0.016	3.74	5.35	107	572	0	0	572
AV-400	PT-B3	HDPE	150	168	268	0.016	4.65	4.31	18	77	0	0	77
PT-B3	MH-14	DICL	150	175	275	0.016	4.50	4.45	51	227	1	63	290
MH-14	MH-15	DICL	150	175	275	0.016	4.50	4.45	53.4	238	3	189	427
MH-15	J-129	DICL	150	175	275	0.016	4.50	4.45	15	67	3	189	256
J-129	J-140	Steel	150	168	268	0.016	4.65	4.31	1	4	0	0	4
J-140	J-126	HDPE	50	60	160	0.016	9.76	2.05	20	41.0	4	252	293
J-126	J-125	HDPE	50	60	160	0.016	9.76	2.05	39.2	80.4	5	315	395
J-125	J-124	HDPE	50	60	160	0.016	9.76	2.05	40	82	6	378	460

City of Iqaluit Water and Sewer Study <u>Annex 8d - Heat Loss Calculations</u> Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.016	6.347	3.151	20	63						
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
J-124	MH-29	HDPE	50	60	160	0.016	9.76	2.05	10	20.5	7	441	462			
MH-29	J-122	HDPE	50	60	160	0.016	9.76	2.05	110	225	8	504	730			
J-122	J-120	HDPE	50	60	160	0.016	9.76	2.05	40	82.0	9	567	649			
J-120	J-137	HDPE	50	60	160	0.016	9.76	2.05	40	82.0	10	630	712			
J-137	Pump-Atco	Steel	50	60	160	0.016	9.76	2.05	1	2.0	11	693	695			
J-140	J-150	Steel	50	60	160	0.016	9.76	2.05	0.8	1.6	3	189	191			
J-150	J-134	Steel	50	60	160	0.016	9.76	2.05	0.8	1.6	0	0	2			
J-134	Pump-Main	Steel	50	60	160	0.016	9.76	2.05	1	2.0	0	0	2			
TOTAL												28,093				

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.016	6.347	3.151	20	63			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
RE-HEAT STATION NO. 1													
ASTRO HILL													
PMP-Recirc	J-112	Copper	50	54	154	0.016	10.42	1.92	0.7	1	0	0	1
J-112	J-111	Copper	50	54	154	0.016	10.42	1.92	0.5	1	0	0	1
J-111	J-3061	Copper	50	54	154	0.016	10.42	1.92	1.6	3	0	0	3
J-3061	J-3051	HDPE	250	273	373	0.016	3.10	6.44	41	264	0	0	264
J-3051	PT A	AC	250	273	373	0.016	3.10	6.44	68	438	0	0	438
PT A	PT L	AC	250	273	373	0.016	3.10	6.44	69	445	0	0	445
PT L	J-12	Copper	75	79	179	0.016	8.14	2.46	37.1	91	0	0	91
PT L	PT L-1	Copper	19	22	122	0.016	17.04	1.17	1	1	0	0	1
PT L-1	PT A-1	Copper	38	41	141	0.016	12.29	1.63	76.9	125	0	0	125
PT A	PT O	AC	250	273	373	0.016	3.10	6.44	192	1237	0	0	1,237
PT O	PT B	AC	250	273	373	0.016	3.10	6.44	35	225	0	0	225
PT B	PT D	AC	250	273	373	0.016	3.10	6.44	61	393	0	0	393
From Pt-D to Re-Heat Station No. 1													
PT D	PT A-1	Copper	50	67	167	0.016	9.08	2.20	291	641	0	0	641
PT A-1	J-3065	Copper	50	67	167	0.016	9.08	2.20	101	222	0	0	222
J-3065	PMP-Recirc	Copper	50	67	167	0.016	9.08	2.20	5.5	12	0	0	12
PT D	PT E	HDPE	250	273	373	0.016	3.10	6.44	35	225	1	63	288
PT E	PT F	HDPE	200	219	319	0.016	3.74	5.35	41	219	1	63	282
PT F	PT G	DICL	150	175	275	0.016	4.50	4.45	22	98	1	63	161
PT G	J-190	AC	150	168	268	0.016	4.65	4.31	80.7	347	0	0	347
J-190	PT H	AC	150	168	268	0.016	4.65	4.31	8.3	36	2	126	162
PT H	PT H-2	AC	150	168	268	0.016	4.65	4.31	3	13	2	126	139
PT H-2	J-3	AC	150	168	268	0.016	4.65	4.31	73.8	318	2	126	444
J-3	AV-9A	HDPE	150	168	268	0.016	4.65	4.31	16.2	70	0	0	70
												Subtotal	5,993
HAPPY VALLEY													
PMP-Recirc	J-114	Copper	50	54	154	0.016	10.42	1.92	2.7	5	0	0	5
J-114	J-113	Copper	50	54	154	0.016	10.42	1.92	1	2	0	0	2
J-113	J-3063	Copper	50	54	154	0.016	10.42	1.92	5.4	10	0	0	10
J-3063	AV-306	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
J-3063	MH-104	HDPE	200	219	319	0.016	3.74	5.35	27.4	146	0	0	146
MH-104	MH-103	HDPE	200	219	319	0.016	3.74	5.35	109.9	587	1	63	651
MH-103	MH-95 HYD	HDPE	200	219	319	0.016	3.74	5.35	37.7	202	0	0	202
MH-95 HYD	MH-68	HDPE	200	219	319	0.016	3.74	5.3457	12	64.148	0	0	64

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.016	6.347	3.151	20	63				
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
MH-68	MH-69	HDPE	200	219	319	0.016	3.74	5.35	100	535	2	126	661	
MH-69	MH-70 HYD	HDPE	200	219	319	0.016	3.74	5.35	78	417	3	189	606	
MH-70 HYD	MH-71	HDPE	200	219	319	0.016	3.74	5.35	104	556	5	315	871	
MH-71	MH-72 HYD	HDPE	200	219	319	0.016	3.74	5.35	90	481	3	189	670	
MH-72 HYD	MH-100	HDPE	200	219	319	0.016	3.74	5.35	151	807	0	0	807	
MH-100	MH-99	HDPE	200	219	319	0.016	3.74	5.35	91	486	5	315	802	
MH-99	MH-98	HDPE	200	219	319	0.016	3.74	5.35	60	321	5	315	636	
MH-98	MH-97	HDPE	200	219	319	0.016	3.74	5.35	51	273	3	189	462	
MH-97	MH-96	HDPE	200	219	319	0.016	3.74	5.35	29	155	0	0	155	
MH-96	AV-216	HDPE	200	219	319	0.016	3.74	5.35	69	369	3	189	558	
AV-216	AV-217 HYD	HDPE	200	219	319	0.016	3.74	5.35	48	257	4	252	509	
AV-217 HYD	AV-237	HDPE	200	219	319	0.016	3.74	5.35	42	225	3	189	414	
AV-237	AV-238 HYD	HDPE	200	219	319	0.016	3.74	5.35	88	470	5	315	786	
AV-238 HYD	AV-227	HDPE	200	219	319	0.016	3.74	5.35	41	219	2	126	345	
AV-227	AV-228	HDPE	200	219	319	0.016	3.74	5.35	127	679	11	693	1,372	
AV-228	AV-229 HYD	HDPE	200	219	319	0.016	3.74	5.35	87	465	6	378	843	
AV-229 HYD	AV-230	HDPE	200	219	319	0.016	3.74	5.35	77	412	4	252	664	
AV-230	AV-231	HDPE	200	219	319	0.016	3.74	5.35	34	182	3	189	371	
AV-231	AV-232 HYD	HDPE	200	219	319	0.016	3.74	5.35	100	535	5	315	850	
AV-232 HYD	AV-233	HDPE	200	219	319	0.016	3.74	5.35	58	310	4	252	562	
AV-233	AV-234	HDPE	200	219	319	0.016	3.74	5.35	95	508	5	315	823	
AV-234	AV-235 HYD	HDPE	150	168	268	0.016	4.65	4.31	105	452	10	630	1,082	
AV-235 HYD	J-234-1	HDPE	50	60	160	0.016	9.76	2.05	112	230	0	0	230	
J-234-1	J-226-1	HDPE	75	89	189	0.016	7.49	2.67	70	187	0	0	187	
AV-234	AV-226	HDPE	200	219	319	0.016	3.74	5.35	67	358	2	126	484	
AV-226	J-227-1	HDPE	150	168	268	0.016	4.65	4.31	126	542	5	315	858	
J-227-1	J-226-1	HDPE	50	60	160	0.016	9.76	2.05	131	269	0	0	269	
AV-226	AV-225 HYD	HDPE	200	219	319	0.016	3.74	5.35	60	321	3	189	510	
J-226-1	J-225-2	HDPE	75	89	189	0.016	7.49	2.67	58	155	0	0	155	
AV-225 HYD	AV-239	HDPE	150	168	268	0.016	4.65	4.31	61	263	7	441	704	
AV-239	J-225-1	HDPE	50	60	160	0.016	9.76	2.05	65	133	0	0	133	
J-225-1	J-225-2	HDPE	50	60	160	0.016	9.76	2.05	0.5	1	0	0	1	
J-225-1	J-225-2	Copper	13	16	116	0.016	19.71	1.01	1	1	0	0	1	
AV-225 HYD	AV-224 HYD	HDPE	200	219	319	0.016	3.74	5.35	97	519	3	189	708	
J-225-2	J-224-1	HDPE	75	89	189	0.016	7.49	2.67	98	262	0	0	262	
AV-224 HYD	AV-240	HDPE	150	168	268	0.016	4.65	4.31	41	177	6	378	555	
AV-240	J-224-1	HDPE	50	60	160	0.016	9.76	2.05	43	88	0	0	88	
J-224-1	AV-223-2	HDPE	75	89	189	0.016	7.49	2.67	78.2	209	0	0	209	
AV-224 HYD	AV-223-3	HDPE	200	219	319	0.016	3.74	5.35	71.2	381	2	126	507	
AV-223-3	AV-223-2	Copper	13	16	116	0.016	19.71	1.01	2	2	0	0	2	

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	3.151	20	63			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
AV-223-2	PMP-AV223	Copper	75	79	179	0.016	8.14	2.46	1	2	0	0	2
PMP-AV223	AV-223	Copper	75	79	179	0.016	8.14	2.46	0.7	2	0	0	2
J-2231	AV-223 PRV	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
AV-223 PRV	AV-223-3	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
AV-223	J-96-1	HDPE	75	89	189	0.016	7.49	2.67	104	278	0	0	278
MH-96	J-96-1	HDPE	150	168	268	0.016	4.65	4.31	0.5	2	0	0	2
J-96-1	MH-93	HDPE	150	168	268	0.016	4.65	4.31	18	77	1	63	141
MH-93	MH-92	HDPE	150	168	268	0.016	4.65	4.31	82	353	4	252	605
MH-92	J-2231	HDPE	150	168	268	0.016	4.65	4.31	38	164	0	0	164
J-2231	MH-91 HYD	HDPE	150	168	268	0.016	4.65	4.31	53	228	3	189	417
MH-91 HYD	MH-89	HDPE	150	168	268	0.016	4.65	4.31	86	370	6	378	748
MH-89	MH-88	HDPE	150	168	268	0.016	4.65	4.31	107	461	1	63	524
MH-88	MH-87	HDPE	150	168	268	0.016	4.65	4.31	38	164	2	126	290
MH-87	MH-86	HDPE	150	168	268	0.016	4.65	4.31	55	237	6	378	615
MH-86	MH-85	HDPE	150	168	268	0.016	4.65	4.31	57	245	4	252	497
MH-85	MH-73 (bleed)	HDPE	150	168	268	0.016	4.65	4.31	53	228	2	126	354
MH-73 (bleed)	MH-74 HYD	HDPE	150	168	268	0.016	4.65	4.31	97	418	5	315	733
MH-74 HYD	MH-75	HDPE	150	168	268	0.016	4.65	4.31	98	422	8	504	926
MH-75	MH-90 HYD	HDPE	150	168	268	0.016	4.65	4.31	48	207	1	63	270
MH-90 HYD	MH-76 (bleed)	HDPE	150	168	268	0.016	4.65	4.31	34	146	1	63	209
MH-76 (bleed)	J-6901	HDPE	150	168	268	0.016	4.65	4.31	35	151	0	0	151
J-6901	J-3066	Copper	50	54	154	0.016	10.42	1.92	285.2	547	0	0	547
J-3066	PMP-Recirc	Copper	50	54	154	0.016	10.42	1.92	5.5	11	0	0	11
											Subtotal		29,288
											TOTAL		35,281

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.016	6.347	3.151	20	63				
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
BOOSTER STATION														
PMP-BS-P10	J-BS30	Steel	75	89	189	0.016	7.49	2.67	1.5	4	0	0	4	
PMP-BS-P10	J-BS30	Steel	75	89	189	0.016	7.49	2.67	1	3	0	0	3	
J-BS30	J-BS22	Steel	75	89	189	0.016	7.49	2.67	3	8	0	0	8	
J-BS22	J-BS27	Steel	250	273	373	0.016	3.10	6.44	10	64	0	0	64	
J-BS27	J-BS26	Steel	250	273	373	0.016	3.10	6.44	2	13	0	0	13	
J-BS26	J-BS2	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5	
J-BS2	J-326-5	HDPE	200	219	319	0.016	3.74	5.35	20	107	0	0	107	
J-326-5	J-326-2	HDPE	200	219	319	0.016	3.74	5.35	4	21	0	0	21	
J-326-2	AV-327 HY	HDPE	200	219	319	0.016	3.74	5.35	174	930	0	0	930	
AV-327 HY	AV-328	HDPE	200	219	319	0.016	3.74	5.35	94	502	0	0	502	
AV-328	J-500-1	HDPE	200	219	319	0.016	3.74	5.35	40.8	218	0	0	218	
J-500-1	AV-500	HDPE	200	219	319	0.016	3.74	5.35	10.7	57	0	0	57	
1999 Subdivision														
AV-500	J-500-6	HDPE	250	273	373	0.016	3.10	6.44	0.5	3	0	0	3	
J-500-5	J-500-6	HDPE	250	273	373	0.016	3.10	6.44	0.5	3	0	0	3	
PMP-500-In	J-500-6	HDPE	75	89	189	0.016	7.49	2.67	0.5	1	0	0	1	
J-500-5	PMP-500-Out	HDPE	75	89	189	0.016	7.49	2.67	1	3	0	0	3	
J-500-5	AV-501	HDPE	250	273	373	0.016	3.10	6.44	80	515	0	0	515	
AV-501	AV-502	HDPE	250	273	373	0.016	3.10	6.44	119.72	771	0	0	771	
AV-502	AV-503 HY	HDPE	250	273	373	0.016	3.10	6.44	96.8	624	1	63	687	
AV-503 HY	AV-504	HDPE	250	273	373	0.016	3.10	6.44	117.03	754	4	252	1,006	
AV-504	AV-505 HY	HDPE	250	273	373	0.016	3.10	6.44	61.8	398	2	126	524	
AV-505 HY	AV-506	HDPE	250	273	373	0.016	3.10	6.44	95.5	615	5	315	930	
AV-506	AV-507 HY	HDPE	250	273	373	0.016	3.10	6.44	123.74	797	10	630	1,427	
AV-507 HY	AV-508	HDPE	250	273	373	0.016	3.10	6.44	116.75	752	9	567	1,319	
AV-508	AV-509 HY	HDPE	250	273	373	0.016	3.10	6.44	119.9	772	10	630	1,403	
AV-509 HY	AV-510	HDPE	250	273	373	0.016	3.10	6.44	68.4	441	6	378	819	
AV-510	AV-511 HY	HDPE	250	273	373	0.016	3.10	6.44	109.7	707	7	441	1,148	
AV-511 HY	AV-512	HDPE	250	273	373	0.016	3.10	6.44	111.8	720	9	567	1,287	
AV-512	AV-513 HY	HDPE	250	273	373	0.016	3.10	6.44	96.42	621	8	504	1,125	
AV-513 HY	AV-514	HDPE	250	273	373	0.016	3.10	6.44	90.63	584	6	378	962	
AV-514	AV-505.	HDPE	250	273	373	0.016	3.10	6.44	55.3	356	2	126	482	
AV-505.	J-504-2	HDPE	250	273	373	0.016	3.10	6.44	61.8	398	2	126	524	
J-504-2	J-515	HDPE	250	273	373	0.016	3.10	6.44	76.9	495	0	0	495	
AV-515	J-515	HDPE	250	273	373	0.016	3.10	6.44	1	6	0	0	6	
AV-515	AV-504 HY	HDPE	250	273	373	0.016	3.10	6.44	75.9	489	2	126	615	
J-503	AV-504 HY	HDPE	250	273	373	0.016	3.10	6.44	117	754	0	0	754	

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	3.151	20	63			
		Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To		Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-500-3	J-503	HDPE	250	273	373	0.016	3.10	6.44	297.5	1,917	0	0	1,917
J-500-3	J-500-1	HDPE	250	273	373	0.016	3.10	6.44	1	6	0	0	6
J-500-3	J-500-4	HDPE	75	89	189	0.016	7.49	2.67	3	8	0	0	8
AV-500	J-500-4	HDPE	200	219	319	0.016	3.74	5.35	11.8	63	0	0	63
J-500-4	AV-329 HY	HDPE	200	219	319	0.016	3.74	5.35	39.7	212	0	0	212
AV-329 HY	AV-330	HDPE	200	219	319	0.016	3.74	5.35	94	502	6	378	881
AV-330	AV-331 HY	HDPE	200	219	319	0.016	3.74	5.35	105	561	4	252	813
AV-331 HY	AV-332 HY	HDPE	200	219	319	0.016	3.74	5.35	104	556	3	189	745
AV-332 HY	J-331-1	HDPE	200	219	319	0.016	3.74	5.35	107	572	0	0	572
J-331-1	AV-333	HDPE	200	219	319	0.016	3.74	5.35	47	251	1	63	314
AV-333	AV-334 HY	HDPE	200	219	319	0.016	3.74	5.35	81	433	1	63	496
AV-350 HY	AV-334 HY	HDPE	200	219	319	0.016	3.74	5.35	60.1	321	1	63	384
AV-350 HY	AV-349	HDPE	200	219	319	0.016	3.74	5.35	74.9	400	3	189	589
AV-349	AV-348 HY	HDPE	200	219	319	0.016	3.74	5.35	77.1	412	3	189	601
AV-348 HY	AV-346 HY	HDPE	200	219	319	0.016	3.74	5.35	94.1	503	1	63	566
AV-346 HY	AV-347 HY	HDPE	200	219	319	0.016	3.74	5.35	88.2	471	4	252	724
AV-347 HY	J-346	HDPE	200	219	319	0.016	3.74	5.35	91	486	0	0	486
J-346	AV-345	HDPE	200	219	319	0.016	3.74	5.35	64.1	343	1	63	406
AV-345	AV-344	HDPE	200	219	319	0.016	3.74	5.35	82.1	439	2	126	565
AV-344	J-345	HDPE	200	219	319	0.016	3.74	5.35	92.5	494	1	63	557
J-345	AV-355	HDPE	200	219	319	0.016	3.74	5.35	98.7	528	0	0	528
J-353	AV-355	HDPE	200	219	319	0.016	3.74	5.35	80.76	432	2	126	558
AV-353 HY	AV-354	HDPE	200	219	319	0.016	3.74	5.35	59.36	317	2	126	443
AV-354	J-353	HDPE	200	219	319	0.016	3.74	5.35	59.36	317	2	126	443
AV-352	AV-353 HY	HDPE	200	219	319	0.016	3.74	5.35	62.78	336	1	63	399
AV-351A	AV-352	HDPE	200	219	319	0.016	3.74	5.35	67.2	359	1	63	422
AV-351	AV-351A	HDPE	200	219	319	0.016	3.74	5.35	30.54	163	0	0	163
AV-351 HY	J-351-1	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
AV-351 HY	PT-N	HDPE	200	219	319	0.016	3.74	5.35	63.2	338	0	0	338
PT-N	PMP-N-In	HDPE	200	219	319	0.016	3.74	5.35	13.6	73	0	0	73
PMP-N-Out	J-351-2	HDPE	200	219	319	0.016	3.74	5.35	49.6	265	0	0	265
J-351-2	J-351-1	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
To New French School and New Arena													
AV-351 HY	AV-356	HDPE	200	219	319	0.016	3.74	5.35	87	465	0	0	465
AV-356	AV-357	HDPE	200	219	319	0.016	3.74	5.35	87	465	1	63	528
AV-357	AV-358	HDPE	200	219	319	0.016	3.74	5.35	87	465	1	63	528
AV-358	AV-351 HY	HDPE	200	219	319	0.016	3.74	5.35	260	1389.9	0	0	1,390

