

Kyle Canyon Gateway Unit 2

Technical Drainage Study Update Supplement

City of Las Vegas, NV

Prepared For:

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Project Number: PAR2004.002
Date: January 2023

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Proposed Condition WSPG Summary

MAIN-PRO-1

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q ₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check ¹
1000.00	60" RCP	2864.18	252.30	2868.07	15.39	2869.18	Outlet into DE2, FG set to soffit	OK
1019.30	60" RCP	2864.30	252.30	2868.10	15.76	2872.23	SDMH #7	OK
1020.10	60" RCP	2864.34	252.30	2868.17	15.63	2872.23		OK
1020.90	60" RCP	2864.38	252.30	2868.24	15.50	2872.23		OK
1021.70	60" RCP	2864.42	252.30	2868.32	15.36	2872.23		OK
1022.50	60" RCP	2864.46	252.30	2868.40	15.21	2872.23		OK
1023.30	60" RCP	2864.50	252.30	2868.48	15.04	2872.23		OK
1033.04	60" RCP	2864.61	252.30	2868.61	14.97	2873.26		DI2
1036.04	60" RCP	2864.68	252.30	2868.75	14.73	2873.26	OK	
1039.04	60" RCP	2864.74	252.30	2868.88	14.51	2873.26	OK	
1039.71	60" RCP	2864.81	252.20	2869.25	13.69	2873.26	OK	
1299.83	60" RCP	2866.86	252.20	2870.82	15.12	2877.06	SDMH #6	OK
1300.83	60" RCP	2866.91	252.20	2870.93	14.91	2877.06		OK
1301.83	60" RCP	2866.96	252.20	2871.05	14.66	2877.06		OK
1302.83	60" RCP	2867.01	252.20	2871.20	14.36	2877.06		OK
1303.83	60" RCP	2867.06	252.20	2871.50	13.69	2877.06		OK
1355.48	54" RCP	2867.39	252.20	2872.49	15.86	2877.82	SDMH #5	OK
1356.81	54" RCP	2867.46	252.20	2872.64	15.86	2877.82		OK
1358.15	54" RCP	2867.52	252.20	2872.85	15.86	2877.82		OK
1359.48	54" RCP	2867.59	252.20	2873.07	15.86	2877.82		OK
1454.21	54" RCP	2868.68	252.20	2874.62	15.86	2878.27	SDMH #4 Junction to Facility 5B	OK
1454.21	54" RCP	2868.68	251.20	2874.69	15.79	2878.27		OK
1455.01	54" RCP	2868.72	251.20	2874.72	15.79	2878.27		OK
1455.81	54" RCP	2868.76	251.20	2874.93	15.79	2878.27		OK
1456.61	54" RCP	2868.80	251.20	2875.13	15.79	2878.27		OK
1457.41	54" RCP	2868.84	251.20	2875.34	15.79	2878.27		OK
1458.21	54" RCP	2868.88	251.20	2875.54	15.79	2878.27		OK
1504.26	54" RCP	2869.18	251.20	2876.49	15.79	2879.31	SDMH #12	OK
1506.26	54" RCP	2869.28	251.20	2876.68	15.79	2879.31		OK
1508.26	54" RCP	2869.38	251.20	2876.90	15.79	2879.31		OK
1533.63	54" RCP	2869.55	251.20	2877.31	15.79	2880.00	SDMH #3 Junction to DI1 Lateral	OK
1538.63	54" RCP	2869.75	251.10	2877.40	15.79	2880.00		OK
1782.30	54" RCP	2875.11	251.10	2881.37	15.79	2887.08		OK

1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1782.30	60" RCP	2875.11	251.10	2878.03	21.08	2887.08	SDMH #2 Junction to Facility 1B	OK
1782.30	60" RCP	2875.11	251.00	2883.38	12.78	2887.08		OK
1783.30	60" RCP	2875.15	251.00	2883.42	12.78	2887.08		OK
1784.30	60" RCP	2875.19	251.00	2883.55	12.78	2887.08		OK
1785.30	60" RCP	2875.23	251.00	2883.69	12.78	2887.08		OK
1786.30	60" RCP	2875.27	251.00	2883.82	12.78	2887.08		OK
1787.30	60" RCP	2875.31	251.00	2883.96	12.78	2887.08		OK
1813.45	60" RCP	2878.15	251.00	2884.20	12.78	2885.65	Facility 2 Inlet, FG HW<1.5H	OK
1813.45	60" RCP	2878.15	251.00	2884.20	12.78	2885.65		OK

T1 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 T2 PRO CONDITION, ROCKY STORM DRAIN
 T3 MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