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.016	6.347	3.151	20	63						
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
To Shunt Subdivision																
AV-351 HYI	AV-343	HDPE	200	219	319	0.016	3.74	5.35	67.3	360	1	63	423			
AV-342 HYI	AV-343	HDPE	200	219	319	0.016	3.74	5.35	58.04	310	2	126	436			
AV-341 HYI	AV-342 HY	HDPE	200	219	319	0.016	3.74	5.35	83.19	445	3	189	634			
AV-340 HYI	AV-341 HY	HDPE	200	219	319	0.016	3.74	5.35	72.2	386	5	315	701			
AV-339	AV-340 HY	HDPE	200	219	319	0.016	3.74	5.35	83.34	446	2	126	572			
AV-334 HYI	AV-335	HDPE	200	219	319	0.016	3.74	5.35	98	524	2	126	650			
AV-335	AV-338 HY	HDPE	200	219	319	0.016	3.74	5.35	67.4	360	1	63	423			
AV-338 HYI	AV-337	HDPE	200	219	319	0.016	3.74	5.35	68	364	2	126	490			
AV-337	AV-336 HY	HDPE	200	219	319	0.016	3.74	5.35	95	508	1	63	571			
AV-336 HYI	J-337-1	HDPE	200	219	319	0.016	3.74	5.35	95	508	2	126	634			
J-337-1	AV-339	HDPE	177						131							
AV-339	J-339	HDPE	200	219	319	0.016	3.74	5.35	1	5	2	126	131			
J-339	J-335-1	HDPE	200	219	319	0.016	3.74	5.35	130.5	698	3	189	887			
J-335-1	J-334-1	HDPE	50	60	160	0.016	9.76	2.05	98	201	0	0	201			
J-326-3	J-334-1	HDPE	200	219	319	0.016	3.74	5.35	700	3742	0	0	3,742			
J-326-3	J-326-6	HDPE	200	219	319	0.016	3.74	5.35	4	21	0	0	21			
J-326-6	J-BS3	HDPE	200	219	319	0.016	3.74	5.35	20	107	0	0	107			
J-BS3	J-BS24	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5			
J-BS24	J-BS25	Steel	200	219	319	0.016	3.74	5.35	2	11	0	0	11			
J-BS25	J-BS28	Steel	100	114	214	0.016	6.26	3.19	10	32	0	0	32			
J-BS28	J-BS29	Steel	75	89	189	0.016	7.49	2.67	2	5	0	0	5			
J-BS29	PMP-BS-P10	Steel	100	114	214	0.016	6.26	3.19	1	3	0	0	3			
J-BS29	PMP-BS-P10	Steel	75	89	189	0.016	7.49	2.67	1.5	4	0	0	4			
TOTAL													46,888			

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nomina	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.016	6.347	3.151	20	63						
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
TRIGRAM BUILDING																
Trigram-P1-C	J-29	Copper	50	54	154	0.016	10.42	1.92	0.3	1	0	0	1			
J-29	J-25	Copper	50	54	154	0.016	10.42	1.92	0.5	1	0	0	1			
J-23	Trigram-P2-C	Copper	50	54	154	0.016	10.42	1.92	0.3	1	0	0	1			
J-25	J-23	Copper	50	54	154	0.016	10.42	1.92	0.5	1	0	0	1			
J-25	J-27	Copper	50	54	154	0.016	10.42	1.92	0.3	1	0	0	1			
J-27	J-1	Copper	50	54	154	0.016	10.42	1.92	3	6	0	0	6			
J-1	J-28	Copper	50	54	154	0.016	10.42	1.92	0.5	1	0	0	1			
J-27	J-2	Copper	50	54	154	0.016	10.42	1.92	3	6	0	0	6			
J-2	J-28	Copper	50	54	154	0.016	10.42	1.92	0.5	1	0	0	1			
J-28	J-33	Copper	50	54	154	0.016	10.42	1.92	4	8	0	0	8			
J-33	J-8202	Copper	50	54	154	0.016	10.42	1.92	2	4	0	0	4			
J-8202	AV-200 (ble	HDPE	100	114	214	0.016	6.26	3.19	43	137	0	0	137			
AV-200 (blee	J-44	HDPE	200	219	319	0.016	3.74	5.35	74.7	399	3	189	588			
J-44	AV-201 HYI	HDPE	200	219	319	0.016	3.74	5.35	9.3	50	0	0	50			
AV-201 HYI	J-56	HDPE	200	219	319	0.016	3.74	5.35	94.8	507	2	126	633			
J-56	AV-202 HYI	HDPE	200	219	319	0.016	3.74	5.35	30.2	161	0	0	161			
AV-202 HYI	AV-203	HDPE	200	219	319	0.016	3.74	5.35	58	310	1	63	373			
AV-203	J-105	HDPE	200	219	319	0.016	3.74	5.35	33.2	177	1	63	240			
J-105	AV-204 HYI	HDPE	200	219	319	0.016	3.74	5.35	40.8	218	0	0	218			
AV-204 HYI	J-57	HDPE	200	219	319	0.016	3.74	5.35	24.1	129	1	63	192			
J-57	AV-205	HDPE	200	219	319	0.016	3.74	5.35	54.9	293	0	0	293			
AV-201 HYI	J-94	HDPE	250	273	373	0.016	3.10	6.44	68.6	442	2	126	568			
J-94	AV-414 HYI	HDPE	250	273	373	0.016	3.10	6.44	31.4	202	0	0	202			
AV-414 HYI	AV-415	HDPE	200	219	319	0.016	3.74	5.35	45	241	0	0	241			
AV-414 HYI	J-175	HDPE	150	168	268	0.016	4.65	4.31	0.4	2	0	0	2			
AV-415	J-175	HDPE	200	219	319	0.016	3.74	5.35	45	241	0	0	241			
J-175	AV-413	HDPE	150	168	268	0.016	4.65	4.31	89.6	386	2	126	512			
AV-413	J-64	HDPE	150	168	268	0.016	4.65	4.31	14.8	64	1	63	127			
J-64	AV-205-1	HDPE	150	168	268	0.016	4.65	4.31	67.2	289	0	0	289			
AV-205-1	AV-205	HDPE	150	168	268	0.016	4.65	4.31	2	9	0	0	9			
AV-205	J-108	HDPE	200	219	319	0.016	3.74	5.35	41.9	224	0	0	224			

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nomina	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
			-	112	212	0.016	6.347	3.151	20	63							
		Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To		Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
J-108	AV-206 HY	HDPE	200	219	319	0.016	3.74	5.35	82.1	439	2	126	565				
AV-206 HY	J-109	HDPE	200	219	319	0.016	3.74	5.35	10.8	58	0	0	58				
J-109	J-110	HDPE	200	219	319	0.016	3.74	5.35	27.4	146	0	0	146				
J-110	AV-207 HY	HDPE	200	219	319	0.016	3.74	5.35	55.8	298	5	315	613				
AV-207 HY	J-72	HDPE	200	219	319	0.016	3.74	5.35	14.8	79	0	0	79				
J-72	J-107	HDPE	200	219	319	0.016	3.74	5.35	61.8	330	0	0	330				
J-107	AV-208 HY	HDPE	200	219	319	0.016	3.74	5.35	17.4	93	2	126	219				
AV-208 HY	AV-209	HDPE	150	168	268	0.016	4.65	4.31	65	280	0	0	280				
AV-209	J-80	HDPE	150	168	268	0.016	4.65	4.31	20.3	87	0	0	87				
J-80	AV-210 HY	HDPE	150	168	268	0.016	4.65	4.31	57.7	248	3	189	437				
AV-210 HY	J-189	HDPE	50	60	160	0.016	9.76	2.05	139.9	287	2	126	413				
J-189	FCV-AV208	HDPE	50	60	160	0.016	9.76	2.05	0.1	0	0	0	0				
FCV-AV208	J-2081	HDPE	50	60	160	0.016	9.76	2.05	1	2	0	0	2				
AV-208 HY	J-77	HDPE	200	219	319	0.016	3.74	5.35	43	230	0	0	230				
J-77	AV-212	HDPE	200	219	319	0.016	3.74	5.35	38	203	1	63	266				
AV-212	J-78	HDPE	200	219	319	0.016	3.74	5.35	38.6	206	0	0	206				
J-78	AV-213 HY	HDPE	200	219	319	0.016	3.74	5.35	54.4	291	2	126	417				
AV-213 HY	J-79	HDPE	200	219	319	0.016	3.74	5.35	44.7	239	0	0	239				
J-79	AV-214 HY	HDPE	200	219	319	0.016	3.74	5.35	71.3	381	3	189	570				
AV-214 HY	AV-215 HY	HDPE	200	219	319	0.016	3.74	5.35	113	604	0	0	604				
AV-215 HY	AV-255	HDPE	200	219	319	0.016	3.74	5.35	55	294	3	189	483				
AV-255	J-81	HDPE	200	219	319	0.016	3.74	5.35	35.6	190	0	0	190				
J-81	AV-256 HY	HDPE	200	219	319	0.016	3.74	5.35	55.4	296	3	189	485				
AV-256 HY	AV-257	HDPE	200	219	319	0.016	3.74	5.35	99	529	1	63	592				
AV-257	AV-258 HY	HDPE	200	219	319	0.016	3.74	5.35	89	476	0	0	476				
AV-258 HY	AV-259	HDPE	200	219	319	0.016	3.74	5.35	92.6	495	0	0	495				
AV-259	AV-260	HDPE	200	219	319	0.016	3.74	5.35	71	380	0	0	380				
AV-260	J-261	HDPE	200	219	319	0.016	3.74	5.35	93	497	1	63	560				
J-261	AV-262	HDPE	200	219	319	0.016	3.74	5.35	29	155	0	0	155				
AV-262-1	AV-259-1	HDPE	75	89	189	0.016	7.49	2.67	194	518	0	0	518				
AV-259-1	AV-257-1	HDPE	75	89	189	0.016	7.49	2.67	186	497	0	0	497				
AV-257-1	J-188	HDPE	50	60	160	0.016	9.76	2.05	644.9	1322	0	0	1,322				
J-188	FCV-AV208	HDPE	50	60	160	0.016	9.76	2.05	0.1	0	0	0	0				
FCV-AV208	J-2081	HDPE	50	60	160	0.016	9.76	2.05	1	2	0	0	2				
J-2081	J-169	HDPE	75	89	189	0.016	7.49	2.67	100	267	0	0	267				
J-169	J-171	HDPE	75	89	189	0.016	7.49	2.67	3	8	0	0	8				
J-171	J-173	HDPE	75	89	189	0.016	7.49	2.67	1	3	0	0	3				

City of Iqaluit Water and Sewer Study <u>Annex 8d - Heat Loss Calculations</u> Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C							
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City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.016	6.347	3.151	20	63				
From		To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
				Nominal	Pipe	Outside	k	R	q	l	Q	No.	Q	Q
				(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)	SCs	(W)	(W)
MAIN DISTRIBUTION														
Main Res	J-RES-1	PVC	300	335	435	0.016	2.60	7.70	1.8	13.9	0	0	14	
J-RES-1	J-RES-2	PVC	300	335	435	0.016	2.60	7.70	18	138.5	0	0	139	
J-RES-2	J-RES-3	PVC	300	335	435	0.016	2.60	7.70	6.3	48.5	0	0	48	
J-RES-3	J-RES-5	PVC	300	335	435	0.016	2.60	7.70	4	30.8	0	0	31	
J-RES-5	J-RES-7	PVC	300	335	435	0.016	2.60	7.70	2.2	16.9	0	0	17	
J-RES-7	J-5	HDPE	250	273	373	0.016	3.10	6.44	2.5	16.1	0	0	16	
J-5	J-3071	HDPE	250	273	373	0.016	3.10	6.44	318.5	2052	0	0	2,052	
J-3071	J-3072	HDPE	100	114	214	0.016	6.26	3.19	14	44.7	0	0	45	
AV-307	J-3072	HDPE	100	114	214	0.016	6.26	3.19	14	44.7	1	63	108	
J-3071	AV-307	HDPE	250	273	373	0.016	3.10	6.44	1	6.4	0	0	6	
AV-307	AV-306	HDPE	250	273	373	0.016	3.10	6.44	73	470	2	126	596	
J-RES-5	J-RES-6	PVC	300	335	435	0.016	2.60	7.70	3.1	24	0	0	24	
J-RES-6	AV-306	HDPE	250	273	373	0.016	3.10	6.44	396	2551	0	0	2,551	
AV-306	AV-305	HDPE	250	273	373	0.016	3.10	6.44	43	277	0	0	277	
AV-306	J-3061	HDPE	250	273	373	0.016	3.10	6.44	1	6	0	0	6	
AV-306	TAC-1	HDPE	250	273	373	0.016	3.10	6.44	113	728	1	63	791	
TAC-1	TAC-2	HDPE	250	273	373	0.016	3.10	6.44	89	573	2	126	699	
TAC-2	TAC-3	HDPE	250	273	373	0.016	3.10	6.44	98.4	634	8	504	1,138	
TAC-3	TAC-4	HDPE	250	273	373	0.016	3.10	6.44	107.2	691	5	315	1,006	
TAC-4	AV-326	HDPE	250	273	373	0.016	3.10	6.44	99.4	640	7	441	1,081	
AV-326	J-326-4	HDPE	250	273	373	0.016	3.10	6.44	4	26	0	0	26	
J-326-4	J-BS1	HDPE	250	273	373	0.016	3.10	6.44	20	129	0	0	129	
J-BS5	J-BS1	HDPE	250	273	373	0.016	3.10	6.44	1	6	0	0	6	
J-BS5	J-BS6	Steel	250	273	373	0.016	3.10	6.44	3.7	24	0	0	24	
J-BS6	J-BS23	Steel	200	219	319	0.016	3.74	5.35	21	112	0	0	112	
J-BS23	J-BS4	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5	
J-BS4	J-326-7	HDPE	200	219	319	0.016	3.74	5.35	20	107	0	0	107	
J-326-7	MH-72 HYD	HDPE	200	219	319	0.016	3.74	5.35	20	107	0	0	107	
J-BS6	J-BS7	Steel	250	273	373	0.016	3.10	6.44	2.5	16.1	0	0	16	
J-BS7	J-BS9	Steel	75	89	188.9	0.016	7.50	2.67	1.5	4.0	0	0	4	
J-BS9	PMP-BS-P10	Steel	75	89	188.9	0.016	7.50	2.67	1	2.7	0	0	3	
PMP-BS-P10	J-BS10	Steel	75	89	189	0.016	7.49	2.67	1	3	0	0	3	

City of Iqaluit Water and Sewer Study			Ta -15 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nomina (mm) Inside (mm) Outside (mm) Conductivity k (W/m.C) R (m.C/W) Heat Loss q (W/m) l (m) Q (W)								Trow MP14882A		
Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			-	112	212	0.016	6.347	3.151	20	63			
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-BS10	J-BS8	Steel	75	89	189	0.016	7.49	2.67	3	8	0	0	8
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.016	7.50	2.67	2	5.3	0	0	5
PMP-BS-P10	J-BS11	Steel	75	89	188.9	0.016	7.50	2.67	1	2.7	0	0	3
J-BS8	J-BS11	Steel	75	89	188.9	0.016	7.50	2.67	5	13.3	0	0	13
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.016	7.50	2.67	1	2.7	0	0	3
J-BS12	PMP-BS-P10	Steel	75	89	188.9	0.016	7.50	2.67	1	2.7	0	0	3
J-BS14	J-BS12	Steel	75	89	188.9	0.016	7.50	2.67	5	13.3	0	0	13
J-BS8	J-BS13	Steel	75	89	189	0.016	7.49	2.67	2	5.3	0	0	5
J-BS13	J-BS14	Steel	150	168	268	0.016	4.65	4.31	1.5	6.5	0	0	6
J-BS14	J-BS15	Steel	150	168	268	0.016	4.64	4.31	3.5	15.1	0	0	15
J-BS15	J-BS18	Steel	150	168	268	0.016	4.64	4.31	1.5	6.5	0	0	6
J-BS18	J-BS19	Steel	150	168	268	0.016	4.64	4.31	2.3	9.9	0	0	10
J-BS19	J-BS21	Steel	200	219	319	0.016	3.74	5.35	4.2	22.5	0	0	22
J-BS21	J-BS22	Steel	250	273	373	0.016	3.10	6.44	3	19.3	0	0	19
Part of Airport Loop													
AV-262	AV-263	HDPE	200	219	319	0.016	3.74	5.35	60	321	0	0	321
AV-263	J-84	HDPE	200	219	319	0.016	3.74	5.35	12.1	65	0	0	65
J-84	AV-264 HY	HDPE	200	219	319	0.016	3.74	5.35	101.9	545	0	0	545
AV-264 HY	J-83	HDPE	200	219	319	0.016	3.74	5.35	27.7	148	0	0	148
J-83	AV-3 HYD	HDPE	200	219	319	0.016	3.74	5.35	85.3	456	1	63	519
AV-3 HYD	AV-2 HYD	HDPE	200	219	319	0.016	3.74	5.35	98	524	0	0	524
AV-2 HYD	AV-1	HDPE	200	219	319	0.016	3.74	5.35	104	556	2	126	682
AV-1	J-106	HDPE	200	219	319	0.016	3.74	5.35	32.4	173	1	63	236
J-106	PT 53	HDPE	200	219	319	0.016	3.74	5.35	57.6	308	0	0	308
PT 53	J-82	HDPE	200	219	319	0.016	3.74	5.35	90.6	484	0	0	484
J-82	J-115	Copper	50	67	167	0.016	9.08	2.20	7.8	17	0	0	17
J-115	J-116	Copper	50	67	167	0.016	9.08	2.20	8.2	18	0	0	18
J-116	J-117	Copper	50	67	167	0.016	9.08	2.20	6.8	15	0	0	15
J-117	AV-262-1	HDPE	75	89	189	0.016	7.49	2.67	234	625	0	0	625
AV-3 HYD	AV-4 HYD	HDPE	200	219	319	0.016	3.74	5.35	128	684	3	189	873
AV-4 HYD	J-2646	HDPE	200	219	319	0.016	3.74	5.35	82	438	5	315	753
J-2646	AV-5 HYD	HDPE	200	219	319	0.016	3.74	5.35	26	139	6	378	517
AV-4 HYD	PT B3	HDPE	150	168	268	0.016	4.65	4.31	87	375	8	504	879

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.016	6.347	3.151	20	63			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-4105	AV-5 HYD	HDPE	150	168	268	0.016	4.65	4.31	161	693	10	630	1,323
PT B3	J-4105	HDPE	150	168	268	0.016	4.65	4.31	27	116	11	693	809
PT B3	PT C3	HDPE	150	168	268	0.016	4.65	4.31	7	30	13	819	849
PT C3	PT D3	HDPE	150	168	268	0.016	4.65	4.31	72	310	14	882	1,192
Part of Uivaq Loop													
PT I	PT J	HDPE	50	60	160	0.016	9.76	2.05	21	43	0	0	43
PT J	MH-16	HDPE	50	60	160	0.016	9.76	2.05	21.4	44	0	0	44
MH-16	MH-10	DICL	100	114	214	0.016	6.26	3.19	42	134	3	189	323
MH-10	MH-49	DICL	100	114	214	0.016	6.26	3.19	20	64	0	0	64
MH-49	MH-11	DICL	100	114	214	0.016	6.26	3.19	75	239	4	252	492
MH-11	MH-8	DICL	100	114	214	0.016	6.26	3.19	60	192	0	0	
AV-9A	MH-8	DICL	150	175	275	0.016	4.50	4.45	90	400	0	0	400
AV-401 HYD	J-159	HDPE	200	219	319	0.016	3.74	5.35	74.7	399	0	0	399
J-159	AV-402 HYD	HDPE	200	219	319	0.016	3.74	5.35	53.9	288	1	63	351
AV-402 HYD	J-192	HDPE	200	219	319	0.016	3.74	5.35	128.9	689	0	0	689
J-192	AV-404 HYD	HDPE	200	219	319	0.016	3.74	5.35	0.1	1	3	189	190
AV-404 HYD	J-176	HDPE	200	219	319	0.016	3.74	5.35	0.5	3	0	0	3
J-176	J-67	HDPE	200	219	319	0.016	3.74	5.35	52.8	282	6	378	660
J-67	AV-405 HYD	HDPE	200	219	319	0.016	3.74	5.35	46.7	250	0	0	250
AV-405 HYD	AV-205-2	HDPE	200	219	319	0.016	3.74	5.35	101	540	3	189	729
AV-205	AV-205-2	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
Lower Base Phase I													
J-187	J-192	HDPE	200	219	319	0.016	3.74	5.35	13.7	73	0	0	73
AV-404 HYD	AV-404 PRV	HDPE	100	114	214	0.016	6.26	3.19	1	3	0	0	3
AV-404 PRV	J-187	HDPE	100	114	214	0.016	6.26	3.19	1	3	0	0	3
AV-404 HYD	J-177	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5
J-176	J-177	Copper	19	27	127	0.016	15.40	1.30	3	4	0	0	4
J-411	J-177	HDPE	200	219	319	0.016	3.74	5.35	117	625	0	0	625
J-435	J-411	HDPE	200	219	319	0.016	3.74	5.35	101	540	0	0	540
AV-435	J-435	HDPE	200	219	319	0.016	3.74	5.35	1	5	7	441	446
AV-411 HYD	AV-435	HDPE	200	219	319	0.016	3.74	5.35	102	545	10	630	1,175
AV-411 HYD	AV-410 HYD	HDPE	200	219	319	0.016	3.74	5.35	70.5	377	0	0	377
Lower Base Phase II (Not in Service)													
AV-410 HYD	AV-440	HDPE	200	219	319	0.016	3.74	5.35	92.55	495	9	567	1,062
AV-440	AV-439	HDPE	200	219	319	0.016	3.74	5.35	68.2	365	2	126	491
AV-439	AV-438	HDPE	200	219	319	0.016	3.74	5.35	85	454	8	504	959
AV-438	AV-437	HDPE	200	219	319	0.016	3.74	5.35	79.4	424	7	441	866

City of Iqaluit Water and Sewer Study Annex 8d - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.016 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)							
			-	112	212	0.016	6.347	3.151	20	63							
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nomina (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
J-183	AV-437	HDPE	200	219	319	0.016	3.74	5.35	72.6	388	3	189	577				
AV-410 HYD	J-183	HDPE	200	219	319	0.016	3.74	5.35	102.5	548	3	189	737				
AV-409 HYD	J-183	HDPE	200	219	319	0.016	3.74	5.35	1	5	0	0	5				
AV-410 HYD	AV-409 HYD	HDPE	200	219	319	0.016	3.74	5.35	103.5	553	2	126	679				
AV-408	AV-409 HYD	HDPE	200	219	319	0.016	3.74	5.35	124.5	666	9	567	1,233				
AV-408	AV-407 HYD	HDPE	200	219	319	0.016	3.74	5.35	62.8	336	6	378	714				
AV-407 HYD	J-172	HDPE	200	219	319	0.016	3.74	5.35	122.2	653	8	504	1,157				
J-172	J-173	Copper	19	27	127	0.016	15.40	1.30	3	4	0	0	4				
J-172	AV 207-PRV	HDPE	200	219	319	0.016	3.74	5.35	1.3	7	0	0	7				
AV 207-PRV	AV-207 HYD	HDPE	200	219	319	0.016	3.74	5.35	1.7	9	0	0	9				
To Bleeder at MH-55																	
J-501	PT H	HDPE	150	168	268	0.016	4.65	4.31	168	723	4	252	975				
PT 1	J-501	AC	50	60	160	0.016	9.76	2.05	18	37	0	0	37				
J-501	MH-50	HDPE	150	168	268	0.016	4.65	4.31	8	34	0	0	34				
MH-50	MH-51	HDPE	150	168	268	0.016	4.65	4.31	71	306	0	0	306				
MH-51	MH-52	HDPE	150	168	268	0.016	4.65	4.31	30	129	0	0	129				
MH-52	MH-53 HYD	HDPE	150	168	268	0.016	4.65	4.31	114	491	5	315	806				
MH-53 HYD	MH-54	HDPE	150	168	268	0.016	4.65	4.31	102	439	2	126	565				
MH-54	MH-55 (bleed	HDPE	150	168	268	0.016	4.65	4.31	108	465	2	126	591				
Subtotal													42,862				
BUILDING 222													28,093				
RE-HEAT STATION NO. 1													35,281				
BOOSTER STATION													46,888				
TRIGRAM BUILDING													26,025				
TOTAL													179,150				

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nominal	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.024	4.231	4.727	20	95						
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
BUILDING 222																
Pump-Main	J-135	Steel	50	60	160	0.024	6.50	3.07	1	3	0	0	3			
J-135	J-136	Steel	50	60	160	0.024	6.50	3.07	6	18	0	0	18			
J-136	J-139	Steel	150	168	268	0.024	3.10	6.46	1	6	0	0	6			
Pump-Atco	J-138	Steel	50	60	160	0.024	6.50	3.07	6	18	2	189	208			
J-138	J-139	Steel	50	60	160	0.024	6.50	3.07	1	3	0	0	3			
J-139	MH-13	Steel	150	168	268	0.024	3.10	6.46	1	6	0	0	6			
MH-13	MH-22	DICL	150	175	275	0.024	3.00	6.67	15	100	1	95	195			
MH-22	MH-21	DICL	150	175	275	0.024	3.00	6.67	64	427	4	378	805			
MH-21	MH-20	DICL	150	175	275	0.024	3.00	6.67	74	494	6	567	1,061			
MH-20	PT C1	DICL	150	175	275	0.024	3.00	6.67	53	354	4	378	732			
PT C1	MH-19 HYD	HDPE	150	168	268	0.024	3.10	6.46	9	58	0	0	58			
MH-19 HYD	PT D1	HDPE	150	168	268	0.024	3.10	6.46	9	58	3	284	342			
PT D1	MH-23B	DICL	150	175	275	0.024	3.00	6.67	43	287	0	0	287			
MH-23B	AV-23A	DICL	150	175	275	0.024	3.00	6.67	37	247	2	189	436			
AV-23A	MH-30	DICL	150	175	275	0.024	3.00	6.67	47	314	2	189	503			
MH-30	MH-31	DICL	150	175	275	0.024	3.00	6.67	48	320	0	0	320			
MH-31	MH-32	DICL	150	175	275	0.024	3.00	6.67	66	440	2	189	629			
MH-32	MH-32A HYD	HDPE	150	168	268	0.024	3.10	6.46	57	368	4	378	746			
MH-32A HYD	J-160	HDPE	150	168	268	0.024	3.10	6.46	37.3	241	4	378	619			
J-160	MH-32B HYD	HDPE	150	168	268	0.024	3.10	6.46	56.7	366	3	284	650			
MH-32B HYD	J-63-1 (bleed)	HDPE	150	168	268	0.024	3.10	6.46	133.3	861	4	378	1,239			
J-63-1 (bleed)	MH-63 HYD	HDPE	150	168	268	0.024	3.10	6.46	11.7	76	0	0	76			
MH-63 HYD	MH-65	HDPE	150	168	268	0.024	3.10	6.46	72	465	5	473	938			
MH-65	MH-66	HDPE	150	168	268	0.024	3.10	6.46	48	310	4	378	688			
MH-66	MH-39	HDPE	150	168	268	0.024	3.10	6.46	18	116	0	0	116			
MH-39	MH-38	HDPE	150	169	269	0.024	3.08	6.49	60	389	2	189	578			
MH-38	MH-37	HDPE	150	168	268	0.024	3.10	6.46	50	323	3	284	606			
MH-37	MH-36	HDPE	150	168	268	0.024	3.10	6.46	76	491	5	473	963			
MH-36	MH-35	HDPE	150	168	268	0.024	3.10	6.46	57	368	5	473	841			
MH-35	MH-24A	HDPE	150	168	268	0.024	3.10	6.46	25	161	0	0	161			
MH-63 HYD	MH-62	HDPE	150	168	268	0.024	3.10	6.46	60	387	2	189	577			
MH-62	MH-61	HDPE	150	168	268	0.024	3.10	6.46	56	362	3	284	645			
MH-61	MH-60	HDPE	150	168	268	0.024	3.10	6.46	100	646	8	756	1,402			
MH-60	MH-59	HDPE	150	168	268	0.024	3.10	6.4578	42	271.23	2	189	460			

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity		Heat Loss									
			Nominal	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
			-	112	212	0.024	4.231	4.727	20	95							
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
MH-59	MH-48	HDPE	150	168	268	0.024	3.10	6.46	50	323	2	189	512				
MH-48	MH-47	HDPE	150	168	268	0.024	3.10	6.46	43	278	2	189	467				
MH-47	MH-46 HYD	HDPE	150	168	268	0.024	3.10	6.46	57	368	3	284	652				
MH-60	MH-58	HDPE	150	168	268	0.024	3.10	6.46	95	613	4	378	992				
MH-58	MH-46B	HDPE	150	168	268	0.024	3.10	6.46	39	252	2	189	441				
MH-46B	MH-46A	HDPE	150	168	268	0.024	3.10	6.46	75	484	2	189	673				
MH-46A	MH-46 HYD	HDPE	150	168	268	0.024	3.10	6.46	40	258	2	189	447				
MH-46 HYD	MH-45	HDPE	150	168	268	0.024	3.10	6.46	51	329	2	189	518				
MH-45	MH-43	HDPE	150	168	268	0.024	3.10	6.46	50	323	2	189	512				
MH-43	MH-42	HDPE	150	168	268	0.024	3.10	6.46	110	710	7	662	1,372				
MH-42	J-42	HDPE	150	168	268	0.024	3.10	6.46	1	6	0	0	6				
J-42	MH-41	HDPE	150	168	268	0.024	3.10	6.46	27	174	2	189	363				
MH-41	MH-40	HDPE	150	168	268	0.024	3.10	6.46	92.6	598	4	378	976				
MH-40	MH-40A	HDPE	150	168	268	0.024	3.10	6.46	91.5	591	2	189	780				
MH-40A	J-40	HDPE	150	168	268	0.024	3.10	6.46	95	613	0	0	613				
J-40	MH-24A	HDPE	150	168	268	0.024	3.10	6.46	62	400	2	189	589				
MH-24A	MH-24	DICL	150	175	275	0.024	3.00	6.67	15	100	0	0	100				
MH-24	PT F1	DICL	150	175	275	0.024	3.00	6.67	61	407	0	0	407				
PT F1	MH-25A HYD	HDPE	150	168	268	0.024	3.10	6.46	14	90	2	189	279				
MH-25A HYD	PT E1	HDPE	150	168	268	0.024	3.10	6.46	14	90	0	0	90				
PT E1	MH-26	DICL	150	175	275	0.024	3.00	6.67	104	694	6	567	1,261				
MH-26	MH-8	DICL	150	175	275	0.024	3.00	6.67	72	480	2	189	669				
MH-8	MH-7	DICL	150	175	275	0.024	3.00	6.67	89	594	9	851	1,445				
MH-7	PT A3	DICL	150	175	275	0.024	3.00	6.67	52	347	1	95	442				
PT A3	AV-400	HDPE	150	168	268	0.024	3.10	6.46	24.6	159	0	0	159				
AV-400	PT-K	HDPE	150	168	268	0.024	3.10	6.46	119.2	770	0	0	770				
PT K	PMP-PT-K-C	HDPE	50	60	160	0.024	6.50	3.07	12.1	37	0	0	37				
PMP-PT-K-C	AV-400	HDPE	50	60	160	0.024	6.50	3.07	104.2	320	0	0	320				
AV-400	AV-401 HYD	HDPE	200	219	319	0.024	2.49	8.02	107	858	0	0	858				
AV-400	PT-B3	HDPE	150	168	268	0.024	3.10	6.46	18	116	0	0	116				
PT-B3	MH-14	DICL	150	175	275	0.024	3.00	6.67	51	340	1	95	435				
MH-14	MH-15	DICL	150	175	275	0.024	3.00	6.67	53.4	356	3	284	640				
MH-15	J-129	DICL	150	175	275	0.024	3.00	6.67	15	100	3	284	384				
J-129	J-140	Steel	150	168	268	0.024	3.10	6.46	1	6	0	0	6				
J-140	J-126	HDPE	50	60	160	0.024	6.50	3.07	20	61.5	4	378	440				
J-126	J-125	HDPE	50	60	160	0.024	6.50	3.07	39.2	120.5	5	473	593				
J-125	J-124	HDPE	50	60	160	0.024	6.50	3.07	40	123	6	567	690				

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)						
			-	112	212	0.024	4.231	4.727	20	95						
		Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To		Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
J-124	MH-29	HDPE	50	60	160	0.024	6.50	3.07	10	30.7	7	662	692			
MH-29	J-122	HDPE	50	60	160	0.024	6.50	3.07	110	338	8	756	1,094			
J-122	J-120	HDPE	50	60	160	0.024	6.50	3.07	40	123.0	9	851	974			
J-120	J-137	HDPE	50	60	160	0.024	6.50	3.07	40	123.0	10	945	1,068			
J-137	Pump-Atco	Steel	50	60	160	0.024	6.50	3.07	1	3.1	11	1,040	1,043			
J-140	J-150	Steel	50	60	160	0.024	6.50	3.07	0.8	2.5	3	284	286			
J-150	J-134	Steel	50	60	160	0.024	6.50	3.07	0.8	2.5	0	0	2			
J-134	Pump-Main	Steel	50	60	160	0.024	6.50	3.07	1	3.1	0	0	3			
TOTAL													42,139			

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nominal	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.024	4.231	4.727	20	95				
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
RE-HEAT STATION NO. 1														
ASTRO HILL														
PMP-Recirc	J-112	Copper	50	54	154	0.024	6.95	2.88	0.7	2	0	0	2	
J-112	J-111	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1	
J-111	J-3061	Copper	50	54	154	0.024	6.95	2.88	1.6	5	0	0	5	
J-3061	J-3051	HDPE	250	273	373	0.024	2.07	9.66	41	396	0	0	396	
J-3051	PT A	AC	250	273	373	0.024	2.07	9.66	68	657	0	0	657	
PT A	PT L	AC	250	273	373	0.024	2.07	9.66	69	667	0	0	667	
PT L	J-12	Copper	75	79	179	0.024	5.42	3.69	37.1	137	0	0	137	
PT L	PT L-1	Copper	19	22	122	0.024	11.36	1.76	1	2	0	0	2	
PT L-1	PT A-1	Copper	38	41	141	0.024	8.19	2.44	76.9	188	0	0	188	
PT A	PT O	AC	250	273	373	0.024	2.07	9.66	192	1855	0	0	1,855	
PT O	PT B	AC	250	273	373	0.024	2.07	9.66	35	338	0	0	338	
PT B	PT D	AC	250	273	373	0.024	2.07	9.66	61	589	0	0	589	
From Pt-D to Re-Heat Station No. 1														
PT D	PT A-1	Copper	50	67	167	0.024	6.06	3.30	291	961	0	0	961	
PT A-1	J-3065	Copper	50	67	167	0.024	6.06	3.30	101	334	0	0	334	
J-3065	PMP-Recirc	Copper	50	67	167	0.024	6.06	3.30	5.5	18	0	0	18	
PT D	PT E	HDPE	250	273	373	0.024	2.07	9.66	35	338	1	95	433	
PT E	PT F	HDPE	200	219	319	0.024	2.49	8.02	41	329	1	95	423	
PT F	PT G	DICL	150	175	275	0.024	3.00	6.67	22	147	1	95	241	
PT G	J-190	AC	150	168	268	0.024	3.10	6.46	80.7	521	0	0	521	
J-190	PT H	AC	150	168	268	0.024	3.10	6.46	8.3	54	2	189	243	
PT H	PT H-2	AC	150	168	268	0.024	3.10	6.46	3	19	2	189	208	
PT H-2	J-3	AC	150	168	268	0.024	3.10	6.46	73.8	477	2	189	666	
J-3	AV-9A	HDPE	150	168	268	0.024	3.10	6.46	16.2	105	0	0	105	
												Subtotal	8,990	
HAPPY VALLEY														
PMP-Recirc	J-114	Copper	50	54	154	0.024	6.95	2.88	2.7	8	0	0	8	
J-114	J-113	Copper	50	54	154	0.024	6.95	2.88	1	3	0	0	3	
J-113	J-3063	Copper	50	54	154	0.024	6.95	2.88	5.4	16	0	0	16	
J-3063	AV-306	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8	
J-3063	MH-104	HDPE	200	219	319	0.024	2.49	8.02	27.4	220	0	0	220	
MH-104	MH-103	HDPE	200	219	319	0.024	2.49	8.02	109.9	881	1	95	976	
MH-103	MH-95 HYD	HDPE	200	219	319	0.024	2.49	8.02	37.7	302	0	0	302	
MH-95 HYD	MH-68	HDPE	200	219	319	0.024	2.49	8.0185	12	96.222	0	0	96	