SO	1000.00	2864.18	60			2866.460				
R	1019.30	2864.30	60	.013					1	
R	1020.10	2864.34	60	.013				1.0		
R	1020.90	2864.38	60	.013				15.0		
R	1021.70	2864.42	60	.013				15.0		
R	1022.50	2864.46	60	.013				15.0		
R	1023.30	2864.50	60	.013				15.0		
R	1033.04	2864.61	60	.013						
R	1036.04	2864.68	60	.013				13.0		
R	1039.04	2864.74	60	.013				15.0		
JX	1039.71	2864.81	60	.013	0.1					
R	1299.83	2866.86	60	.013					1	
R	1300.83	2866.91	60	.013				-4.0		
R	1301.83	2866.96	60	.013				-15.0		
R	1302.83	2867.01	60	.013				-15.0		
R	1303.83	2867.06	60	.013				-15.0		
R	1355.48	2867.39	54	.013					1	
R	1356.81	2867.46	54	.013				-10.0		
R	1358.15	2867.52	54	.013				-15.0		
R	1359.48	2867.59	54	.013				-15.0		
R	1454.21	2868.68	54	.013						
JX	1454.21	2868.68	54	.013	1.0	2868.88	0.0			
R	1455.01	2868.72	54	.013				2.0		
R	1455.81	2868.76	54	.013				15.0		
R	1456.61	2868.80	54	.013				15.0		
R	1457.41	2868.84	54	.013				15.0		
R	1458.21	2868.88	54	.013				15.0		
R	1504.26	2869.18	54	.013					1	
R	1506.26	2869.28	54	.013				12.0		
R	1508.26	2869.38	54	.013				15.0		
R	1533.63	2869.55	54	.013						
JX	1538.63	2869.75	54	.013	0.1	2872.75	90.0			
R	1782.30	2875.11	54	.013						
WE	1782.30	2875.11	60							
JX	1782.30	2875.11	60	.013	0.1	2875.31	0.0			
R	1783.30	2875.15	60	.013				4.0		
R	1784.30	2875.19	60	.013				15.0		
R	1785.30	2875.23	60	.013				15.0		
R	1786.30	2875.27	60	.013				15.0		
R	1787.30	2875.31	60	.013				15.0		
R	1813.45	2878.15	60	.013						
SH	1813.45	2878.15	60							
CD	18	4	1	0.000	1.500	0.000	0.000	0.000	0.0000.00	0.00
CD	24	4	1	0.000	2.000	0.000	0.000	0.000	0.0000.00	0.00
CD	30	4	1	0.000	2.500	0.000	0.000	0.000	0.0000.00	0.00
CD	36	4	1	0.000	3.000	0.000	0.000	0.000	0.0000.00	0.00
CD	42	4	1	0.000	3.500	0.000	0.000	0.000	0.0000.00	0.00
CD	48	4	1	0.000	4.000	0.000	0.000	0.000	0.0000.00	0.00

CD	54	4	1	0.000	4.500	0.000	0.000	0.000	0.0000.00	0.00
CD	60	4	1	0.000	5.000	0.000	0.000	0.000	0.0000.00	0.00
Q				251.000						

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	30	4	1		2.500															
CD	36	4	1		3.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 HEADING LINE NO 2 IS - PRO CONDITION, ROCKY STORM DRAIN
 HEADING LINE NO 3 IS - MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
1	IS	A	SYSTEM OUTLET	U/S DATA	1000.000	2864.180	60	2866.460				
2	IS	A	REACH	U/S DATA	1019.300	2864.300	60		.013	.000	.000	1
3	IS	A	REACH	U/S DATA	1020.100	2864.340	60		.013	.000	1.000	0
4	IS	A	REACH	U/S DATA	1020.900	2864.380	60		.013	.000	15.000	0
5	IS	A	REACH	U/S DATA	1021.700	2864.420	60		.013	.000	15.000	0
6	IS	A	REACH	U/S DATA	1022.500	2864.460	60		.013	.000	15.000	0
7	IS	A	REACH	U/S DATA	1023.300	2864.500	60		.013	.000	15.000	0
8	IS	A	REACH	U/S DATA	1033.040	2864.610	60		.013	.000	.000	0
9	IS	A	REACH	U/S DATA	1036.040	2864.680	60		.013	.000	13.000	0
10	IS	A	REACH									

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	24	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1455.810	2868.760	54	.013		.000	.000	15.000	0			
ELEMENT NO	25	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1456.610	2868.800	54	.013		.000	.000	15.000	0			
ELEMENT NO	26	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1457.410	2868.840	54	.013		.000	.000	15.000	0			
ELEMENT NO	27	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1458.210	2868.880	54	.013		.000	.000	15.000	0			
ELEMENT NO	28	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1504.260	2869.180	54	.013		.000	.000	.000	1			
ELEMENT NO	29	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1506.260	2869.280	54	.013		.000	.000	12.000	0			
ELEMENT NO	30	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1508.260	2869.380	54	.013		.000	.000	15.000	0			
ELEMENT NO	31	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1533.630	2869.550	54	.013		.000	.000	.000	0			
ELEMENT NO	32	IS A JUNCTION	*	*	*	*	*	*	*	*	*	*	*	*
		U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
			1538.630	2869.750	54	18	0	.013	.100	.000	2872.750	.000	90.000	.000
											RADIUS	ANGLE		
											.000	.000		
ELEMENT NO	33	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1782.300	2875.110	54	.013		.000	.000	.000	0			
ELEMENT NO	34	IS A WALL ENTRANCE			*									
		U/S DATA	STATION	INVERT	SECT	FP								
			1782.300	2875.110	60	.500								
ELEMENT NO	35	IS A JUNCTION	*	*	*	*	*	*	*	*	*	*	*	*
		U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
			1782.300	2875.110	60	54	0	.013	.100	.000	2875.310	.000	.000	.000
											RADIUS	ANGLE		
											.000	.000		

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

W S P G W

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WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	36	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1783.300	2875.150	60	.013		.000	.000	4.000	0			
ELEMENT NO	37	IS A REACH	*	*	*									
		U/S DATA	STATION	INVERT	SECT	N		RADIUS	ANGLE	ANG PT	MAN H			
			1784.300	2875.190	60	.013		.000	.000	15.000	0			

MAIN-PRO-1.EDT

ELEMENT NO	IS A	REACH	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
38	IS A	REACH	1785.300	2875.230	60	.013	.000	.000	15.000	0
39	IS A	REACH	1786.300	2875.270	60	.013	.000	.000	15.000	0
40	IS A	REACH	1787.300	2875.310	60	.013	.000	.000	15.000	0
41	IS A	REACH	1813.450	2878.150	60	.013	.000	.000	.000	0
42	IS A	SYSTEM HEADWORKS	1813.450	2878.150	60	.013	.000	.000	.000	0

U/S DATA STATION INVERT SECT

U/S DATA STATION INVERT SECT

U/S DATA STATION INVERT SECT

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W S ELEV
.000

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:38

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2864.180	3.890	2868.070	252.30	15.39	3.68	2871.75	.00	4.44	4.16	5.000	.000	.00	1 .0
19.300	.0062					.0107	.21	3.89	1.37	5.00	.013	.00	.00	PIPE
1019.300	2864.300	3.800	2868.101	252.30	15.76	3.85	2871.96	.00	4.44	4.27	5.000	.000	.00	1 .0
.800	.0500					.0108	.01	3.80	1.43	2.30	.013	.00	.00	PIPE
1020.100	2864.340	3.831	2868.171	252.30	15.63	3.79	2871.96	.00	4.44	4.23	5.000	.000	.00	1 .0
.800	.0497					.0107	.01	3.83	1.41	2.30	.013	.00	.00	PIPE
1020.900	2864.380	3.864	2868.244	252.30	15.50	3.73	2871.97	.00	4.44	4.19	5.000	.000	.00	1 .0
.800	.0500					.0104	.01	3.86	1.39	2.30	.013	.00	.00	PIPE
1021.700	2864.420	3.900	2868.320	252.30	15.36	3.66	2871.98	.00	4.44	4.14	5.000	.000	.00	1 .0
.800	.0500					.0102	.01	3.90	1.36	2.30	.013	.00	.00	PIPE
1022.500	2864.460	3.939	2868.399	252.30	15.21	3.59	2871.99	.00	4.44	4.09	5.000	.000	.00	1 .0
.800	.0500					.0100	.01	3.94	1.33	2.30	.013	.00	.00	PIPE
1023.300	2864.500	3.983	2868.483	252.30	15.04	3.51	2872.00	.00	4.44	4.03	5.000	.000	.00	1 .0
9.740	.0113					.0099	.10	3.98	1.30	3.75	.013	.00	.00	PIPE
1033.040	2864.610	4.004	2868.614	252.30	14.97	3.48	2872.09	.00	4.44	3.99	5.000	.000	.00	1 .0
3.000	.0233					.0096	.03	4.00	1.28	2.89	.013	.00	.00	PIPE
1036.040	2864.680	4.074	2868.753	252.30	14.73	3.37	2872.12	.00	4.44	3.89	5.000	.000	.00	1 .0
3.000	.0200					.0094	.03	4.07	1.24	3.04	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:38

MAIN-PRO-1.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 PRO CONDITION, ROCKY STORM DRAIN
 MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N" X-Fall	ZR	Type Ch	
1039.040	2864.740	4.141	2868.881	252.30	14.51	3.27	2872.15	.00	4.44	3.77	5.000	.000	.00	1 .0
JUNCT STR	.1046					.0088	.01	4.14	1.19		.013	.00	.00	PIPE
1039.710	2864.810	4.436	2869.246	252.20	13.69	2.91	2872.16	.00	4.44	3.16	5.000	.000	.00	1 .0
	192.181	.0079				.0083	1.59	4.44	1.00	5.00	.013	.00	.00	PIPE
1231.891	2866.325	4.772	2871.097	252.20	13.06	2.65	2873.74	.00	4.44	2.09	5.000	.000	.00	1 .0
	21.317	.0079				.0081	.17	4.77	.76	5.00	.013	.00	.00	PIPE
1253.208	2866.493	4.785	2871.278	252.20	13.04	2.64	2873.92	.00	4.44	2.03	5.000	.000	.00	1 .0
HYDRAULIC JUMP														
1253.208	2866.493	4.088	2870.580	252.20	14.68	3.34	2873.93	.00	4.44	3.86	5.000	.000	.00	1 .0
	46.622	.0079				.0097	.45	4.09	1.23	5.00	.013	.00	.00	PIPE
1299.830	2866.860	3.960	2870.820	252.20	15.12	3.55	2874.37	.00	4.44	4.06	5.000	.000	.00	1 .0
	1.000	.0498				.0099	.01	3.96	1.31	2.30	.013	.00	.00	PIPE
1300.830	2866.910	4.019	2870.929	252.20	14.91	3.45	2874.38	.00	4.44	3.97	5.000	.000	.00	1 .0
	1.000	.0500				.0096	.01	4.02	1.27	2.30	.013	.00	.00	PIPE
1301.830	2866.960	4.092	2871.052	252.20	14.66	3.34	2874.39	.00	4.44	3.86	5.000	.000	.00	1 .0
	1.000	.0500				.0092	.01	4.09	1.22	2.30	.013	.00	.00	PIPE
1302.830	2867.010	4.189	2871.199	252.20	14.36	3.20	2874.40	.00	4.44	3.69	5.000	.000	.00	1 .0
	1.000	.0500				.0087	.01	4.19	1.16	2.30	.013	.00	.00	PIPE