City of Iqaluit Water and Sewer Study Annex 8c - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nominal	Inside	Outside	k	R	q	l	Q						
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)						
			-	112	212	0.024	4.231	4.727	20	95						
		Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To		Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
MH-68	MH-69	HDPE	200	219	319	0.024	2.49	8.02	100	802	2	189	991			
MH-69	MH-70 HYD	HDPE	200	219	319	0.024	2.49	8.02	78	625	3	284	909			
MH-70 HYD	MH-71	HDPE	200	219	319	0.024	2.49	8.02	104	834	5	473	1,307			
MH-71	MH-72 HYD	HDPE	200	219	319	0.024	2.49	8.02	90	722	3	284	1,005			
MH-72 HYD	MH-100	HDPE	200	219	319	0.024	2.49	8.02	151	1211	0	0	1,211			
MH-100	MH-99	HDPE	200	219	319	0.024	2.49	8.02	91	730	5	473	1,202			
MH-99	MH-98	HDPE	200	219	319	0.024	2.49	8.02	60	481	5	473	954			
MH-98	MH-97	HDPE	200	219	319	0.024	2.49	8.02	51	409	3	284	693			
MH-97	MH-96	HDPE	200	219	319	0.024	2.49	8.02	29	233	0	0	233			
MH-96	AV-216	HDPE	200	219	319	0.024	2.49	8.02	69	553	3	284	837			
AV-216	AV-217 HYD	HDPE	200	219	319	0.024	2.49	8.02	48	385	4	378	763			
AV-217 HYD	AV-237	HDPE	200	219	319	0.024	2.49	8.02	42	337	3	284	620			
AV-237	AV-238 HYD	HDPE	200	219	319	0.024	2.49	8.02	88	706	5	473	1,178			
AV-238 HYD	AV-227	HDPE	200	219	319	0.024	2.49	8.02	41	329	2	189	518			
AV-227	AV-228	HDPE	200	219	319	0.024	2.49	8.02	127	1018	11	1,040	2,058			
AV-228	AV-229 HYD	HDPE	200	219	319	0.024	2.49	8.02	87	698	6	567	1,265			
AV-229 HYD	AV-230	HDPE	200	219	319	0.024	2.49	8.02	77	617	4	378	996			
AV-230	AV-231	HDPE	200	219	319	0.024	2.49	8.02	34	273	3	284	556			
AV-231	AV-232 HYD	HDPE	200	219	319	0.024	2.49	8.02	100	802	5	473	1,275			
AV-232 HYD	AV-233	HDPE	200	219	319	0.024	2.49	8.02	58	465	4	378	843			
AV-233	AV-234	HDPE	200	219	319	0.024	2.49	8.02	95	762	5	473	1,234			
AV-234	AV-235 HYD	HDPE	150	168	268	0.024	3.10	6.46	105	678	10	945	1,623			
AV-235 HYD	J-234-1	HDPE	50	60	160	0.024	6.50	3.07	112	344	0	0	344			
J-234-1	J-226-1	HDPE	75	89	189	0.024	4.99	4.00	70	280	0	0	280			
AV-234	AV-226	HDPE	200	219	319	0.024	2.49	8.02	67	537	2	189	726			
AV-226	J-227-1	HDPE	150	168	268	0.024	3.10	6.46	126	814	5	473	1,286			
J-227-1	J-226-1	HDPE	50	60	160	0.024	6.50	3.07	131	403	0	0	403			
AV-226	AV-225 HYD	HDPE	200	219	319	0.024	2.49	8.02	60	481	3	284	765			
J-226-1	J-225-2	HDPE	75	89	189	0.024	4.99	4.00	58	232	0	0	232			
AV-225 HYD	AV-239	HDPE	150	168	268	0.024	3.10	6.46	61	394	7	662	1,056			
AV-239	J-225-1	HDPE	50	60	160	0.024	6.50	3.07	65	200	0	0	200			
J-225-1	J-225-2	HDPE	50	60	160	0.024	6.50	3.07	0.5	2	0	0	2			
J-225-1	J-225-2	Copper	13	16	116	0.024	13.14	1.52	1	2	0	0	2			
AV-225 HYD	AV-224 HYD	HDPE	200	219	319	0.024	2.49	8.02	97	778	3	284	1,061			
J-225-2	J-224-1	HDPE	75	89	189	0.024	4.99	4.00	98	392	0	0	392			
AV-224 HYD	AV-240	HDPE	150	168	268	0.024	3.10	6.46	41	265	6	567	832			
AV-240	J-224-1	HDPE	50	60	160	0.024	6.50	3.07	43	132	0	0	132			
J-224-1	AV-223-2	HDPE	75	89	189	0.024	4.99	4.00	78.2	313	0	0	313			
AV-224 HYD	AV-223-3	HDPE	200	219	319	0.024	2.49	8.02	71.2	571	2	189	760			
AV-223-3	AV-223-2	Copper	13	16	116	0.024	13.14	1.52	2	3	0	0	3			

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.024	4.231	4.727	20	95			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
AV-223-2	PMP-AV223	Copper	75	79	179	0.024	5.42	3.69	1	4	0	0	4
PMP-AV223	AV-223	Copper	75	79	179	0.024	5.42	3.69	0.7	3	0	0	3
J-2231	AV-223 PRV	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
AV-223 PRV	AV-223-3	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
AV-223	J-96-1	HDPE	75	89	189	0.024	4.99	4.00	104	416	0	0	416
MH-96	J-96-1	HDPE	150	168	268	0.024	3.10	6.46	0.5	3	0	0	3
J-96-1	MH-93	HDPE	150	168	268	0.024	3.10	6.46	18	116	1	95	211
MH-93	MH-92	HDPE	150	168	268	0.024	3.10	6.46	82	530	4	378	908
MH-92	J-2231	HDPE	150	168	268	0.024	3.10	6.46	38	245	0	0	245
J-2231	MH-91 HYD	HDPE	150	168	268	0.024	3.10	6.46	53	342	3	284	626
MH-91 HYD	MH-89	HDPE	150	168	268	0.024	3.10	6.46	86	555	6	567	1,123
MH-89	MH-88	HDPE	150	168	268	0.024	3.10	6.46	107	691	1	95	786
MH-88	MH-87	HDPE	150	168	268	0.024	3.10	6.46	38	245	2	189	434
MH-87	MH-86	HDPE	150	168	268	0.024	3.10	6.46	55	355	6	567	922
MH-86	MH-85	HDPE	150	168	268	0.024	3.10	6.46	57	368	4	378	746
MH-85	MH-73 (bleed)	HDPE	150	168	268	0.024	3.10	6.46	53	342	2	189	531
MH-73 (bleed)	MH-74 HYD	HDPE	150	168	268	0.024	3.10	6.46	97	626	5	473	1,099
MH-74 HYD	MH-75	HDPE	150	168	268	0.024	3.10	6.46	98	633	8	756	1,389
MH-75	MH-90 HYD	HDPE	150	168	268	0.024	3.10	6.46	48	310	1	95	405
MH-90 HYD	MH-76 (bleed)	HDPE	150	168	268	0.024	3.10	6.46	34	220	1	95	314
MH-76 (bleed)	J-6901	HDPE	150	168	268	0.024	3.10	6.46	35	226	0	0	226
J-6901	J-3066	Copper	50	54	154	0.024	6.95	2.88	285.2	821	0	0	821
J-3066	PMP-Recirc	Copper	50	54	154	0.024	6.95	2.88	5.5	16	0	0	16
											Subtotal		43,932
											TOTAL		52,922

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)				
			-	112	212	0.024	4.231	4.727	20	95				
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
BOOSTER STATION														
PMP-BS-P10	J-BS30	Steel	75	89	189	0.024	4.99	4.00	1.5	6	0	0	6	
PMP-BS-P10	J-BS30	Steel	75	89	189	0.024	4.99	4.00	1	4	0	0	4	
J-BS30	J-BS22	Steel	75	89	189	0.024	4.99	4.00	3	12	0	0	12	
J-BS22	J-BS27	Steel	250	273	373	0.024	2.07	9.66	10	97	0	0	97	
J-BS27	J-BS26	Steel	250	273	373	0.024	2.07	9.66	2	19	0	0	19	
J-BS26	J-BS2	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8	
J-BS2	J-326-5	HDPE	200	219	319	0.024	2.49	8.02	20	160	0	0	160	
J-326-5	J-326-2	HDPE	200	219	319	0.024	2.49	8.02	4	32	0	0	32	
J-326-2	AV-327 HY	HDPE	200	219	319	0.024	2.49	8.02	174	1395	0	0	1,395	
AV-327 HY	AV-328	HDPE	200	219	319	0.024	2.49	8.02	94	754	0	0	754	
AV-328	J-500-1	HDPE	200	219	319	0.024	2.49	8.02	40.8	327	0	0	327	
J-500-1	AV-500	HDPE	200	219	319	0.024	2.49	8.02	10.7	86	0	0	86	
1999 Subdivision														
AV-500	J-500-6	HDPE	250	273	373	0.024	2.07	9.66	0.5	5	0	0	5	
J-500-5	J-500-6	HDPE	250	273	373	0.024	2.07	9.66	0.5	5	0	0	5	
PMP-500-In	J-500-6	HDPE	75	89	189	0.024	4.99	4.00	0.5	2	0	0	2	
J-500-5	PMP-500-Out	HDPE	75	89	189	0.024	4.99	4.00	1	4	0	0	4	
J-500-5	AV-501	HDPE	250	273	373	0.024	2.07	9.66	80	773	0	0	773	
AV-501	AV-502	HDPE	250	273	373	0.024	2.07	9.66	119.72	1157	0	0	1,157	
AV-502	AV-503 HY	HDPE	250	273	373	0.024	2.07	9.66	96.8	935	1	95	1,030	
AV-503 HY	AV-504	HDPE	250	273	373	0.024	2.07	9.66	117.03	1131	4	378	1,509	
AV-504	AV-505 HY	HDPE	250	273	373	0.024	2.07	9.66	61.8	597	2	189	786	
AV-505 HY	AV-506	HDPE	250	273	373	0.024	2.07	9.66	95.5	923	5	473	1,395	
AV-506	AV-507 HY	HDPE	250	273	373	0.024	2.07	9.66	123.74	1196	10	945	2,141	
AV-507 HY	AV-508	HDPE	250	273	373	0.024	2.07	9.66	116.75	1128	9	851	1,979	
AV-508	AV-509 HY	HDPE	250	273	373	0.024	2.07	9.66	119.9	1159	10	945	2,104	
AV-509 HY	AV-510	HDPE	250	273	373	0.024	2.07	9.66	68.4	661	6	567	1,228	
AV-510	AV-511 HY	HDPE	250	273	373	0.024	2.07	9.66	109.7	1060	7	662	1,722	
AV-511 HY	AV-512	HDPE	250	273	373	0.024	2.07	9.66	111.8	1080	9	851	1,931	
AV-512	AV-513 HY	HDPE	250	273	373	0.024	2.07	9.66	96.42	932	8	756	1,688	
AV-513 HY	AV-514	HDPE	250	273	373	0.024	2.07	9.66	90.63	876	6	567	1,443	
AV-514	AV-505	HDPE	250	273	373	0.024	2.07	9.66	55.3	534	2	189	723	
AV-505	J-504-2	HDPE	250	273	373	0.024	2.07	9.66	61.8	597	2	189	786	
J-504-2	J-515	HDPE	250	273	373	0.024	2.07	9.66	76.9	743	0	0	743	
AV-515	J-515	HDPE	250	273	373	0.024	2.07	9.66	1	10	0	0	10	
AV-515	AV-504 HY	HDPE	250	273	373	0.024	2.07	9.66	75.9	733	2	189	922	
J-503	AV-504 HY	HDPE	250	273	373	0.024	2.07	9.66	117	1131	0	0	1131	

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.024	4.231	4.727	20	95			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-500-3	J-503	HDPE	250	273	373	0.024	2.07	9.66	297.5	2,875	0	0	2,875
J-500-3	J-500-1	HDPE	250	273	373	0.024	2.07	9.66	1	10	0	0	10
J-500-3	J-500-4	HDPE	75	89	189	0.024	4.99	4.00	3	12	0	0	12
AV-500	J-500-4	HDPE	200	219	319	0.024	2.49	8.02	11.8	95	0	0	95
J-500-4	AV-329 HY	HDPE	200	219	319	0.024	2.49	8.02	39.7	318	0	0	318
AV-329 HYL	AV-330	HDPE	200	219	319	0.024	2.49	8.02	94	754	6	567	1,321
AV-330	AV-331 HY	HDPE	200	219	319	0.024	2.49	8.02	105	842	4	378	1,220
AV-331 HYL	AV-332 HY	HDPE	200	219	319	0.024	2.49	8.02	104	834	3	284	1,118
AV-332 HYL	J-331-1	HDPE	200	219	319	0.024	2.49	8.02	107	858	0	0	858
J-331-1	AV-333	HDPE	200	219	319	0.024	2.49	8.02	47	377	1	95	471
AV-333	AV-334 HY	HDPE	200	219	319	0.024	2.49	8.02	81	650	1	95	744
AV-350 HYL	AV-334 HY	HDPE	200	219	319	0.024	2.49	8.02	60.1	482	1	95	576
AV-350 HYL	AV-349	HDPE	200	219	319	0.024	2.49	8.02	74.9	601	3	284	884
AV-349	AV-348 HY	HDPE	200	219	319	0.024	2.49	8.02	77.1	618	3	284	902
AV-348 HYL	AV-346 HY	HDPE	200	219	319	0.024	2.49	8.02	94.1	755	1	95	849
AV-346 HYL	AV-347 HY	HDPE	200	219	319	0.024	2.49	8.02	88.2	707	4	378	1,085
AV-347 HYL	J-346	HDPE	200	219	319	0.024	2.49	8.02	91	730	0	0	730
J-346	AV-345	HDPE	200	219	319	0.024	2.49	8.02	64.1	514	1	95	609
AV-345	AV-344	HDPE	200	219	319	0.024	2.49	8.02	82.1	658	2	189	847
AV-344	J-345	HDPE	200	219	319	0.024	2.49	8.02	92.5	742	1	95	836
J-345	AV-355	HDPE	200	219	319	0.024	2.49	8.02	98.7	791	0	0	791
J-353	AV-355	HDPE	200	219	319	0.024	2.49	8.02	80.76	648	2	189	837
AV-353 HYL	AV-354	HDPE	200	219	319	0.024	2.49	8.02	59.36	476	2	189	665
AV-354	J-353	HDPE	200	219	319	0.024	2.49	8.02	59.36	476	2	189	665
AV-352	AV-353 HY	HDPE	200	219	319	0.024	2.49	8.02	62.78	503	1	95	598
AV-351A	AV-352	HDPE	200	219	319	0.024	2.49	8.02	67.2	539	1	95	633
AV-351	AV-351A	HDPE	200	219	319	0.024	2.49	8.02	30.54	245	0	0	245
AV-351 HYL	J-351-1	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
AV-351 HYL	PT-N	HDPE	200	219	319	0.024	2.49	8.02	63.2	507	0	0	507
PT-N	PMP-N-In	HDPE	200	219	319	0.024	2.49	8.02	13.6	109	0	0	109
PMP-N-Out	J-351-2	HDPE	200	219	319	0.024	2.49	8.02	49.6	398	0	0	398
J-351-2	J-351-1	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
To New French School and New Arena													
AV-351 HYL	AV-356	HDPE	200	219	319	0.024	2.49	8.02	87	698	0	0	698
AV-356	AV-357	HDPE	200	219	319	0.024	2.49	8.02	87	698	1	95	792
AV-357	AV-358	HDPE	200	219	319	0.024	2.49	8.02	87	698	1	95	792
AV-358	AV-351 HY	HDPE	200	219	319	0.024	2.49	8.02	260	2084.8	0	0	2,085

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nominal	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.024	4.231	4.727	20	95				
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
To Shunt Subdivision														
AV-351 HYI	AV-343	HDPE	200	219	319	0.024	2.49	8.02	67.3	540	1	95	634	
AV-342 HYI	AV-343	HDPE	200	219	319	0.024	2.49	8.02	58.04	465	2	189	654	
AV-341 HYI	AV-342 HYI	HDPE	200	219	319	0.024	2.49	8.02	83.19	667	3	284	951	
AV-340 HYI	AV-341 HYI	HDPE	200	219	319	0.024	2.49	8.02	72.2	579	5	473	1,052	
AV-339	AV-340 HYI	HDPE	200	219	319	0.024	2.49	8.02	83.34	668	2	189	857	
AV-334 HYI	AV-335	HDPE	200	219	319	0.024	2.49	8.02	98	786	2	189	975	
AV-335	AV-338 HYI	HDPE	200	219	319	0.024	2.49	8.02	67.4	540	1	95	635	
AV-338 HYI	AV-337	HDPE	200	219	319	0.024	2.49	8.02	68	545	2	189	734	
AV-337	AV-336 HYI	HDPE	200	219	319	0.024	2.49	8.02	95	762	1	95	856	
AV-336 HYI	J-337-1	HDPE	200	219	319	0.024	2.49	8.02	95	762	2	189	951	
J-337-1	AV-339	HDPE	177						131					
AV-339	J-339	HDPE	200	219	319	0.024	2.49	8.02	1	8	2	189	197	
J-339	J-335-1	HDPE	200	219	319	0.024	2.49	8.02	130.5	1046	3	284	1,330	
J-335-1	J-334-1	HDPE	50	60	160	0.024	6.50	3.07	98	301	0	0	301	
J-326-3	J-334-1	HDPE	200	219	319	0.024	2.49	8.02	700	5613	0	0	5,613	
J-326-3	J-326-6	HDPE	200	219	319	0.024	2.49	8.02	4	32	0	0	32	
J-326-6	J-BS3	HDPE	200	219	319	0.024	2.49	8.02	20	160	0	0	160	
J-BS3	J-BS24	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8	
J-BS24	J-BS25	Steel	200	219	319	0.024	2.49	8.02	2	16	0	0	16	
J-BS25	J-BS28	Steel	100	114	214	0.024	4.18	4.79	10	48	0	0	48	
J-BS28	J-BS29	Steel	75	89	189	0.024	4.99	4.00	2	8	0	0	8	
J-BS29	PMP-BS-P10	Steel	100	114	214	0.024	4.18	4.79	1	5	0	0	5	
J-BS29	PMP-BS-P10	Steel	75	89	189	0.024	4.99	4.00	1.5	6	0	0	6	
TOTAL												70,333		

City of Iqaluit Water and Sewer Study			Ta -15 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Nominal Inside Outside (mm) (mm) (mm) Conductivity k R (W/m.C) (m.C/W) Heat Loss q l Q (W/m) (m) (W)								 Trow MP14882A		
Annex 8c - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			-	112	212	0.024	4.231	4.727	20	95			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
TRIGRAM BUILDING													
Trigram-P1-C	J-29	Copper	50	54	154	0.024	6.95	2.88	0.3	1	0	0	1
J-29	J-25	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1
J-23	Trigram-P2-	Copper	50	54	154	0.024	6.95	2.88	0.3	1	0	0	1
J-25	J-23	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1
J-25	J-27	Copper	50	54	154	0.024	6.95	2.88	0.3	1	0	0	1
J-27	J-1	Copper	50	54	154	0.024	6.95	2.88	3	9	0	0	9
J-1	J-28	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1
J-27	J-2	Copper	50	54	154	0.024	6.95	2.88	3	9	0	0	9
J-2	J-28	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1
J-28	J-33	Copper	50	54	154	0.024	6.95	2.88	4	12	0	0	12
J-33	J-8202	Copper	50	54	154	0.024	6.95	2.88	2	6	0	0	6
J-8202	AV-200 (ble	HDPE	100	114	214	0.024	4.18	4.79	43	206	0	0	206
AV-200 (ble	J-44	HDPE	200	219	319	0.024	2.49	8.02	74.7	599	3	284	883
J-44	AV-201 HY	HDPE	200	219	319	0.024	2.49	8.02	9.3	75	0	0	75
AV-201 HY	J-56	HDPE	200	219	319	0.024	2.49	8.02	94.8	760	2	189	949
J-56	AV-202 HY	HDPE	200	219	319	0.024	2.49	8.02	30.2	242	0	0	242
AV-202 HY	AV-203	HDPE	200	219	319	0.024	2.49	8.02	58	465	1	95	560
AV-203	J-105	HDPE	200	219	319	0.024	2.49	8.02	33.2	266	1	95	361
J-105	AV-204 HY	HDPE	200	219	319	0.024	2.49	8.02	40.8	327	0	0	327
AV-204 HY	J-57	HDPE	200	219	319	0.024	2.49	8.02	24.1	193	1	95	288
J-57	AV-205	HDPE	200	219	319	0.024	2.49	8.02	54.9	440	0	0	440
AV-201 HY	J-94	HDPE	250	273	373	0.024	2.07	9.66	68.6	663	2	189	852
J-94	AV-414 HY	HDPE	250	273	373	0.024	2.07	9.66	31.4	303	0	0	303
AV-414 HY	AV-415	HDPE	200	219	319	0.024	2.49	8.02	45	361	0	0	361
AV-414 HY	J-175	HDPE	150	168	268	0.024	3.10	6.46	0.4	3	0	0	3
AV-415	J-175	HDPE	200	219	319	0.024	2.49	8.02	45	361	0	0	361
J-175	AV-413	HDPE	150	168	268	0.024	3.10	6.46	89.6	579	2	189	768
AV-413	J-64	HDPE	150	168	268	0.024	3.10	6.46	14.8	96	1	95	190
J-64	AV-205-1	HDPE	150	168	268	0.024	3.10	6.46	67.2	434	0	0	434
AV-205-1	AV-205	HDPE	150	168	268	0.024	3.10	6.46	2	13	0	0	13
AV-205	J-108	HDPE	200	219	319	0.024	2.49	8.02	41.9	336	0	0	336