FILE: MAIN-PRO-1.WSW

W S P G W - CIVILDESIGN Version 14.08

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:38

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 PRO CONDITION, ROCKY STORM DRAIN
 MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

MAIN-PRO-1.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1303.830	2867.060	4.436	2871.496	252.20	13.69	2.91	2874.41	.00	4.44	3.16	5.000	.000	.00	1 .0
1303.830	2867.060	4.282	2871.342	252.20	16.14	4.05	2875.39	.00	4.28	1.93	4.500	.000	.00	1 .0
	8.671 .0064					.0150	.13	4.28	1.00	4.50	.013	.00	.00	PIPE
1312.501	2867.115	4.500	2871.615	252.20	15.86	3.90	2875.52	.00	4.28	.00	4.500	.000	.00	1 .0
	42.979 .0064					.0161	.69	4.50	.00	4.50	.013	.00	.00	PIPE
1355.480	2867.390	5.095	2872.485	252.20	15.86	3.90	2876.39	.00	4.28	.00	4.500	.000	.00	1 .0
	1.330 .0527					.0164	.02	5.09	.00	2.40	.013	.00	.00	PIPE
1356.810	2867.460	5.176	2872.635	252.20	15.86	3.90	2876.54	.00	4.28	.00	4.500	.000	.00	1 .0
	1.340 .0448					.0164	.02	5.18	.00	2.53	.013	.00	.00	PIPE
1358.150	2867.520	5.331	2872.851	252.20	15.86	3.90	2876.76	.00	4.28	.00	4.500	.000	.00	1 .0
	1.330 .0527					.0164	.02	5.33	.00	2.40	.013	.00	.00	PIPE
1359.480	2867.590	5.476	2873.066	252.20	15.86	3.90	2876.97	.00	4.28	.00	4.500	.000	.00	1 .0
	94.730 .0115					.0164	1.56	5.48	.00	4.50	.013	.00	.00	PIPE
1454.210	2868.680	5.944	2874.624	252.20	15.86	3.90	2878.53	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0000					.0164	.00	5.94	.00		.013	.00	.00	PIPE
1454.210	2868.680	6.006	2874.686	251.20	15.79	3.87	2878.56	.00	4.28	.00	4.500	.000	.00	1 .0
	.800 .0500					.0163	.01	6.01	.00	2.44	.013	.00	.00	PIPE
1455.010	2868.720	6.004	2874.724	251.20	15.79	3.87	2878.60	.00	4.28	.00	4.500	.000	.00	1 .0
	.800 .0500					.0163	.01	6.00	.00	2.44	.013	.00	.00	PIPE

▲ FILE: MAIN-PRO-1.WSW

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:38

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

MAIN-PRO-1.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1455.810	2868.760	6.169	2874.929	251.20	15.79	3.87	2878.80	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0501				.0163	.01	6.17	.00	2.44	.013	.00	.00	PIPE
1456.610	2868.800	6.334	2875.134	251.20	15.79	3.87	2879.01	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0500				.0163	.01	6.33	.00	2.44	.013	.00	.00	PIPE
1457.410	2868.840	6.499	2875.339	251.20	15.79	3.87	2879.21	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0497				.0163	.01	6.50	.00	2.44	.013	.00	.00	PIPE
1458.210	2868.880	6.664	2875.544	251.20	15.79	3.87	2879.42	.00	4.28	.00	4.500	.000	.00	1 .0
	46.050	.0065				.0163	.75	6.66	.00	4.50	.013	.00	.00	PIPE
1504.260	2869.180	7.309	2876.489	251.20	15.79	3.87	2880.36	.00	4.28	.00	4.500	.000	.00	1 .0
	2.000	.0500				.0163	.03	7.31	.00	2.44	.013	.00	.00	PIPE
1506.260	2869.280	7.395	2876.675	251.20	15.79	3.87	2880.55	.00	4.28	.00	4.500	.000	.00	1 .0
	2.000	.0499				.0163	.03	7.39	.00	2.44	.013	.00	.00	PIPE
1508.260	2869.380	7.519	2876.899	251.20	15.79	3.87	2880.77	.00	4.28	.00	4.500	.000	.00	1 .0
	25.370	.0067				.0163	.41	7.52	.00	4.50	.013	.00	.00	PIPE
1533.630	2869.550	7.763	2877.313	251.20	15.79	3.87	2881.19	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0400					.0163	.08	7.76	.00		.013	.00	.00	PIPE
1538.630	2869.750	7.651	2877.401	251.10	15.79	3.87	2881.27	.00	4.28	.00	4.500	.000	.00	1 .0
	243.670	.0220				.0163	3.97	7.65	.00	3.22	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:38

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
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MAIN-PRO-1.OUT

L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	Ch
1782.300	2875.110	6.264	2881.374	251.10	15.79	3.87	2885.24	.00	4.28	.00	4.500	.000	.00	1	.0
HYDRAULIC JUMP															
1782.300	2875.110	2.921	2878.031	251.10	21.08	6.90	2884.93	.00	4.43	4.93	5.000	.000	.00	0	.0
HYDRAULIC DROP															
JUNCT STR	.0000					.0093	.00	8.26	.00		.013	.00	.00	PIPE	
1782.300	2875.110	8.264	2883.375	251.00	12.78	2.54	2885.91	.00	4.43	.00	5.000	.000	.00	1	.0
1.000	.0398					.0093	.01	8.26	.00	2.45	.013	.00	.00	PIPE	
1783.300	2875.150	8.267	2883.417	251.00	12.78	2.54	2885.95	.00	4.43	.00	5.000	.000	.00	1	.0
1.000	.0400					.0093	.01	8.27	.00	2.45	.013	.00	.00	PIPE	
1784.300	2875.190	8.362	2883.552	251.00	12.78	2.54	2886.09	.00	4.43	.00	5.000	.000	.00	1	.0
1.000	.0400					.0093	.01	8.36	.00	2.45	.013	.00	.00	PIPE	
1785.300	2875.230	8.457	2883.687	251.00	12.78	2.54	2886.22	.00	4.43	.00	5.000	.000	.00	1	.0
1.000	.0400					.0093	.01	8.46	.00	2.45	.013	.00	.00	PIPE	
1786.300	2875.270	8.552	2883.822	251.00	12.78	2.54	2886.36	.00	4.43	.00	5.000	.000	.00	1	.0
1.000	.0400					.0093	.01	8.55	.00	2.45	.013	.00	.00	PIPE	
1787.300	2875.310	8.647	2883.957	251.00	12.78	2.54	2886.49	.00	4.43	.00	5.000	.000	.00	1	.0
26.150	.1086					.0093	.24	8.65	.00	1.85	.013	.00	.00	PIPE	

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:38

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-1 ALL FLOW INTO WEST BOUNDARY

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Prs/Pip	Wth
1813.450	2878.150	6.050	2884.200	251.00	12.78	2.54	2886.74	.00	4.43	.00	5.000	.000	.00	1	.0

MAIN-PRO-1.OUT



**Proposed Condition WSPG Summary
MAIN-PRO-2**

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q ₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check ¹
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1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1000.00	60" RCP	2864.18	252.30	2868.07	15.39	2869.18	Outlet into DE2, FG set to soffit	OK
1019.30	60" RCP	2864.30	252.30	2868.10	15.76	2872.23	SDMH #7	OK
1020.10	60" RCP	2864.34	252.30	2868.17	15.63	2872.23		OK
1020.90	60" RCP	2864.38	252.30	2868.24	15.50	2872.23		OK
1021.70	60" RCP	2864.42	252.30	2868.32	15.36	2872.23		OK
1022.50	60" RCP	2864.46	252.30	2868.40	15.21	2872.23		OK
1023.30	60" RCP	2864.50	252.30	2868.48	15.04	2872.23		OK
1033.04	60" RCP	2864.61	252.30	2868.61	14.97	2873.26		DI2
1036.04	60" RCP	2864.68	252.30	2868.75	14.73	2873.26	OK	
1039.04	60" RCP	2864.74	252.30	2868.88	14.51	2873.26	OK	
1039.71	60" RCP	2864.81	252.20	2869.25	13.69	2873.26	OK	
1299.83	60" RCP	2866.86	252.20	2870.82	15.12	2877.06	SDMH #6	OK
1300.83	60" RCP	2866.91	252.20	2870.93	14.91	2877.06		OK
1301.83	60" RCP	2866.96	252.20	2871.05	14.66	2877.06		OK
1302.83	60" RCP	2867.01	252.20	2871.20	14.36	2877.06		OK
1303.83	60" RCP	2867.06	252.20	2871.50	13.69	2877.06		OK
1355.48	54" RCP	2867.39	252.20	2872.49	15.86	2877.82	SDMH #5	OK
1356.81	54" RCP	2867.46	252.20	2872.64	15.86	2877.82		OK
1358.15	54" RCP	2867.52	252.20	2872.85	15.86	2877.82		OK
1359.48	54" RCP	2867.59	252.20	2873.07	15.86	2877.82		OK
1454.21	54" RCP	2868.68	252.20	2874.62	15.86	2878.27	SDMH #4 Junction to Facility 5B	OK
1454.21	54" RCP	2868.68	251.20	2874.69	15.79	2878.27		OK
1455.01	54" RCP	2868.72	251.20	2874.72	15.79	2878.27		OK
1455.81	54" RCP	2868.76	251.20	2874.93	15.79	2878.27		OK
1456.61	54" RCP	2868.80	251.20	2875.13	15.79	2878.27		OK
1457.41	54" RCP	2868.84	251.20	2875.34	15.79	2878.27		OK
1458.21	54" RCP	2868.88	251.20	2875.54	15.79	2878.27		OK
1504.26	54" RCP	2869.18	251.20	2876.49	15.79	2879.31	SDMH #12	OK
1506.26	54" RCP	2869.28	251.20	2876.68	15.79	2879.31		OK
1508.26	54" RCP	2869.38	251.20	2876.90	15.79	2879.31		OK
1533.63	54" RCP	2869.55	251.20	2877.31	15.79	2880.00	SDMH #3	OK
1538.63	54" RCP	2869.75	251.10	2877.40	15.79	2880.00	Junction to DI1 Lateral	OK
1782.30	54" RCP	2875.11	251.10	2881.37	15.79	2887.08	SDMH #2	OK

1787.30	54" RCP	2875.31	251.00	2881.46	15.78	2887.08	Junction to Facility 2	OK
1815.59	54" RCP	2876.76	251.00	2881.92	15.78	2888.68	SDMH #1	OK
1815.59	54" RCP	2876.76	251.00	2881.92	15.78	2888.68		OK