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.024	4.231	4.727	20	95			
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-108	AV-206 HY	HDPE	200	219	319	0.024	2.49	8.02	82.1	658	2	189	847
AV-206 HY	J-109	HDPE	200	219	319	0.024	2.49	8.02	10.8	87	0	0	87
J-109	J-110	HDPE	200	219	319	0.024	2.49	8.02	27.4	220	0	0	220
J-110	AV-207 HY	HDPE	200	219	319	0.024	2.49	8.02	55.8	447	5	473	920
AV-207 HY	J-72	HDPE	200	219	319	0.024	2.49	8.02	14.8	119	0	0	119
J-72	J-107	HDPE	200	219	319	0.024	2.49	8.02	61.8	496	0	0	496
J-107	AV-208 HY	HDPE	200	219	319	0.024	2.49	8.02	17.4	140	2	189	329
AV-208 HY	AV-209	HDPE	150	168	268	0.024	3.10	6.46	65	420	0	0	420
AV-209	J-80	HDPE	150	168	268	0.024	3.10	6.46	20.3	131	0	0	131
J-80	AV-210 HY	HDPE	150	168	268	0.024	3.10	6.46	57.7	373	3	284	656
AV-210 HY	J-189	HDPE	50	60	160	0.024	6.50	3.07	139.9	430	2	189	619
J-189	FCV-AV208	HDPE	50	60	160	0.024	6.50	3.07	0.1	0	0	0	0
FCV-AV208	J-2081	HDPE	50	60	160	0.024	6.50	3.07	1	3	0	0	3
AV-208 HY	J-77	HDPE	200	219	319	0.024	2.49	8.02	43	345	0	0	345
J-77	AV-212	HDPE	200	219	319	0.024	2.49	8.02	38	305	1	95	399
AV-212	J-78	HDPE	200	219	319	0.024	2.49	8.02	38.6	310	0	0	310
J-78	AV-213 HY	HDPE	200	219	319	0.024	2.49	8.02	54.4	436	2	189	625
AV-213 HY	J-79	HDPE	200	219	319	0.024	2.49	8.02	44.7	358	0	0	358
J-79	AV-214 HY	HDPE	200	219	319	0.024	2.49	8.02	71.3	572	3	284	855
AV-214 HY	AV-215 HY	HDPE	200	219	319	0.024	2.49	8.02	113	906	0	0	906
AV-215 HY	AV-255	HDPE	200	219	319	0.024	2.49	8.02	55	441	3	284	725
AV-255	J-81	HDPE	200	219	319	0.024	2.49	8.02	35.6	285	0	0	285
J-81	AV-256 HY	HDPE	200	219	319	0.024	2.49	8.02	55.4	444	3	284	728
AV-256 HY	AV-257	HDPE	200	219	319	0.024	2.49	8.02	99	794	1	95	888
AV-257	AV-258 HY	HDPE	200	219	319	0.024	2.49	8.02	89	714	0	0	714
AV-258 HY	AV-259	HDPE	200	219	319	0.024	2.49	8.02	92.6	743	0	0	743
AV-259	AV-260	HDPE	200	219	319	0.024	2.49	8.02	71	569	0	0	569
AV-260	J-261	HDPE	200	219	319	0.024	2.49	8.02	93	746	1	95	840
J-261	AV-262	HDPE	200	219	319	0.024	2.49	8.02	29	233	0	0	233
AV-262-1	AV-259-1	HDPE	75	89	189	0.024	4.99	4.00	194	777	0	0	777
AV-259-1	AV-257-1	HDPE	75	89	189	0.024	4.99	4.00	186	745	0	0	745
AV-257-1	J-188	HDPE	50	60	160	0.024	6.50	3.07	644.9	1983	0	0	1,983
J-188	FCV-AV208	HDPE	50	60	160	0.024	6.50	3.07	0.1	0	0	0	0
FCV-AV208	J-2081	HDPE	50	60	160	0.024	6.50	3.07	1	3	0	0	3
J-2081	J-169	HDPE	75	89	189	0.024	4.99	4.00	100	400	0	0	400
J-169	J-171	HDPE	75	89	189	0.024	4.99	4.00	3	12	0	0	12
J-171	J-173	HDPE	75	89	189	0.024	4.99	4.00	1	4	0	0	4

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A					
			Heat Loss, Q, per SC (Service Connection):													
			Insulated Pipe Diameters			Conductivity		Heat Loss								
			Nominal (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)						
			-	112	212	0.024	4.231	4.727	20	95						
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total			
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)			
J-173	AV-205-3	HDPE	75	89	189	0.024	4.99	4.00	210	841	0	0	841			
AV-205-3	J-8201	HDPE	75	89	189	0.024	4.99	4.00	465	1862	0	0	1,862			
J-8201	J-17	Copper	50	54	154	0.024	6.95	2.88	2	6	0	0	6			
J-17	J-18	Copper	50	54	154	0.024	6.95	2.88	4	12	0	0	12			
J-18	J-19	Copper	50	54	154	0.024	6.95	2.88	0.3	1	0	0	1			
J-19	Trigram-P1-	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1			
Trigram-P2-I	J-19	Copper	50	54	154	0.024	6.95	2.88	0.5	1	0	0	1			
AV-305	J-6	HDPE	250	273	373	0.024	2.07	9.66	59.3	573	0	0	573			
J-6	AV-304 HY	HDPE	250	273	373	0.024	2.07	9.66	12.7	123	0	0	123			
AV-304 HY	AV-303 HY	HDPE	250	273	373	0.024	2.07	9.66	84	812	0	0	812			
AV-303 HY	AV-301	HDPE	250	273	373	0.024	2.07	9.66	93	899	0	0	899			
AV-301	AV-301-1	HDPE	250	273	373	0.024	2.07	9.66	1	10	0	0	10			
AV-301	AV-302 HY	HDPE	200	219	319	0.024	2.49	8.02	32	257	0	0	257			
AV-302 HY	J-3021	HDPE	150	168	268	0.024	3.10	6.46	34	220	0	0	220			
J-3021	J-145	HDPE	150	168	268	0.024	3.10	6.46	1	6	0	0	6			
J-145	J-144	HDPE	50	60	160	0.024	6.50	3.07	24	74	0	0	74			
AV-302 HY	AV-303B	HDPE	200	219	319	0.024	2.49	8.02	49.2	395	2	189	584			
AV-303B	AV-304B	HDPE	200	219	319	0.024	2.49	8.02	109.1	875	3	284	1,158			
AV-304B	J-147	HDPE	50	60	160	0.024	6.50	3.07	1	3	4	378	381			
J-147	J-146	HDPE	50	60	160	0.024	6.50	3.07	109	335	5	473	808			
J-146	J-144	HDPE	50	60	160	0.024	6.50	3.07	49.2	151	6	567	718			
J-144	AV-301-1	HDPE	50	60	160	0.024	6.50	3.07	32	98	6	567	666			
AV-301-1	AV-300 HY	HDPE	200	219	319	0.024	2.49	8.02	84	674	0	0	674			
AV-300 HY	J-13	HDPE	250	273	373	0.024	2.07	9.66	83.4	806	0	0	806			
J-13	J-34	HDPE	250	273	373	0.024	2.07	9.66	91.3	882	0	0	882			
J-34	AV-406	HDPE	250	273	373	0.024	2.07	9.66	28.3	273	0	0	273			
AV-406	AV-200 (ble	HDPE	200	219	319	0.024	2.49	8.02	13	104	0	0	104			
TOTAL													39,038			

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity		Heat Loss						
			Nominal	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.024	4.231	4.727	20	95				
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
MAIN DISTRIBUTION														
Main Res	J-RES-1	PVC	300	335	435	0.024	1.73	11.55	1.8	20.8	0	0	21	
J-RES-1	J-RES-2	PVC	300	335	435	0.024	1.73	11.55	18	207.8	0	0	208	
J-RES-2	J-RES-3	PVC	300	335	435	0.024	1.73	11.55	6.3	72.7	0	0	73	
J-RES-3	J-RES-5	PVC	300	335	435	0.024	1.73	11.55	4	46.2	0	0	46	
J-RES-5	J-RES-7	PVC	300	335	435	0.024	1.73	11.55	2.2	25.4	0	0	25	
J-RES-7	J-5	HDPE	250	273	373	0.024	2.07	9.66	2.5	24.2	0	0	24	
J-5	J-3071	HDPE	250	273	373	0.024	2.07	9.66	318.5	3078	0	0	3,078	
J-3071	J-3072	HDPE	100	114	214	0.024	4.18	4.79	14	67.0	0	0	67	
AV-307	J-3072	HDPE	100	114	214	0.024	4.18	4.79	14	67.0	1	95	162	
J-3071	AV-307	HDPE	250	273	373	0.024	2.07	9.66	1	9.7	0	0	10	
AV-307	AV-306	HDPE	250	273	373	0.024	2.07	9.66	73	705	2	189	894	
J-RES-5	J-RES-6	PVC	300	335	435	0.024	1.73	11.55	3.1	36	0	0	36	
J-RES-6	AV-306	HDPE	250	273	373	0.024	2.07	9.66	396	3827	0	0	3,827	
AV-306	AV-305	HDPE	250	273	373	0.024	2.07	9.66	43	416	0	0	416	
AV-306	J-3061	HDPE	250	273	373	0.024	2.07	9.66	1	10	0	0	10	
AV-306	TAC-1	HDPE	250	273	373	0.024	2.07	9.66	113	1092	1	95	1,186	
TAC-1	TAC-2	HDPE	250	273	373	0.024	2.07	9.66	89	860	2	189	1,049	
TAC-2	TAC-3	HDPE	250	273	373	0.024	2.07	9.66	98.4	951	8	756	1,707	
TAC-3	TAC-4	HDPE	250	273	373	0.024	2.07	9.66	107.2	1036	5	473	1,509	
TAC-4	AV-326	HDPE	250	273	373	0.024	2.07	9.66	99.4	961	7	662	1,622	
AV-326	J-326-4	HDPE	250	273	373	0.024	2.07	9.66	4	39	0	0	39	
J-326-4	J-BS1	HDPE	250	273	373	0.024	2.07	9.66	20	193	0	0	193	
J-BS5	J-BS1	HDPE	250	273	373	0.024	2.07	9.66	1	10	0	0	10	
J-BS5	J-BS6	Steel	250	273	373	0.024	2.07	9.66	3.7	36	0	0	36	
J-BS6	J-BS23	Steel	200	219	319	0.024	2.49	8.02	21	168	0	0	168	
J-BS23	J-BS4	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8	
J-BS4	J-326-7	HDPE	200	219	319	0.024	2.49	8.02	20	160	0	0	160	
J-326-7	MH-72 HYL	HDPE	200	219	319	0.024	2.49	8.02	20	160	0	0	160	
J-BS6	J-BS7	Steel	250	273	373	0.024	2.07	9.66	2.5	24.2	0	0	24	
J-BS7	J-BS9	Steel	75	89	188.9	0.024	5.00	4.00	1.5	6.0	0	0	6	
J-BS9	PMP-BS-P10	Steel	75	89	188.9	0.024	5.00	4.00	1	4.0	0	0	4	
PMP-BS-P10	J-BS10	Steel	75	89	189	0.024	4.99	4.00	1	4	0	0	4	

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C Heat Loss, Q, per SC (Service Connection): Insulated Pipe Diameters Conductivity Heat Loss Nominal Inside Outside k R q l Q (mm) (mm) (mm) (W/m.C) (m.C/W) (W/m) (m) (W) - 112 212 0.024 4.231 4.727 20 95								 Trow MP14882A		
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-BS10	J-BS8	Steel	75	89	189	0.024	4.99	4.00	3	12	0	0	12
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.024	5.00	4.00	2	8.0	0	0	8
PMP-BS-P10	J-BS11	Steel	75	89	188.9	0.024	5.00	4.00	1	4.0	0	0	4
J-BS8	J-BS11	Steel	75	89	188.9	0.024	5.00	4.00	5	20.0	0	0	20
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.024	5.00	4.00	1	4.0	0	0	4
J-BS12	PMP-BS-P10	Steel	75	89	188.9	0.024	5.00	4.00	1	4.0	0	0	4
J-BS14	J-BS12	Steel	75	89	188.9	0.024	5.00	4.00	5	20.0	0	0	20
J-BS8	J-BS13	Steel	75	89	189	0.024	4.99	4.00	2	8.0	0	0	8
J-BS13	J-BS14	Steel	150	168	268	0.024	3.10	6.46	1.5	9.7	0	0	10
J-BS14	J-BS15	Steel	150	168	268	0.024	3.09	6.47	3.5	22.6	0	0	23
J-BS15	J-BS18	Steel	150	168	268	0.024	3.09	6.47	1.5	9.7	0	0	10
J-BS18	J-BS19	Steel	150	168	268	0.024	3.09	6.47	2.3	14.9	0	0	15
J-BS19	J-BS21	Steel	200	219	319	0.024	2.49	8.02	4.2	33.7	0	0	34
J-BS21	J-BS22	Steel	250	273	373	0.024	2.07	9.67	3	29.0	0	0	29
Part of Airport Loop													
AV-262	AV-263	HDPE	200	219	319	0.024	2.49	8.02	60	481	0	0	481
AV-263	J-84	HDPE	200	219	319	0.024	2.49	8.02	12.1	97	0	0	97
J-84	AV-264 HYD	HDPE	200	219	319	0.024	2.49	8.02	101.9	817	0	0	817
AV-264 HYD	J-83	HDPE	200	219	319	0.024	2.49	8.02	27.7	222	0	0	222
J-83	AV-3 HYD	HDPE	200	219	319	0.024	2.49	8.02	85.3	684	1	95	779
AV-3 HYD	AV-2 HYD	HDPE	200	219	319	0.024	2.49	8.02	98	786	0	0	786
AV-2 HYD	AV-1	HDPE	200	219	319	0.024	2.49	8.02	104	834	2	189	1,023
AV-1	J-106	HDPE	200	219	319	0.024	2.49	8.02	32.4	260	1	95	354
J-106	PT 53	HDPE	200	219	319	0.024	2.49	8.02	57.6	462	0	0	462
PT 53	J-82	HDPE	200	219	319	0.024	2.49	8.02	90.6	726	0	0	726
J-82	J-115	Copper	50	67	167	0.024	6.06	3.30	7.8	26	0	0	26
J-115	J-116	Copper	50	67	167	0.024	6.06	3.30	8.2	27	0	0	27
J-116	J-117	Copper	50	67	167	0.024	6.06	3.30	6.8	22	0	0	22
J-117	AV-262-1	HDPE	75	89	189	0.024	4.99	4.00	234	937	0	0	937
AV-3 HYD	AV-4 HYD	HDPE	200	219	319	0.024	2.49	8.02	128	1026	3	284	1,310
AV-4 HYD	J-2646	HDPE	200	219	319	0.024	2.49	8.02	82	658	5	473	1,130
J-2646	AV-5 HYD	HDPE	200	219	319	0.024	2.49	8.02	26	208	6	567	776
AV-4 HYD	PT B3	HDPE	150	168	268	0.024	3.10	6.46	87	562	8	756	1,318

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.024	4.231	4.727	20	95			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-4105	AV-5 HYD	HDPE	150	168	268	0.024	3.10	6.46	161	1040	10	945	1,985
PT B3	J-4105	HDPE	150	168	268	0.024	3.10	6.46	27	174	11	1,040	1,214
PT B3	PT C3	HDPE	150	168	268	0.024	3.10	6.46	7	45	13	1,229	1,274
PT C3	PT D3	HDPE	150	168	268	0.024	3.10	6.46	72	465	14	1,323	1,788
Part of Uivaq Loop													
PT I	PT J	HDPE	50	60	160	0.024	6.50	3.07	21	65	0	0	65
PT J	MH-16	HDPE	50	60	160	0.024	6.50	3.07	21.4	66	0	0	66
MH-16	MH-10	DICL	100	114	214	0.024	4.18	4.79	42	201	3	284	485
MH-10	MH-49	DICL	100	114	214	0.024	4.18	4.79	20	96	0	0	96
MH-49	MH-11	DICL	100	114	214	0.024	4.18	4.79	75	359	4	378	737
MH-11	MH-8	DICL	100	114	214	0.024	4.18	4.79	60	287	0	0	
AV-9A	MH-8	DICL	150	175	275	0.024	3.00	6.67	90	601	0	0	601
AV-401 HYD	J-159	HDPE	200	219	319	0.024	2.49	8.02	74.7	599	0	0	599
J-159	AV-402 HYD	HDPE	200	219	319	0.024	2.49	8.02	53.9	432	1	95	527
AV-402 HYD	J-192	HDPE	200	219	319	0.024	2.49	8.02	128.9	1034	0	0	1,034
J-192	AV-404 HYD	HDPE	200	219	319	0.024	2.49	8.02	0.1	1	3	284	284
AV-404 HYD	J-176	HDPE	200	219	319	0.024	2.49	8.02	0.5	4	0	0	4
J-176	J-67	HDPE	200	219	319	0.024	2.49	8.02	52.8	423	6	567	991
J-67	AV-405 HYD	HDPE	200	219	319	0.024	2.49	8.02	46.7	374	0	0	374
AV-405 HYD	AV-205-2	HDPE	200	219	319	0.024	2.49	8.02	101	810	3	284	1,093
AV-205	AV-205-2	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
Lower Base Phase I													
J-187	J-192	HDPE	200	219	319	0.024	2.49	8.02	13.7	110	0	0	110
AV-404 HYD	AV-404 PRV	HDPE	100	114	214	0.024	4.18	4.79	1	5	0	0	5
AV-404 PRV	J-187	HDPE	100	114	214	0.024	4.18	4.79	1	5	0	0	5
AV-404 HYD	J-177	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
J-176	J-177	Copper	19	27	127	0.024	10.27	1.95	3	6	0	0	6
J-411	J-177	HDPE	200	219	319	0.024	2.49	8.02	117	938	0	0	938
J-435	J-411	HDPE	200	219	319	0.024	2.49	8.02	101	810	0	0	810
AV-435	J-435	HDPE	200	219	319	0.024	2.49	8.02	1	8	7	662	670
AV-411 HYD	AV-435	HDPE	200	219	319	0.024	2.49	8.02	102	818	10	945	1,763
AV-411 HYD	AV-410 HYD	HDPE	200	219	319	0.024	2.49	8.02	70.5	565	0	0	565
Lower Base Phase II (Not in Service)													
AV-410 HYD	AV-440	HDPE	200	219	319	0.024	2.49	8.02	92.55	742	9	851	1,593
AV-440	AV-439	HDPE	200	219	319	0.024	2.49	8.02	68.2	547	2	189	736
AV-439	AV-438	HDPE	200	219	319	0.024	2.49	8.02	85	682	8	756	1,438
AV-438	AV-437	HDPE	200	219	319	0.024	2.49	8.02	79.4	637	7	662	1,298

City of Iqaluit Water and Sewer Study Annex 8e - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.024 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity		Heat Loss					
			Nominal	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.024	4.231	4.727	20	95			
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-183	AV-437	HDPE	200	219	319	0.024	2.49	8.02	72.6	582	3	284	866
AV-410 HYD	J-183	HDPE	200	219	319	0.024	2.49	8.02	102.5	822	3	284	1,105
AV-409 HYD	J-183	HDPE	200	219	319	0.024	2.49	8.02	1	8	0	0	8
AV-410 HYD	AV-409 HYD	HDPE	200	219	319	0.024	2.49	8.02	103.5	830	2	189	1,019
AV-408	AV-409 HYD	HDPE	200	219	319	0.024	2.49	8.02	124.5	998	9	851	1,849
AV-408	AV-407 HYD	HDPE	200	219	319	0.024	2.49	8.02	62.8	504	6	567	1,071
AV-407 HYD	J-172	HDPE	200	219	319	0.024	2.49	8.02	122.2	980	8	756	1,736
J-172	J-173	Copper	19	27	127	0.024	10.27	1.95	3	6	0	0	6
J-172	AV 207-PRV	HDPE	200	219	319	0.024	2.49	8.02	1.3	10	0	0	10
AV 207-PRV	AV-207 HYD	HDPE	200	219	319	0.024	2.49	8.02	1.7	14	0	0	14
To Bleeder at MH-55													
J-501	PT H	HDPE	150	168	268	0.024	3.10	6.46	168	1085	4	378	1,463
PT I	J-501	AC	50	60	160	0.024	6.50	3.07	18	55	0	0	55
J-501	MH-50	HDPE	150	168	268	0.024	3.10	6.46	8	52	0	0	52
MH-50	MH-51	HDPE	150	168	268	0.024	3.10	6.46	71	459	0	0	459
MH-51	MH-52	HDPE	150	168	268	0.024	3.10	6.46	30	194	0	0	194
MH-52	MH-53 HYD	HDPE	150	168	268	0.024	3.10	6.46	114	736	5	473	1,209
MH-53 HYD	MH-54	HDPE	150	168	268	0.024	3.10	6.46	102	659	2	189	848
MH-54	MH-55 (blee	HDPE	150	168	268	0.024	3.10	6.46	108	697	2	189	886
Subtotal													64,293
BUILDING 222													42,139
RE-HEAT STATION NO. 1													52,922
BOOSTER STATION													70,333
TRIGRAM BUILDING													39,038
TOTAL													268,724