T1 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 T2 PRO CONDITION, ROCKY STORM DRAIN
 T3 MAIN-PRO-2 ALL FLOW INTO WEST SUMP

SO	1000.00	2864.18	60			2866.460				
R	1019.30	2864.30	60	.013					1	
R	1020.10	2864.34	60	.013				1.0		
R	1020.90	2864.38	60	.013				15.0		
R	1021.70	2864.42	60	.013				15.0		
R	1022.50	2864.46	60	.013				15.0		
R	1023.30	2864.50	60	.013				15.0		
R	1033.04	2864.61	60	.013						
R	1036.04	2864.68	60	.013				13.0		
R	1039.04	2864.74	60	.013				15.0		
JX	1039.71	2864.81	60	.013	0.1					
R	1299.83	2866.86	60	.013					1	
R	1300.83	2866.91	60	.013				-4.0		
R	1301.83	2866.96	60	.013				-15.0		
R	1302.83	2867.01	60	.013				-15.0		
R	1303.83	2867.06	60	.013				-15.0		
R	1355.48	2867.39	54	.013					1	
R	1356.81	2867.46	54	.013				-10.0		
R	1358.15	2867.52	54	.013				-15.0		
R	1359.48	2867.59	54	.013				-15.0		
R	1454.21	2868.68	54	.013						
JX	1454.21	2868.68	54 54	.013	1.0	2868.88		0.0		
R	1455.01	2868.72	54	.013				2.0		
R	1455.81	2868.76	54	.013				15.0		
R	1456.61	2868.80	54	.013				15.0		
R	1457.41	2868.84	54	.013				15.0		
R	1458.21	2868.88	54	.013				15.0		
R	1504.26	2869.18	54	.013					1	
R	1506.26	2869.28	54	.013				12.0		
R	1508.26	2869.38	54	.013				15.0		
R	1533.63	2869.55	54	.013						
JX	1538.63	2869.75	54 18	.013	0.1	2872.75		90.0		
R	1782.30	2875.11	54	.013						
JX	1787.30	2875.31	54 60	.013	0.1	2875.31		64.0		
R	1815.59	2876.76	54	.013						
SH	1815.59	2876.76	54			2881.260				
CD	18	4	1	0.000	1.500	0.000	0.000	0.000	0.0000.00	0.00
CD	24	4	1	0.000	2.000	0.000	0.000	0.000	0.0000.00	0.00
CD	30	4	1	0.000	2.500	0.000	0.000	0.000	0.0000.00	0.00
CD	36	4	1	0.000	3.000	0.000	0.000	0.000	0.0000.00	0.00
CD	42	4	1	0.000	3.500	0.000	0.000	0.000	0.0000.00	0.00
CD	48	4	1	0.000	4.000	0.000	0.000	0.000	0.0000.00	0.00
CD	54	4	1	0.000	4.500	0.000	0.000	0.000	0.0000.00	0.00
CD	60	4	1	0.000	5.000	0.000	0.000	0.000	0.0000.00	0.00
Q		251.000								

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	30	4	1		2.500															
CD	36	4	1		3.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 HEADING LINE NO 2 IS - PRO CONDITION, ROCKY STORM DRAIN
 HEADING LINE NO 3 IS - MAIN-PRO-2 ALL FLOW INTO WEST SUMP

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
1	IS	A	SYSTEM OUTLET	U/S DATA	1000.000	2864.180	60	2866.460				
2	IS	A	REACH	U/S DATA	1019.300	2864.300	60		.013	.000	.000	1
3	IS	A	REACH	U/S DATA	1020.100	2864.340	60		.013	.000	1.000	0
4	IS	A	REACH	U/S DATA	1020.900	2864.380	60		.013	.000	15.000	0
5	IS	A	REACH	U/S DATA	1021.700	2864.420	60		.013	.000	15.000	0
6	IS	A	REACH	U/S DATA	1022.500	2864.460	60		.013	.000	15.000	0
7	IS	A	REACH	U/S DATA	1023.300	2864.500	60		.013	.000	15.000	0
8	IS	A	REACH	U/S DATA	1033.040	2864.610	60		.013	.000	.000	0
9	IS	A	REACH	U/S DATA	1036.040	2864.680	60		.013	.000	13.000	0
10	IS	A	REACH									

MAIN-PRO-2.EDT

ELEMENT NO 11 IS A JUNCTION
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1039.040 2864.740 60 .013 .000 .000 15.000 0
 * * * * *
 U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
 1039.710 2864.810 60 0 0 .013 .100 .000 .000 .000 .000
 RADIUS ANGLE
 .000 .000

ELEMENT NO 12 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1299.830 2866.860 60 .013 .000 .000 .000 1
 W S P G W
 PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1300.830 2866.910 60 .013 .000 .000 -4.000 0
 ELEMENT NO 14 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1301.830 2866.960 60 .013 .000 .000 -15.000 0
 ELEMENT NO 15 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1302.830 2867.010 60 .013 .000 .000 -15.000 0
 ELEMENT NO 16 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1303.830 2867.060 60 .013 .000 .000 -15.000 0