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity							
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
	-	112	212	0.048	2.116	9.453	20	189					
		Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To		Nomina	Pipe	Outside	k	R	q	l	Q	No.	Q	Q
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)	SCs	(W)	(W)
BUILDING 222													
Pump-Main	J-135	Steel	50	60	160	0.048	3.25	6.15	1	6	0	0	6
J-135	J-136	Steel	50	60	160	0.048	3.25	6.15	6	37	0	0	37
J-136	J-139	Steel	150	168	268	0.048	1.55	12.92	1	13	0	0	13
Pump-Atco	J-138	Steel	50	60	160	0.048	3.25	6.15	6	37	2	378	415
J-138	J-139	Steel	50	60	160	0.048	3.25	6.15	1	6	0	0	6
J-139	MH-13	Steel	150	168	268	0.048	1.55	12.92	1	13	0	0	13
MH-13	MH-22	DICL	150	175	275	0.048	1.50	13.35	15	200	1	189	389
MH-22	MH-21	DICL	150	175	275	0.048	1.50	13.35	64	854	4	756	1,610
MH-21	MH-20	DICL	150	175	275	0.048	1.50	13.35	74	988	6	1,134	2,122
MH-20	PT C1	DICL	150	175	275	0.048	1.50	13.35	53	707	4	756	1,464
PT C1	MH-19 HYD	HDPE	150	168	268	0.048	1.55	12.92	9	116	0	0	116
MH-19 HYD	PT D1	HDPE	150	168	268	0.048	1.55	12.92	9	116	3	567	683
PT D1	MH-23B	DICL	150	175	275	0.048	1.50	13.35	43	574	0	0	574
MH-23B	AV-23A	DICL	150	175	275	0.048	1.50	13.35	37	494	2	378	872
AV-23A	MH-30	DICL	150	175	275	0.048	1.50	13.35	47	627	2	378	1,005
MH-30	MH-31	DICL	150	175	275	0.048	1.50	13.35	48	641	0	0	641
MH-31	MH-32	DICL	150	175	275	0.048	1.50	13.35	66	881	2	378	1,259
MH-32	MH-32A HYD	HDPE	150	168	268	0.048	1.55	12.92	57	736	4	756	1,492
MH-32A HYD	J-160	HDPE	150	168	268	0.048	1.55	12.92	37.3	482	4	756	1,238
J-160	MH-32B HYD	HDPE	150	168	268	0.048	1.55	12.92	56.7	732	3	567	1,299
MH-32B HYD	J-63-1 (bleed)	HDPE	150	168	268	0.048	1.55	12.92	133.3	1,722	4	756	2,478
J-63-1 (bleed)	MH-63 HYD	HDPE	150	168	268	0.048	1.55	12.92	11.7	151	0	0	151
MH-63 HYD	MH-65	HDPE	150	168	268	0.048	1.55	12.92	72	930	5	945	1,875
MH-65	MH-66	HDPE	150	168	268	0.048	1.55	12.92	48	620	4	756	1,376
MH-66	MH-39	HDPE	150	168	268	0.048	1.55	12.92	18	232	0	0	232
MH-39	MH-38	HDPE	150	169	269	0.048	1.54	12.98	60	779	2	378	1,157
MH-38	MH-37	HDPE	150	168	268	0.048	1.55	12.92	50	646	3	567	1,213
MH-37	MH-36	HDPE	150	168	268	0.048	1.55	12.92	76	982	5	945	1,927
MH-36	MH-35	HDPE	150	168	268	0.048	1.55	12.92	57	736	5	945	1,681
MH-35	MH-24A	HDPE	150	168	268	0.048	1.55	12.92	25	323	0	0	323
MH-63 HYD	MH-62	HDPE	150	168	268	0.048	1.55	12.92	60	775	2	378	1,153
MH-62	MH-61	HDPE	150	168	268	0.048	1.55	12.92	56	723	3	567	1,290
MH-61	MH-60	HDPE	150	168	268	0.048	1.55	12.92	100	1,292	8	1,512	2,804
MH-60	MH-59	HDPE	150	168	268	0.048	1.55	12.916	42	542.45	2	378	921

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity									
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)					
			-	112	212	0.048	2.116	9.453	20	189					
From		To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
MH-59	MH-48	HDPE	150	168	268	0.048	1.55	12.92	50	646	2	378	1,024		
MH-48	MH-47	HDPE	150	168	268	0.048	1.55	12.92	43	555	2	378	933		
MH-47	MH-46 HYD	HDPE	150	168	268	0.048	1.55	12.92	57	736	3	567	1,303		
MH-60	MH-58	HDPE	150	168	268	0.048	1.55	12.92	95	1,227	4	756	1,983		
MH-58	MH-46B	HDPE	150	168	268	0.048	1.55	12.92	39	504	2	378	882		
MH-46B	MH-46A	HDPE	150	168	268	0.048	1.55	12.92	75	969	2	378	1,347		
MH-46A	MH-46 HYD	HDPE	150	168	268	0.048	1.55	12.92	40	517	2	378	895		
MH-46 HYD	MH-45	HDPE	150	168	268	0.048	1.55	12.92	51	659	2	378	1,037		
MH-45	MH-43	HDPE	150	168	268	0.048	1.55	12.92	50	646	2	378	1,024		
MH-43	MH-42	HDPE	150	168	268	0.048	1.55	12.92	110	1,421	7	1,323	2,744		
MH-42	J-42	HDPE	150	168	268	0.048	1.55	12.92	1	13	0	0	13		
J-42	MH-41	HDPE	150	168	268	0.048	1.55	12.92	27	349	2	378	727		
MH-41	MH-40	HDPE	150	168	268	0.048	1.55	12.92	92.6	1,196	4	756	1,952		
MH-40	MH-40A	HDPE	150	168	268	0.048	1.55	12.92	91.5	1,182	2	378	1,560		
MH-40A	J-40	HDPE	150	168	268	0.048	1.55	12.92	95	1,227	0	0	1,227		
J-40	MH-24A	HDPE	150	168	268	0.048	1.55	12.92	62	801	2	378	1,179		
MH-24A	MH-24	DICL	150	175	275	0.048	1.50	13.35	15	200	0	0	200		
MH-24	PT F1	DICL	150	175	275	0.048	1.50	13.35	61	814	0	0	814		
PT F1	MH-25A HYD	HDPE	150	168	268	0.048	1.55	12.92	14	181	2	378	559		
MH-25A HYD	PT E1	HDPE	150	168	268	0.048	1.55	12.92	14	181	0	0	181		
PT E1	MH-26	DICL	150	175	275	0.048	1.50	13.35	104	1,388	6	1,134	2,522		
MH-26	MH-8	DICL	150	175	275	0.048	1.50	13.35	72	961	2	378	1,339		
MH-8	MH-7	DICL	150	175	275	0.048	1.50	13.35	89	1,188	9	1,702	2,889		
MH-7	PT A3	DICL	150	175	275	0.048	1.50	13.35	52	694	1	189	883		
PT A3	AV-400	HDPE	150	168	268	0.048	1.55	12.92	24.6	318	0	0	318		
AV-400	PT-K	HDPE	150	168	268	0.048	1.55	12.92	119.2	1,540	0	0	1,540		
PT K	PMP-PT-K-C	HDPE	50	60	160	0.048	3.25	6.15	12.1	74	0	0	74		
PMP-PT-K-C	AV-400	HDPE	50	60	160	0.048	3.25	6.15	104.2	641	0	0	641		
AV-400	AV-401 HYD	HDPE	200	219	319	0.048	1.25	16.04	107	1,716	0	0	1,716		
AV-400	PT-B3	HDPE	150	168	268	0.048	1.55	12.92	18	232	0	0	232		
PT-B3	MH-14	DICL	150	175	275	0.048	1.50	13.35	51	681	1	189	870		
MH-14	MH-15	DICL	150	175	275	0.048	1.50	13.35	53.4	713	3	567	1,280		
MH-15	J-129	DICL	150	175	275	0.048	1.50	13.35	15	200	3	567	767		
J-129	J-140	Steel	150	168	268	0.048	1.55	12.92	1	13	0	0	13		
J-140	J-126	HDPE	50	60	160	0.048	3.25	6.15	20	123.0	4	756	879		
J-126	J-125	HDPE	50	60	160	0.048	3.25	6.15	39.2	241.1	5	945	1,186		
J-125	J-124	HDPE	50	60	160	0.048	3.25	6.15	40	246	6	1,134	1,380		

City of Iqaluit Water and Sewer Study <u>Annex 8f - Heat Loss Calculations</u> Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity								
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.048	2.116	9.453	20	189				
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
J-124	MH-29	HDPE	50	60	160	0.048	3.25	6.15	10	61.5	7	1,323	1,385	
MH-29	J-122	HDPE	50	60	160	0.048	3.25	6.15	110	676	8	1,512	2,189	
J-122	J-120	HDPE	50	60	160	0.048	3.25	6.15	40	246.0	9	1,702	1,948	
J-120	J-137	HDPE	50	60	160	0.048	3.25	6.15	40	246.0	10	1,891	2,137	
J-137	Pump-Atco	Steel	50	60	160	0.048	3.25	6.15	1	6.1	11	2,080	2,086	
J-140	J-150	Steel	50	60	160	0.048	3.25	6.15	0.8	4.9	3	567	572	
J-150	J-134	Steel	50	60	160	0.048	3.25	6.15	0.8	4.9	0	0	5	
J-134	Pump-Main	Steel	50	60	160	0.048	3.25	6.15	1	6.1	0	0	6	
TOTAL													84,278	

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity							
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)			
			-	112	212	0.048	2.116	9.453	20	189			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
RE-HEAT STATION NO. 1													
ASTRO HILL													
PMP-Recirc	J-112	Copper	50	54	154	0.048	3.47	5.76	0.7	4	0	0	4
J-112	J-111	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3
J-111	J-3061	Copper	50	54	154	0.048	3.47	5.76	1.6	9	0	0	9
J-3061	J-3051	HDPE	250	273	373	0.048	1.03	19.33	41	792	0	0	792
J-3051	PT A	AC	250	273	373	0.048	1.03	19.33	68	1314	0	0	1,314
PT A	PT L	AC	250	273	373	0.048	1.03	19.33	69	1334	0	0	1,334
PT L	J-12	Copper	75	79	179	0.048	2.71	7.37	37.1	274	0	0	274
PT L	PT L-1	Copper	19	22	122	0.048	5.68	3.52	1	4	0	0	4
PT L-1	PT A-1	Copper	38	41	141	0.048	4.10	4.88	76.9	376	0	0	376
PT A	PT O	AC	250	273	373	0.048	1.03	19.33	192	3711	0	0	3,711
PT O	PT B	AC	250	273	373	0.048	1.03	19.33	35	676	0	0	676
PT B	PT D	AC	250	273	373	0.048	1.03	19.33	61	1179	0	0	1,179
From Pt-D to Re-Heat Station No. 1													
PT D	PT A-1	Copper	50	67	167	0.048	3.03	6.60	291	1922	0	0	1,922
PT A-1	J-3065	Copper	50	67	167	0.048	3.03	6.60	101	667	0	0	667
J-3065	PMP-Recirc	Copper	50	67	167	0.048	3.03	6.60	5.5	36	0	0	36
PT D	PT E	HDPE	250	273	373	0.048	1.03	19.33	35	676	1	189	865
PT E	PT F	HDPE	200	219	319	0.048	1.25	16.04	41	658	1	189	847
PT F	PT G	DICL	150	175	275	0.048	1.50	13.35	22	294	1	189	483
PT G	J-190	AC	150	168	268	0.048	1.55	12.92	80.7	1042	0	0	1,042
J-190	PT H	AC	150	168	268	0.048	1.55	12.92	8.3	107	2	378	485
PT H	PT H-2	AC	150	168	268	0.048	1.55	12.92	3	39	2	378	417
PT H-2	J-3	AC	150	168	268	0.048	1.55	12.92	73.8	953	2	378	1,331
J-3	AV-9A	HDPE	150	168	268	0.048	1.55	12.92	16.2	209	0	0	209
												Subtotal	17,980
HAPPY VALLEY													
PMP-Recirc	J-114	Copper	50	54	154	0.048	3.47	5.76	2.7	16	0	0	16
J-114	J-113	Copper	50	54	154	0.048	3.47	5.76	1	6	0	0	6
J-113	J-3063	Copper	50	54	154	0.048	3.47	5.76	5.4	31	0	0	31
J-3063	AV-306	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16
J-3063	MH-104	HDPE	200	219	319	0.048	1.25	16.04	27.4	439	0	0	439
MH-104	MH-103	HDPE	200	219	319	0.048	1.25	16.04	109.9	1762	1	189	1,952
MH-103	MH-95 HYD	HDPE	200	219	319	0.048	1.25	16.04	37.7	605	0	0	605
MH-95 HYD	MH-68	HDPE	200	219	319	0.048	1.25	16.037	12	192.44	0	0	192

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity								
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)				
			-	112	212	0.048	2.116	9.453	20	189				
From		To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
MH-68	MH-69	HDPE	200	219	319	0.048	1.25	16.04	100	1,604	2	378	1,982	
MH-69	MH-70 HYD	HDPE	200	219	319	0.048	1.25	16.04	78	1251	3	567	1,818	
MH-70 HYD	MH-71	HDPE	200	219	319	0.048	1.25	16.04	104	1668	5	945	2,613	
MH-71	MH-72 HYD	HDPE	200	219	319	0.048	1.25	16.04	90	1443	3	567	2,011	
MH-72 HYD	MH-100	HDPE	200	219	319	0.048	1.25	16.04	151	2422	0	0	2,422	
MH-100	MH-99	HDPE	200	219	319	0.048	1.25	16.04	91	1459	5	945	2,405	
MH-99	MH-98	HDPE	200	219	319	0.048	1.25	16.04	60	962	5	945	1,908	
MH-98	MH-97	HDPE	200	219	319	0.048	1.25	16.04	51	818	3	567	1,385	
MH-97	MH-96	HDPE	200	219	319	0.048	1.25	16.04	29	465	0	0	465	
MH-96	AV-216	HDPE	200	219	319	0.048	1.25	16.04	69	1107	3	567	1,674	
AV-216	AV-217 HYD	HDPE	200	219	319	0.048	1.25	16.04	48	770	4	756	1,526	
AV-217 HYD	AV-237	HDPE	200	219	319	0.048	1.25	16.04	42	674	3	567	1,241	
AV-237	AV-238 HYD	HDPE	200	219	319	0.048	1.25	16.04	88	1411	5	945	2,357	
AV-238 HYD	AV-227	HDPE	200	219	319	0.048	1.25	16.04	41	658	2	378	1,036	
AV-227	AV-228	HDPE	200	219	319	0.048	1.25	16.04	127	2037	11	2,080	4,116	
AV-228	AV-229 HYD	HDPE	200	219	319	0.048	1.25	16.04	87	1395	6	1,134	2,530	
AV-229 HYD	AV-230	HDPE	200	219	319	0.048	1.25	16.04	77	1235	4	756	1,991	
AV-230	AV-231	HDPE	200	219	319	0.048	1.25	16.04	34	545	3	567	1,112	
AV-231	AV-232 HYD	HDPE	200	219	319	0.048	1.25	16.04	100	1604	5	945	2,549	
AV-232 HYD	AV-233	HDPE	200	219	319	0.048	1.25	16.04	58	930	4	756	1,686	
AV-233	AV-234	HDPE	200	219	319	0.048	1.25	16.04	95	1524	5	945	2,469	
AV-234	AV-235 HYD	HDPE	150	168	268	0.048	1.55	12.92	105	1356	10	1,891	3,247	
AV-235 HYD	J-234-1	HDPE	50	60	160	0.048	3.25	6.15	112	689	0	0	689	
J-234-1	J-226-1	HDPE	75	89	189	0.048	2.50	8.01	70	561	0	0	561	
AV-234	AV-226	HDPE	200	219	319	0.048	1.25	16.04	67	1074	2	378	1,453	
AV-226	J-227-1	HDPE	150	168	268	0.048	1.55	12.92	126	1627	5	945	2,573	
J-227-1	J-226-1	HDPE	50	60	160	0.048	3.25	6.15	131	806	0	0	806	
AV-226	AV-225 HYD	HDPE	200	219	319	0.048	1.25	16.04	60	962	3	567	1,529	
J-226-1	J-225-2	HDPE	75	89	189	0.048	2.50	8.01	58	465	0	0	465	
AV-225 HYD	AV-239	HDPE	150	168	268	0.048	1.55	12.92	61	788	7	1,323	2,111	
AV-239	J-225-1	HDPE	50	60	160	0.048	3.25	6.15	65	400	0	0	400	
J-225-1	J-225-2	HDPE	50	60	160	0.048	3.25	6.15	0.5	3	0	0	3	
J-225-1	J-225-2	Copper	13	16	116	0.048	6.57	3.04	1	3	0	0	3	
AV-225 HYD	AV-224 HYD	HDPE	200	219	319	0.048	1.25	16.04	97	1556	3	567	2,123	
J-225-2	J-224-1	HDPE	75	89	189	0.048	2.50	8.01	98	785	0	0	785	
AV-224 HYD	AV-240	HDPE	150	168	268	0.048	1.55	12.92	41	530	6	1,134	1,664	
AV-240	J-224-1	HDPE	50	60	160	0.048	3.25	6.15	43	264	0	0	264	
J-224-1	AV-223-2	HDPE	75	89	189	0.048	2.50	8.01	78.2	626	0	0	626	
AV-224 HYD	AV-223-3	HDPE	200	219	319	0.048	1.25	16.04	71.2	1142	2	378	1,520	
AV-223-3	AV-223-2	Copper	13	16	116	0.048	6.57	3.04	2	6	0	0	6	