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 17 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1355.480 2867.390 54 .013 .000 .000 .000 1
 ELEMENT NO 18 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1356.810 2867.460 54 .013 .000 .000 -10.000 0
 ELEMENT NO 19 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1358.150 2867.520 54 .013 .000 .000 -15.000 0
 ELEMENT NO 20 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1359.480 2867.590 54 .013 .000 .000 -15.000 0
 ELEMENT NO 21 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1454.210 2868.680 54 .013 .000 .000 .000 0
 ELEMENT NO 22 IS A JUNCTION
 U/S DATA STATION INVERT SECT LAT-1 LAT-2 N Q3 Q4 INVERT-3 INVERT-4 PHI 3 PHI 4
 1454.210 2868.680 54 54 0 .013 1.000 .000 2868.880 .000 .000 .000
 RADIUS ANGLE
 .000 .000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 23 IS A REACH
 U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT MAN H
 1455.010 2868.720 54 .013 .000 .000 2.000 0
 W S P G W
 PAGE NO 4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	24 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1455.810	2868.760	54		.013		.000	.000	15.000	0								
ELEMENT NO	25 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1456.610	2868.800	54		.013		.000	.000	15.000	0								
ELEMENT NO	26 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1457.410	2868.840	54		.013		.000	.000	15.000	0								
ELEMENT NO	27 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1458.210	2868.880	54		.013		.000	.000	15.000	0								
ELEMENT NO	28 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1504.260	2869.180	54		.013		.000	.000	.000	1								
ELEMENT NO	29 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1506.260	2869.280	54		.013		.000	.000	12.000	0								
ELEMENT NO	30 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1508.260	2869.380	54		.013		.000	.000	15.000	0								
ELEMENT NO	31 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H								
		1533.630	2869.550	54		.013		.000	.000	.000	0								
ELEMENT NO	32 IS A JUNCTION	*	*	*	*														
	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4						
		1538.630	2869.750	54	18	0	.013	.100	.000	2872.750	.000	90.000	.000	.000					
										RADIUS	ANGLE								
										.000	.000								
ELEMENT NO	33 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H						
		1782.300	2875.110	54			.013			.000	.000	.000	0						
ELEMENT NO	34 IS A JUNCTION	*	*	*	*														
	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4						
		1787.300	2875.310	54	60	0	.013	.100	.000	2875.310	.000	64.000	.000	.000					
										RADIUS	ANGLE								
										.000	.000								
													W S P G W			PAGE NO	5		
													WATER SURFACE PROFILE - ELEMENT CARD LISTING						
ELEMENT NO	35 IS A REACH	*	*	*															
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H						
		1815.590	2876.760	54			.013			.000	.000	.000	0						
ELEMENT NO	36 IS A SYSTEM HEADWORKS			*															
	U/S DATA	STATION	INVERT	SECT						W S ELEV									
		1815.590	2876.760	54						2881.260									

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:54

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-2 ALL FLOW INTO WEST SUMP

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2864.180	3.890	2868.070	252.30	15.39	3.68	2871.75	.00	4.44	4.16	5.000	.000	.00	1 .0
	.0062					.0107	.21	3.89	1.37	5.00	.013	.00	.00	PIPE
1019.300	2864.300	3.800	2868.101	252.30	15.76	3.85	2871.96	.00	4.44	4.27	5.000	.000	.00	1 .0
	.0500					.0108	.01	3.80	1.43	2.30	.013	.00	.00	PIPE
1020.100	2864.340	3.831	2868.171	252.30	15.63	3.79	2871.96	.00	4.44	4.23	5.000	.000	.00	1 .0
	.0497					.0107	.01	3.83	1.41	2.30	.013	.00	.00	PIPE
1020.900	2864.380	3.864	2868.244	252.30	15.50	3.73	2871.97	.00	4.44	4.19	5.000	.000	.00	1 .0
	.0500					.0104	.01	3.86	1.39	2.30	.013	.00	.00	PIPE
1021.700	2864.420	3.900	2868.320	252.30	15.36	3.66	2871.98	.00	4.44	4.14	5.000	.000	.00	1 .0
	.0500					.0102	.01	3.90	1.36	2.30	.013	.00	.00	PIPE
1022.500	2864.460	3.939	2868.399	252.30	15.21	3.59	2871.99	.00	4.44	4.09	5.000	.000	.00	1 .0
	.0500					.0100	.01	3.94	1.33	2.30	.013	.00	.00	PIPE
1023.300	2864.500	3.983	2868.483	252.30	15.04	3.51	2872.00	.00	4.44	4.03	5.000	.000	.00	1 .0
	.0113					.0099	.10	3.98	1.30	3.75	.013	.00	.00	PIPE
1033.040	2864.610	4.004	2868.614	252.30	14.97	3.48	2872.09	.00	4.44	3.99	5.000	.000	.00	1 .0
	.0233					.0096	.03	4.00	1.28	2.89	.013	.00	.00	PIPE
1036.040	2864.680	4.074	2868.753	252.30	14.73	3.37	2872.12	.00	4.44	3.89	5.000	.000	.00	1 .0
	.0200					.0094	.03	4.07	1.24	3.04	.013	.00	.00	PIPE

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:54

MAIN-PRO-2.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-2 ALL FLOW INTO WEST SUMP