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity									
			Nomina	Inside	Outside	k	R	q	l	Q					
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
			-	112	212	0.048	2.116	9.453	20	189					
From	To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
			Nominal	Pipe	Outside	k	R	q	l	Q	No. SCs	Q (W)	Q (W)		
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
AV-223-2	PMP-AV223	Copper	75	79	179	0.048	2.71	7.37	1	7	0	0	7		
PMP-AV223	AV-223	Copper	75	79	179	0.048	2.71	7.37	0.7	5	0	0	5		
J-2231	AV-223 PR	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16		
AV-223 PRV	AV-223-3	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16		
AV-223	J-96-1	HDPE	75	89	189	0.048	2.50	8.01	104	833	0	0	833		
MH-96	J-96-1	HDPE	150	168	268	0.048	1.55	12.92	0.5	6	0	0	6		
J-96-1	MH-93	HDPE	150	168	268	0.048	1.55	12.92	18	232	1	189	422		
MH-93	MH-92	HDPE	150	168	268	0.048	1.55	12.92	82	1059	4	756	1,815		
MH-92	J-2231	HDPE	150	168	268	0.048	1.55	12.92	38	491	0	0	491		
J-2231	MH-91 HYD	HDPE	150	168	268	0.048	1.55	12.92	53	685	3	567	1,252		
MH-91 HYD	MH-89	HDPE	150	168	268	0.048	1.55	12.92	86	1111	6	1,134	2,245		
MH-89	MH-88	HDPE	150	168	268	0.048	1.55	12.92	107	1382	1	189	1,571		
MH-88	MH-87	HDPE	150	168	268	0.048	1.55	12.92	38	491	2	378	869		
MH-87	MH-86	HDPE	150	168	268	0.048	1.55	12.92	55	710	6	1,134	1,845		
MH-86	MH-85	HDPE	150	168	268	0.048	1.55	12.92	57	736	4	756	1,492		
MH-85	MH-73 (bleed)	HDPE	150	168	268	0.048	1.55	12.92	53	685	2	378	1,063		
MH-73 (bleed)	MH-74 HYD	HDPE	150	168	268	0.048	1.55	12.92	97	1253	5	945	2,198		
MH-74 HYD	MH-75	HDPE	150	168	268	0.048	1.55	12.92	98	1266	8	1,512	2,778		
MH-75	MH-90 HYD	HDPE	150	168	268	0.048	1.55	12.92	48	620	1	189	809		
MH-90 HYD	MH-76 (bleed)	HDPE	150	168	268	0.048	1.55	12.92	34	439	1	189	628		
MH-76 (bleed)	J-6901	HDPE	150	168	268	0.048	1.55	12.92	35	452	0	0	452		
J-6901	J-3066	Copper	50	54	154	0.048	3.47	5.76	285.2	1642	0	0	1,642		
J-3066	PMP-Recirc	Copper	50	54	154	0.048	3.47	5.76	5.5	32	0	0	32		
											Subtotal	87,864			
											TOTAL	105,844			

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity							
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.048	2.116	9.453	20	189			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
BOOSTER STATION													
PMP-BS-P10	J-BS30	Steel	75	89	189	0.048	2.50	8.01	1.5	12	0	0	12
PMP-BS-P10	J-BS30	Steel	75	89	189	0.048	2.50	8.01	1	8	0	0	8
J-BS30	J-BS22	Steel	75	89	189	0.048	2.50	8.01	3	24	0	0	24
J-BS22	J-BS27	Steel	250	273	373	0.048	1.03	19.33	10	193	0	0	193
J-BS27	J-BS26	Steel	250	273	373	0.048	1.03	19.33	2	39	0	0	39
J-BS26	J-BS2	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16
J-BS2	J-326-5	HDPE	200	219	319	0.048	1.25	16.04	20	321	0	0	321
J-326-5	J-326-2	HDPE	200	219	319	0.048	1.25	16.04	4	64	0	0	64
J-326-2	AV-327 HY	HDPE	200	219	319	0.048	1.25	16.04	174	2790	0	0	2,790
AV-327 HY	AV-328	HDPE	200	219	319	0.048	1.25	16.04	94	1507	0	0	1,507
AV-328	J-500-1	HDPE	200	219	319	0.048	1.25	16.04	40.8	654	0	0	654
J-500-1	AV-500	HDPE	200	219	319	0.048	1.25	16.04	10.7	172	0	0	172
1999 Subdivision													
AV-500	J-500-6	HDPE	250	273	373	0.048	1.03	19.33	0.5	10	0	0	10
J-500-5	J-500-6	HDPE	250	273	373	0.048	1.03	19.33	0.5	10	0	0	10
PMP-500-In	J-500-6	HDPE	75	89	189	0.048	2.50	8.01	0.5	4	0	0	4
J-500-5	PMP-500-O	HDPE	75	89	189	0.048	2.50	8.01	1	8	0	0	8
J-500-5	AV-501	HDPE	250	273	373	0.048	1.03	19.33	80	1546	0	0	1,546
AV-501	AV-502	HDPE	250	273	373	0.048	1.03	19.33	119.72	2314	0	0	2,314
AV-502	AV-503 HY	HDPE	250	273	373	0.048	1.03	19.33	96.8	1871	1	189	2,060
AV-503 HY	AV-504	HDPE	250	273	373	0.048	1.03	19.33	117.03	2262	4	756	3,018
AV-504	AV-505 HY	HDPE	250	273	373	0.048	1.03	19.33	61.8	1194	2	378	1,572
AV-505 HY	AV-506	HDPE	250	273	373	0.048	1.03	19.33	95.5	1846	5	945	2,791
AV-506	AV-507 HY	HDPE	250	273	373	0.048	1.03	19.33	123.74	2391	10	1,891	4,282
AV-507 HY	AV-508	HDPE	250	273	373	0.048	1.03	19.33	116.75	2256	9	1,702	3,958
AV-508	AV-509 HY	HDPE	250	273	373	0.048	1.03	19.33	119.9	2317	10	1,891	4,208
AV-509 HY	AV-510	HDPE	250	273	373	0.048	1.03	19.33	68.4	1322	6	1,134	2,456
AV-510	AV-511 HY	HDPE	250	273	373	0.048	1.03	19.33	109.7	2120	7	1,323	3,444
AV-511 HY	AV-512	HDPE	250	273	373	0.048	1.03	19.33	111.8	2161	9	1,702	3,862
AV-512	AV-513 HY	HDPE	250	273	373	0.048	1.03	19.33	96.42	1863	8	1,512	3,376
AV-513 HY	AV-514	HDPE	250	273	373	0.048	1.03	19.33	90.63	1752	6	1,134	2,886
AV-514	AV-505	HDPE	250	273	373	0.048	1.03	19.33	55.3	1069	2	378	1,447
AV-505	J-504-2	HDPE	250	273	373	0.048	1.03	19.33	61.8	1194	2	378	1,572
J-504-2	J-515	HDPE	250	273	373	0.048	1.03	19.33	76.9	1486	0	0	1,486
AV-515	J-515	HDPE	250	273	373	0.048	1.03	19.33	1	19	0	0	19
AV-515	AV-504 HY	HDPE	250	273	373	0.048	1.03	19.33	75.9	1,467	2	378	1,845
J-503	AV-504 HY	HDPE	250	273	373	0.048	1.03	19.33	117	2261	0	0	2261

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity									
			Nomina (mm)	Inside (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)					
			-	112	212	0.048	2.116	9.453	20	189					
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
J-500-3	J-503	HDPE	250	273	373	0.048	1.03	19.33	297.5	5,750	0	0	5,750		
J-500-3	J-500-1	HDPE	250	273	373	0.048	1.03	19.33	1	19	0	0	19		
J-500-3	J-500-4	HDPE	75	89	189	0.048	2.50	8.01	3	24	0	0	24		
AV-500	J-500-4	HDPE	200	219	319	0.048	1.25	16.04	11.8	189	0	0	189		
J-500-4	AV-329 HY	HDPE	200	219	319	0.048	1.25	16.04	39.7	637	0	0	637		
AV-329 HY	AV-330	HDPE	200	219	319	0.048	1.25	16.04	94	1507	6	1,134	2,642		
AV-330	AV-331 HY	HDPE	200	219	319	0.048	1.25	16.04	105	1684	4	756	2,440		
AV-331 HY	AV-332 HY	HDPE	200	219	319	0.048	1.25	16.04	104	1668	3	567	2,235		
AV-332 HY	J-331-1	HDPE	200	219	319	0.048	1.25	16.04	107	1716	0	0	1,716		
J-331-1	AV-333	HDPE	200	219	319	0.048	1.25	16.04	47	754	1	189	943		
AV-333	AV-334 HY	HDPE	200	219	319	0.048	1.25	16.04	81	1299	1	189	1,488		
AV-350 HY	AV-334 HY	HDPE	200	219	319	0.048	1.25	16.04	60.1	964	1	189	1,153		
AV-350 HY	AV-349	HDPE	200	219	319	0.048	1.25	16.04	74.9	1201	3	567	1,768		
AV-349	AV-348 HY	HDPE	200	219	319	0.048	1.25	16.04	77.1	1236	3	567	1,804		
AV-348 HY	AV-346 HY	HDPE	200	219	319	0.048	1.25	16.04	94.1	1509	1	189	1,698		
AV-346 HY	AV-347 HY	HDPE	200	219	319	0.048	1.25	16.04	88.2	1414	4	756	2,171		
AV-347 HY	J-346	HDPE	200	219	319	0.048	1.25	16.04	91	1459	0	0	1,459		
J-346	AV-345	HDPE	200	219	319	0.048	1.25	16.04	64.1	1028	1	189	1,217		
AV-345	AV-344	HDPE	200	219	319	0.048	1.25	16.04	82.1	1317	2	378	1,695		
AV-344	J-345	HDPE	200	219	319	0.048	1.25	16.04	92.5	1483	1	189	1,672		
J-345	AV-355	HDPE	200	219	319	0.048	1.25	16.04	98.7	1583	0	0	1,583		
J-353	AV-355	HDPE	200	219	319	0.048	1.25	16.04	80.76	1295	2	378	1,673		
AV-353 HY	AV-354	HDPE	200	219	319	0.048	1.25	16.04	59.36	952	2	378	1,330		
AV-354	J-353	HDPE	200	219	319	0.048	1.25	16.04	59.36	952	2	378	1,330		
AV-352	AV-353 HY	HDPE	200	219	319	0.048	1.25	16.04	62.78	1007	1	189	1,196		
AV-351A	AV-352	HDPE	200	219	319	0.048	1.25	16.04	67.2	1078	1	189	1,267		
AV-351	AV-351A	HDPE	200	219	319	0.048	1.25	16.04	30.54	490	0	0	490		
AV-351 HY	J-351-1	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16		
AV-351 HY	PT-N	HDPE	200	219	319	0.048	1.25	16.04	63.2	1014	0	0	1,014		
PT-N	PMP-N-In	HDPE	200	219	319	0.048	1.25	16.04	13.6	218	0	0	218		
PMP-N-Out	J-351-2	HDPE	200	219	319	0.048	1.25	16.04	49.6	795	0	0	795		
J-351-2	J-351-1	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16		
To New French School and New Arena															
AV-351 HY	AV-356	HDPE	200	219	319	0.048	1.25	16.04	87	1395	0	0	1,395		
AV-356	AV-357	HDPE	200	219	319	0.048	1.25	16.04	87	1395	1	189	1,584		
AV-357	AV-358	HDPE	200	219	319	0.048	1.25	16.04	87	1395	1	189	1,584		
AV-358	AV-351 HY	HDPE	200	219	319	0.048	1.25	16.04	260	4169.6	0	0	4,170		

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity									
			Nomina	Inside	Outside	k	R	q	l	Q					
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
			-	112	212	0.048	2.116	9.453	20	189					
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
To Shunt Subdivision															
AV-351 HYI	AV-343	HDPE	200	219	319	0.048	1.25	16.04	67.3	1079	1	189	1,268		
AV-342 HYI	AV-343	HDPE	200	219	319	0.048	1.25	16.04	58.04	931	2	378	1,309		
AV-341 HYI	AV-342 HY	HDPE	200	219	319	0.048	1.25	16.04	83.19	1334	3	567	1,901		
AV-340 HYI	AV-341 HY	HDPE	200	219	319	0.048	1.25	16.04	72.2	1158	5	945	2,103		
AV-339	AV-340 HY	HDPE	200	219	319	0.048	1.25	16.04	83.34	1337	2	378	1,715		
AV-334 HYI	AV-335	HDPE	200	219	319	0.048	1.25	16.04	98	1572	2	378	1,950		
AV-335	AV-338 HY	HDPE	200	219	319	0.048	1.25	16.04	67.4	1081	1	189	1,270		
AV-338 HYI	AV-337	HDPE	200	219	319	0.048	1.25	16.04	68	1091	2	378	1,469		
AV-337	AV-336 HY	HDPE	200	219	319	0.048	1.25	16.04	95	1524	1	189	1,713		
AV-336 HYI	J-337-1	HDPE	200	219	319	0.048	1.25	16.04	95	1524	2	378	1,902		
J-337-1	AV-339	HDPE	177						131						
AV-339	J-339	HDPE	200	219	319	0.048	1.25	16.04	1	16	2	378	394		
J-339	J-335-1	HDPE	200	219	319	0.048	1.25	16.04	130.5	2093	3	567	2,660		
J-335-1	J-334-1	HDPE	50	60	160	0.048	3.25	6.15	98	603	0	0	603		
J-326-3	J-334-1	HDPE	200	219	319	0.048	1.25	16.04	700	11226	0	0	11,226		
J-326-3	J-326-6	HDPE	200	219	319	0.048	1.25	16.04	4	64	0	0	64		
J-326-6	J-BS3	HDPE	200	219	319	0.048	1.25	16.04	20	321	0	0	321		
J-BS3	J-BS24	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16		
J-BS24	J-BS25	Steel	200	219	319	0.048	1.25	16.04	2	32	0	0	32		
J-BS25	J-BS28	Steel	100	114	214	0.048	2.09	9.58	10	96	0	0	96		
J-BS28	J-BS29	Steel	75	89	189	0.048	2.50	8.01	2	16	0	0	16		
J-BS29	PMP-BS-P1	Steel	100	114	214	0.048	2.09	9.58	1	10	0	0	10		
J-BS29	PMP-BS-P1	Steel	75	89	189	0.048	2.50	8.01	1.5	12	0	0	12		
TOTAL												140,665			

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A						
			Heat Loss, Q, per SC (Service Connection):														
			Insulated Pipe Diameters			Conductivity											
			Nomina	Inside	Outside	k	R	q	l	Q							
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)							
			-	112	212	0.048	2.116	9.453	20	189							
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total				
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)				
TRIGRAM BUILDING																	
Trigram-P1-C	J-29	Copper	50	54	154	0.048	3.47	5.76	0.3	2	0	0	2				
J-29	J-25	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3				
J-23	Trigram-P2-	Copper	50	54	154	0.048	3.47	5.76	0.3	2	0	0	2				
J-25	J-23	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3				
J-25	J-27	Copper	50	54	154	0.048	3.47	5.76	0.3	2	0	0	2				
J-27	J-1	Copper	50	54	154	0.048	3.47	5.76	3	17	0	0	17				
J-1	J-28	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3				
J-27	J-2	Copper	50	54	154	0.048	3.47	5.76	3	17	0	0	17				
J-2	J-28	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3				
J-28	J-33	Copper	50	54	154	0.048	3.47	5.76	4	23	0	0	23				
J-33	J-8202	Copper	50	54	154	0.048	3.47	5.76	2	12	0	0	12				
J-8202	AV-200 (ble	HDPE	100	114	214	0.048	2.09	9.58	43	412	0	0	412				
AV-200 (blee	J-44	HDPE	200	219	319	0.048	1.25	16.04	74.7	1198	3	567	1,765				
J-44	AV-201 HY	HDPE	200	219	319	0.048	1.25	16.04	9.3	149	0	0	149				
AV-201 HYI	J-56	HDPE	200	219	319	0.048	1.25	16.04	94.8	1520	2	378	1,898				
J-56	AV-202 HY	HDPE	200	219	319	0.048	1.25	16.04	30.2	484	0	0	484				
AV-202 HYI	AV-203	HDPE	200	219	319	0.048	1.25	16.04	58	930	1	189	1,119				
AV-203	J-105	HDPE	200	219	319	0.048	1.25	16.04	33.2	532	1	189	721				
J-105	AV-204 HY	HDPE	200	219	319	0.048	1.25	16.04	40.8	654	0	0	654				
AV-204 HYI	J-57	HDPE	200	219	319	0.048	1.25	16.04	24.1	386	1	189	576				
J-57	AV-205	HDPE	200	219	319	0.048	1.25	16.04	54.9	880	0	0	880				
AV-201 HYI	J-94	HDPE	250	273	373	0.048	1.03	19.33	68.6	1326	2	378	1,704				
J-94	AV-414 HY	HDPE	250	273	373	0.048	1.03	19.33	31.4	607	0	0	607				
AV-414 HYI	AV-415	HDPE	200	219	319	0.048	1.25	16.04	45	722	0	0	722				
AV-414 HYI	J-175	HDPE	150	168	268	0.048	1.55	12.92	0.4	5	0	0	5				
AV-415	J-175	HDPE	200	219	319	0.048	1.25	16.04	45	722	0	0	722				
J-175	AV-413	HDPE	150	168	268	0.048	1.55	12.92	89.6	1157	2	378	1,535				
AV-413	J-64	HDPE	150	168	268	0.048	1.55	12.92	14.8	191	1	189	380				
J-64	AV-205-1	HDPE	150	168	268	0.048	1.55	12.92	67.2	868	0	0	868				
AV-205-1	AV-205	HDPE	150	168	268	0.048	1.55	12.92	2	26	0	0	26				
AV-205	J-108	HDPE	200	219	319	0.048	1.25	16.04	41.9	672	0	0	672				

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity									
			Nomina	Inside	Outside	k	R	q	l	Q					
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
			-	112	212	0.048	2.116	9.453	20	189					
From		To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain		Heat Loss-SC		Total		
			Nominal	Pipe	Outside	k	R	q	l	Q	No.	Q	Q		
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)	SCs	(W)	(W)		
J-108	AV-206 HY	HDPE	200	219	319	0.048	1.25	16.04	82.1	1317	2	378	1,695		
AV-206 HY	J-109	HDPE	200	219	319	0.048	1.25	16.04	10.8	173	0	0	173		
J-109	J-110	HDPE	200	219	319	0.048	1.25	16.04	27.4	439	0	0	439		
J-110	AV-207 HY	HDPE	200	219	319	0.048	1.25	16.04	55.8	895	5	945	1,840		
AV-207 HY	J-72	HDPE	200	219	319	0.048	1.25	16.04	14.8	237	0	0	237		
J-72	J-107	HDPE	200	219	319	0.048	1.25	16.04	61.8	991	0	0	991		
J-107	AV-208 HY	HDPE	200	219	319	0.048	1.25	16.04	17.4	279	2	378	657		
AV-208 HY	AV-209	HDPE	150	168	268	0.048	1.55	12.92	65	840	0	0	840		
AV-209	J-80	HDPE	150	168	268	0.048	1.55	12.92	20.3	262	0	0	262		
J-80	AV-210 HY	HDPE	150	168	268	0.048	1.55	12.92	57.7	745	3	567	1,312		
AV-210 HY	J-189	HDPE	50	60	160	0.048	3.25	6.15	139.9	860	2	378	1,238		
J-189	FCV-AV208	HDPE	50	60	160	0.048	3.25	6.15	0.1	1	0	0	1		
FCV-AV208	J-2081	HDPE	50	60	160	0.048	3.25	6.15	1	6	0	0	6		
AV-208 HY	J-77	HDPE	200	219	319	0.048	1.25	16.04	43	690	0	0	690		
J-77	AV-212	HDPE	200	219	319	0.048	1.25	16.04	38	609	1	189	798		
AV-212	J-78	HDPE	200	219	319	0.048	1.25	16.04	38.6	619	0	0	619		
J-78	AV-213 HY	HDPE	200	219	319	0.048	1.25	16.04	54.4	872	2	378	1,251		
AV-213 HY	J-79	HDPE	200	219	319	0.048	1.25	16.04	44.7	717	0	0	717		
J-79	AV-214 HY	HDPE	200	219	319	0.048	1.25	16.04	71.3	1143	3	567	1,711		
AV-214 HY	AV-215 HY	HDPE	200	219	319	0.048	1.25	16.04	113	1812	0	0	1,812		
AV-215 HY	AV-255	HDPE	200	219	319	0.048	1.25	16.04	55	882	3	567	1,449		
AV-255	J-81	HDPE	200	219	319	0.048	1.25	16.04	35.6	571	0	0	571		
J-81	AV-256 HY	HDPE	200	219	319	0.048	1.25	16.04	55.4	888	3	567	1,456		
AV-256 HY	AV-257	HDPE	200	219	319	0.048	1.25	16.04	99	1588	1	189	1,777		
AV-257	AV-258 HY	HDPE	200	219	319	0.048	1.25	16.04	89	1427	0	0	1,427		
AV-258 HY	AV-259	HDPE	200	219	319	0.048	1.25	16.04	92.6	1485	0	0	1,485		
AV-259	AV-260	HDPE	200	219	319	0.048	1.25	16.04	71	1139	0	0	1,139		
AV-260	J-261	HDPE	200	219	319	0.048	1.25	16.04	93	1491	1	189	1,681		
J-261	AV-262	HDPE	200	219	319	0.048	1.25	16.04	29	465	0	0	465		
AV-262-1	AV-259-1	HDPE	75	89	189	0.048	2.50	8.01	194	1554	0	0	1,554		
AV-259-1	AV-257-1	HDPE	75	89	189	0.048	2.50	8.01	186	1490	0	0	1,490		
AV-257-1	J-188	HDPE	50	60	160	0.048	3.25	6.15	644.9	3966	0	0	3,966		
J-188	FCV-AV208	HDPE	50	60	160	0.048	3.25	6.15	0.1	1	0	0	1		
FCV-AV208	J-2081	HDPE	50	60	160	0.048	3.25	6.15	1	6	0	0	6		
J-2081	J-169	HDPE	75	89	189	0.048	2.50	8.01	100	801	0	0	801		
J-169	J-171	HDPE	75	89	189	0.048	2.50	8.01	3	24	0	0	24		
J-171	J-173	HDPE	75	89	189	0.048	2.50	8.01	1	8	0	0	8		

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity								
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.048	2.116	9.453	20	189				
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total	
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)	
J-173	AV-205-3	HDPE	75	89	189	0.048	2.50	8.01	210	1682	0	0	1,682	
AV-205-3	J-8201	HDPE	75	89	189	0.048	2.50	8.01	465	3724	0	0	3,724	
J-8201	J-17	Copper	50	54	154	0.048	3.47	5.76	2	12	0	0	12	
J-17	J-18	Copper	50	54	154	0.048	3.47	5.76	4	23	0	0	23	
J-18	J-19	Copper	50	54	154	0.048	3.47	5.76	0.3	2	0	0	2	
J-19	Trigram-P1	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3	
Trigram-P2-I	J-19	Copper	50	54	154	0.048	3.47	5.76	0.5	3	0	0	3	
AV-305	J-6	HDPE	250	273	373	0.048	1.03	19.33	59.3	1146	0	0	1,146	
J-6	AV-304 HY	HDPE	250	273	373	0.048	1.03	19.33	12.7	245	0	0	245	
AV-304 HY	AV-303 HY	HDPE	250	273	373	0.048	1.03	19.33	84	1623	0	0	1,623	
AV-303 HY	AV-301	HDPE	250	273	373	0.048	1.03	19.33	93	1797	0	0	1,797	
AV-301	AV-301-1	HDPE	250	273	373	0.048	1.03	19.33	1	19	0	0	19	
AV-301	AV-302 HY	HDPE	200	219	319	0.048	1.25	16.04	32	513	0	0	513	
AV-302 HY	J-3021	HDPE	150	168	268	0.048	1.55	12.92	34	439	0	0	439	
J-3021	J-145	HDPE	150	168	268	0.048	1.55	12.92	1	13	0	0	13	
J-145	J-144	HDPE	50	60	160	0.048	3.25	6.15	24	148	0	0	148	
AV-302 HY	AV-303B	HDPE	200	219	319	0.048	1.25	16.04	49.2	789	2	378	1,167	
AV-303B	AV-304B	HDPE	200	219	319	0.048	1.25	16.04	109.1	1750	3	567	2,317	
AV-304B	J-147	HDPE	50	60	160	0.048	3.25	6.15	1	6	4	756	762	
J-147	J-146	HDPE	50	60	160	0.048	3.25	6.15	109	670	5	945	1,616	
J-146	J-144	HDPE	50	60	160	0.048	3.25	6.15	49.2	303	6	1,134	1,437	
J-144	AV-301-1	HDPE	50	60	160	0.048	3.25	6.15	32	197	6	1,134	1,331	
AV-301-1	AV-300 HY	HDPE	200	219	319	0.048	1.25	16.04	84	1347	0	0	1,347	
AV-300 HY	J-13	HDPE	250	273	373	0.048	1.03	19.33	83.4	1612	0	0	1,612	
J-13	J-34	HDPE	250	273	373	0.048	1.03	19.33	91.3	1764	0	0	1,764	
J-34	AV-406	HDPE	250	273	373	0.048	1.03	19.33	28.3	547	0	0	547	
AV-406	AV-200 (ble	HDPE	200	219	319	0.048	1.25	16.04	13	208	0	0	208	
TOTAL													78,076	

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity							
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.048	2.116	9.453	20	189			
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
MAIN DISTRIBUTION													
Main Res	J-RES-1	PVC	300	335	435	0.048	0.87	23.09	1.8	41.6	0	0	42
J-RES-1	J-RES-2	PVC	300	335	435	0.048	0.87	23.09	18	415.6	0	0	416
J-RES-2	J-RES-3	PVC	300	335	435	0.048	0.87	23.09	6.3	145.5	0	0	145
J-RES-3	J-RES-5	PVC	300	335	435	0.048	0.87	23.09	4	92.4	0	0	92
J-RES-5	J-RES-7	PVC	300	335	435	0.048	0.87	23.09	2.2	50.8	0	0	51
J-RES-7	J-5	HDPE	250	273	373	0.048	1.03	19.33	2.5	48.3	0	0	48
J-5	J-3071	HDPE	250	273	373	0.048	1.03	19.33	318.5	6155	0	0	6,155
J-3071	J-3072	HDPE	100	114	214	0.048	2.09	9.58	14	134.1	0	0	134
AV-307	J-3072	HDPE	100	114	214	0.048	2.09	9.58	14	134.1	1	189	323
J-3071	AV-307	HDPE	250	273	373	0.048	1.03	19.33	1	19.3	0	0	19
AV-307	AV-306	HDPE	250	273	373	0.048	1.03	19.33	73	1411	2	378	1,789
J-RES-5	J-RES-6	PVC	300	335	435	0.048	0.87	23.09	3.1	72	0	0	72
J-RES-6	AV-306	HDPE	250	273	373	0.048	1.03	19.33	396	7653	0	0	7,653
AV-306	AV-305	HDPE	250	273	373	0.048	1.03	19.33	43	831	0	0	831
AV-306	J-3061	HDPE	250	273	373	0.048	1.03	19.33	1	19	0	0	19
AV-306	TAC-1	HDPE	250	273	373	0.048	1.03	19.33	113	2184	1	189	2,373
TAC-1	TAC-2	HDPE	250	273	373	0.048	1.03	19.33	89	1720	2	378	2,098
TAC-2	TAC-3	HDPE	250	273	373	0.048	1.03	19.33	98.4	1902	8	1,512	3,414
TAC-3	TAC-4	HDPE	250	273	373	0.048	1.03	19.33	107.2	2072	5	945	3,017
TAC-4	AV-326	HDPE	250	273	373	0.048	1.03	19.33	99.4	1921	7	1,323	3,244
AV-326	J-326-4	HDPE	250	273	373	0.048	1.03	19.33	4	77	0	0	77
J-326-4	J-BS1	HDPE	250	273	373	0.048	1.03	19.33	20	387	0	0	387
J-BS5	J-BS1	HDPE	250	273	373	0.048	1.03	19.33	1	19	0	0	19
J-BS5	J-BS6	Steel	250	273	373	0.048	1.03	19.33	3.7	72	0	0	72
J-BS6	J-BS23	Steel	200	219	319	0.048	1.25	16.04	21	337	0	0	337
J-BS23	J-BS4	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16
J-BS4	J-326-7	HDPE	200	219	319	0.048	1.25	16.04	20	321	0	0	321
J-326-7	MH-72 HYI	HDPE	200	219	319	0.048	1.25	16.04	20	321	0	0	321
J-BS6	J-BS7	Steel	250	273	373	0.048	1.03	19.33	2.5	48.3	0	0	48
J-BS7	J-BS9	Steel	75	89	188.9	0.048	2.50	8.00	1.5	12.0	0	0	12
J-BS9	PMP-BS-P10	Steel	75	89	188.9	0.048	2.50	8.00	1	8.0	0	0	8
PMP-BS-P10	J-BS10	Steel	75	89	189	0.048	2.50	8.01	1	8	0	0	8

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A		
			Heat Loss, Q, per SC (Service Connection):										
			Insulated Pipe Diameters			Conductivity							
			Nomina	Inside	Outside	k	R	q	l	Q			
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)			
			-	112	212	0.048	2.116	9.453	20	189			
		Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
From	To		Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)
J-BS10	J-BS8	Steel	75	89	189	0.048	2.50	8.01	3	24	0	0	24
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.048	2.50	8.00	2	16.0	0	0	16
PMP-BS-P10	J-BS11	Steel	75	89	188.9	0.048	2.50	8.00	1	8.0	0	0	8
J-BS8	J-BS11	Steel	75	89	188.9	0.048	2.50	8.00	5	40.0	0	0	40
PMP-BS-P10	J-BS9	Steel	75	89	188.9	0.048	2.50	8.00	1	8.0	0	0	8
J-BS12	PMP-BS-P1	Steel	75	89	188.9	0.048	2.50	8.00	1	8.0	0	0	8
J-BS14	J-BS12	Steel	75	89	188.9	0.048	2.50	8.00	5	40.0	0	0	40
J-BS8	J-BS13	Steel	75	89	189	0.048	2.50	8.01	2	16.0	0	0	16
J-BS13	J-BS14	Steel	150	168	268	0.048	1.55	12.92	1.5	19.4	0	0	19
J-BS14	J-BS15	Steel	150	168	268	0.048	1.55	12.93	3.5	45.3	0	0	45
J-BS15	J-BS18	Steel	150	168	268	0.048	1.55	12.93	1.5	19.4	0	0	19
J-BS18	J-BS19	Steel	150	168	268	0.048	1.55	12.93	2.3	29.7	0	0	30
J-BS19	J-BS21	Steel	200	219	319	0.048	1.25	16.04	4.2	67.4	0	0	67
J-BS21	J-BS22	Steel	250	273	373	0.048	1.03	19.33	3	58.0	0	0	58
Part of Airport Loop													
AV-262	AV-263	HDPE	200	219	319	0.048	1.25	16.04	60	962	0	0	962
AV-263	J-84	HDPE	200	219	319	0.048	1.25	16.04	12.1	194	0	0	194
J-84	AV-264 HYD	HDPE	200	219	319	0.048	1.25	16.04	101.9	1634	0	0	1,634
AV-264 HYD	J-83	HDPE	200	219	319	0.048	1.25	16.04	27.7	444	0	0	444
J-83	AV-3 HYD	HDPE	200	219	319	0.048	1.25	16.04	85.3	1368	1	189	1,557
AV-3 HYD	AV-2 HYD	HDPE	200	219	319	0.048	1.25	16.04	98	1572	0	0	1,572
AV-2 HYD	AV-1	HDPE	200	219	319	0.048	1.25	16.04	104	1668	2	378	2,046
AV-1	J-106	HDPE	200	219	319	0.048	1.25	16.04	32.4	520	1	189	709
J-106	PT 53	HDPE	200	219	319	0.048	1.25	16.04	57.6	924	0	0	924
PT 53	J-82	HDPE	200	219	319	0.048	1.25	16.04	90.6	1453	0	0	1,453
J-82	J-115	Copper	50	67	167	0.048	3.03	6.60	7.8	52	0	0	52
J-115	J-116	Copper	50	67	167	0.048	3.03	6.60	8.2	54	0	0	54
J-116	J-117	Copper	50	67	167	0.048	3.03	6.60	6.8	45	0	0	45
J-117	AV-262-1	HDPE	75	89	189	0.048	2.50	8.01	234	1874	0	0	1,874
AV-3 HYD	AV-4 HYD	HDPE	200	219	319	0.048	1.25	16.04	128	2053	3	567	2,620
AV-4 HYD	J-2646	HDPE	200	219	319	0.048	1.25	16.04	82	1315	5	945	2,260
J-2646	AV-5 HYD	HDPE	200	219	319	0.048	1.25	16.04	26	417	6	1,134	1,551
AV-4 HYD	PT B3	HDPE	150	168	268	0.048	1.55	12.92	87	1124	8	1,512	2,636

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A			
			Heat Loss, Q, per SC (Service Connection):											
			Insulated Pipe Diameters			Conductivity								
			Nomina	Inside	Outside	k	R	q	l	Q				
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)				
			-	112	212	0.048	2.116	9.453	20	189				
From		To	Material	Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total
			Nomina	Pipe	Outside	k	R	q	l	Q	No.	Q	Q	
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)	SCs	(W)	(W)	
J-4105	AV-5 HYD	HDPE	150	168	268	0.048	1.55	12.92	161	2079	10	1,891	3,970	
PT B3	J-4105	HDPE	150	168	268	0.048	1.55	12.92	27	349	11	2,080	2,428	
PT B3	PT C3	HDPE	150	168	268	0.048	1.55	12.92	7	90	13	2,458	2,548	
PT C3	PT D3	HDPE	150	168	268	0.048	1.55	12.92	72	930	14	2,647	3,577	
Part of Uivaq Loop														
PT I	PT J	HDPE	50	60	160	0.048	3.25	6.15	21	129	0	0	129	
PT J	MH-16	HDPE	50	60	160	0.048	3.25	6.15	21.4	132	0	0	132	
MH-16	MH-10	DICL	100	114	214	0.048	2.09	9.58	42	402	3	567	969	
MH-10	MH-49	DICL	100	114	214	0.048	2.09	9.58	20	192	0	0	192	
MH-49	MH-11	DICL	100	114	214	0.048	2.09	9.58	75	718	4	756	1,475	
MH-11	MH-8	DICL	100	114	214	0.048	2.09	9.58	60	575	0	0		
AV-9A	MH-8	DICL	150	175	275	0.048	1.50	13.35	90	1201	0	0	1,201	
AV-401 HYD	J-159	HDPE	200	219	319	0.048	1.25	16.04	74.7	1198	0	0	1,198	
J-159	AV-402 HY	HDPE	200	219	319	0.048	1.25	16.04	53.9	864	1	189	1,053	
AV-402 HYD	J-192	HDPE	200	219	319	0.048	1.25	16.04	128.9	2067	0	0	2,067	
J-192	AV-404 HY	HDPE	200	219	319	0.048	1.25	16.04	0.1	2	3	567	569	
AV-404 HYD	J-176	HDPE	200	219	319	0.048	1.25	16.04	0.5	8	0	0	8	
J-176	J-67	HDPE	200	219	319	0.048	1.25	16.04	52.8	847	6	1,134	1,981	
J-67	AV-405 HY	HDPE	200	219	319	0.048	1.25	16.04	46.7	749	0	0	749	
AV-405 HYD	AV-205-2	HDPE	200	219	319	0.048	1.25	16.04	101	1620	3	567	2,187	
AV-205	AV-205-2	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16	
Lower Base Phase I														
J-187	J-192	HDPE	200	219	319	0.048	1.25	16.04	13.7	220	0	0	220	
AV-404 HYD	AV-404 PRV	HDPE	100	114	214	0.048	2.09	9.58	1	10	0	0	10	
AV-404 PRV	J-187	HDPE	100	114	214	0.048	2.09	9.58	1	10	0	0	10	
AV-404 HYD	J-177	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16	
J-176	J-177	Copper	19	27	127	0.048	5.13	3.90	3	12	0	0	12	
J-411	J-177	HDPE	200	219	319	0.048	1.25	16.04	117	1876	0	0	1,876	
J-435	J-411	HDPE	200	219	319	0.048	1.25	16.04	101	1620	0	0	1,620	
AV-435	J-435	HDPE	200	219	319	0.048	1.25	16.04	1	16	7	1,323	1,339	
AV-411 HYD	AV-435	HDPE	200	219	319	0.048	1.25	16.04	102	1636	10	1,891	3,526	
AV-411 HYD	AV-410 HY	HDPE	200	219	319	0.048	1.25	16.04	70.5	1131	0	0	1,131	
Lower Base Phase II (Not in Service)														
AV-410 HYD	AV-440	HDPE	200	219	319	0.048	1.25	16.04	92.55	1484	9	1,702	3,186	
AV-440	AV-439	HDPE	200	219	319	0.048	1.25	16.04	68.2	1094	2	378	1,472	
AV-439	AV-438	HDPE	200	219	319	0.048	1.25	16.04	85	1363	8	1,512	2,876	
AV-438	AV-437	HDPE	200	219	319	0.048	1.25	16.04	79.4	1273	7	1,323	2,597	

City of Iqaluit Water and Sewer Study Annex 8f - Heat Loss Calculations Ambient Temperature = -15 C Conductivity = 0.048 W/m.C			Ta -15 C Tw 5 C								 Trow MP14882A				
			Heat Loss, Q, per SC (Service Connection):												
			Insulated Pipe Diameters			Conductivity									
			Nomina	Inside	Outside	k	R	q	l	Q					
			(mm)	(mm)	(mm)	(W/m.C)	(m.C/W)	(W/m)	(m)	(W)					
			-	112	212	0.048	2.116	9.453	20	189					
			Insulated Pipe Diameter			Conductivity		Heat Loss-Watermain			Heat Loss-SC		Total		
From	To	Material	Nominal (mm)	Pipe (mm)	Outside (mm)	k (W/m.C)	R (m.C/W)	q (W/m)	l (m)	Q (W)	No. SCs	Q (W)	Q (W)		
J-183	AV-437	HDPE	200	219	319	0.048	1.25	16.04	72.6	1164	3	567	1,731		
AV-410 HYD	J-183	HDPE	200	219	319	0.048	1.25	16.04	102.5	1644	3	567	2,211		
AV-409 HYD	J-183	HDPE	200	219	319	0.048	1.25	16.04	1	16	0	0	16		
AV-410 HYD	AV-409 HY	HDPE	200	219	319	0.048	1.25	16.04	103.5	1660	2	378	2,038		
AV-408	AV-409 HY	HDPE	200	219	319	0.048	1.25	16.04	124.5	1997	9	1,702	3,698		
AV-408	AV-407 HY	HDPE	200	219	319	0.048	1.25	16.04	62.8	1007	6	1,134	2,141		
AV-407 HYD	J-172	HDPE	200	219	319	0.048	1.25	16.04	122.2	1960	8	1,512	3,472		
J-172	J-173	Copper	19	27	127	0.048	5.13	3.90	3	12	0	0	12		
J-172	AV 207-PRV	HDPE	200	219	319	0.048	1.25	16.04	1.3	21	0	0	21		
AV 207-PRV	AV-207 HY	HDPE	200	219	319	0.048	1.25	16.04	1.7	27	0	0	27		
To Bleeder at MH-55															
J-501	PT H	HDPE	150	168	268	0.048	1.55	12.92	168	2170	4	756	2,926		
PT I	J-501	AC	50	60	160	0.048	3.25	6.15	18	111	0	0	111		
J-501	MH-50	HDPE	150	168	268	0.048	1.55	12.92	8	103	0	0	103		
MH-50	MH-51	HDPE	150	168	268	0.048	1.55	12.92	71	917	0	0	917		
MH-51	MH-52	HDPE	150	168	268	0.048	1.55	12.92	30	387	0	0	387		
MH-52	MH-53 HYD	HDPE	150	168	268	0.048	1.55	12.92	114	1472	5	945	2,418		
MH-53 HYD	MH-54	HDPE	150	168	268	0.048	1.55	12.92	102	1317	2	378	1,696		
MH-54	MH-55 (bleed	HDPE	150	168	268	0.048	1.55	12.92	108	1395	2	378	1,773		
Subtotal												128,586			
BUILDING 222												84,278			
RE-HEAT STATION NO. 1												105,844			
BOOSTER STATION												140,665			
TRIGRAM BUILDING												78,076			
TOTAL												537,449			