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
        | Elev   | (FT)  | Elev   | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
L/Elem | Ch Slope |      |      |      |      | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
1039.040 | 2864.740 | 4.141 | 2868.881 | 252.30 | 14.51 | 3.27 | 2872.15 | .00 | 4.44 | 3.77 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
JUNCT STR | .1046 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1039.710 | 2864.810 | 4.436 | 2869.246 | 252.20 | 13.69 | 2.91 | 2872.16 | .00 | 4.44 | 3.16 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
192.181 | .0079 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1231.891 | 2866.325 | 4.772 | 2871.097 | 252.20 | 13.06 | 2.65 | 2873.74 | .00 | 4.44 | 2.09 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
21.317 | .0079 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1253.208 | 2866.493 | 4.785 | 2871.278 | 252.20 | 13.04 | 2.64 | 2873.92 | .00 | 4.44 | 2.03 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
HYDRAULIC JUMP
1253.208 | 2866.493 | 4.088 | 2870.580 | 252.20 | 14.68 | 3.34 | 2873.93 | .00 | 4.44 | 3.86 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
46.622 | .0079 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1299.830 | 2866.860 | 3.960 | 2870.820 | 252.20 | 15.12 | 3.55 | 2874.37 | .00 | 4.44 | 4.06 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1.000 | .0498 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1300.830 | 2866.910 | 4.019 | 2870.929 | 252.20 | 14.91 | 3.45 | 2874.38 | .00 | 4.44 | 3.97 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1.000 | .0500 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1301.830 | 2866.960 | 4.092 | 2871.052 | 252.20 | 14.66 | 3.34 | 2874.39 | .00 | 4.44 | 3.86 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1.000 | .0500 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1302.830 | 2867.010 | 4.189 | 2871.199 | 252.20 | 14.36 | 3.20 | 2874.40 | .00 | 4.44 | 3.69 | 5.000 | .000 | .00 | 1 | .0
        |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
1.000 | .0500 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
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FILE: MAIN-PRO-2.WSW

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:54

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-2 ALL FLOW INTO WEST SUMP

MAIN-PRO-2.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1303.830	2867.060	4.436	2871.496	252.20	13.69	2.91	2874.41	.00	4.44	3.16	5.000	.000	.00	1 .0
1303.830	2867.060	4.282	2871.342	252.20	16.14	4.05	2875.39	.00	4.28	1.93	4.500	.000	.00	1 .0
	8.671	.0064				.0150	.13	4.28	1.00	4.50	.013	.00	.00	PIPE
1312.501	2867.115	4.500	2871.615	252.20	15.86	3.90	2875.52	.00	4.28	.00	4.500	.000	.00	1 .0
	42.979	.0064				.0161	.69	4.50	.00	4.50	.013	.00	.00	PIPE
1355.480	2867.390	5.095	2872.485	252.20	15.86	3.90	2876.39	.00	4.28	.00	4.500	.000	.00	1 .0
	1.330	.0527				.0164	.02	5.09	.00	2.40	.013	.00	.00	PIPE
1356.810	2867.460	5.176	2872.635	252.20	15.86	3.90	2876.54	.00	4.28	.00	4.500	.000	.00	1 .0
	1.340	.0448				.0164	.02	5.18	.00	2.53	.013	.00	.00	PIPE
1358.150	2867.520	5.331	2872.851	252.20	15.86	3.90	2876.76	.00	4.28	.00	4.500	.000	.00	1 .0
	1.330	.0527				.0164	.02	5.33	.00	2.40	.013	.00	.00	PIPE
1359.480	2867.590	5.476	2873.066	252.20	15.86	3.90	2876.97	.00	4.28	.00	4.500	.000	.00	1 .0
	94.730	.0115				.0164	1.56	5.48	.00	4.50	.013	.00	.00	PIPE
1454.210	2868.680	5.944	2874.624	252.20	15.86	3.90	2878.53	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0000					.0164	.00	5.94	.00		.013	.00	.00	PIPE
1454.210	2868.680	6.006	2874.686	251.20	15.79	3.87	2878.56	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0500				.0163	.01	6.01	.00	2.44	.013	.00	.00	PIPE
1455.010	2868.720	6.004	2874.724	251.20	15.79	3.87	2878.60	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0500				.0163	.01	6.00	.00	2.44	.013	.00	.00	PIPE

FILE: MAIN-PRO-2.WSW

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:54

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-2 ALL FLOW INTO WEST SUMP

MAIN-PRO-2.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1455.810	2868.760	6.169	2874.929	251.20	15.79	3.87	2878.80	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0501				.0163	.01	6.17	.00	2.44	.013	.00	.00	PIPE
1456.610	2868.800	6.334	2875.134	251.20	15.79	3.87	2879.01	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0500				.0163	.01	6.33	.00	2.44	.013	.00	.00	PIPE
1457.410	2868.840	6.499	2875.339	251.20	15.79	3.87	2879.21	.00	4.28	.00	4.500	.000	.00	1 .0
	.800	.0497				.0163	.01	6.50	.00	2.44	.013	.00	.00	PIPE
1458.210	2868.880	6.664	2875.544	251.20	15.79	3.87	2879.42	.00	4.28	.00	4.500	.000	.00	1 .0
	46.050	.0065				.0163	.75	6.66	.00	4.50	.013	.00	.00	PIPE
1504.260	2869.180	7.309	2876.489	251.20	15.79	3.87	2880.36	.00	4.28	.00	4.500	.000	.00	1 .0
	2.000	.0500				.0163	.03	7.31	.00	2.44	.013	.00	.00	PIPE
1506.260	2869.280	7.395	2876.675	251.20	15.79	3.87	2880.55	.00	4.28	.00	4.500	.000	.00	1 .0
	2.000	.0499				.0163	.03	7.39	.00	2.44	.013	.00	.00	PIPE
1508.260	2869.380	7.519	2876.899	251.20	15.79	3.87	2880.77	.00	4.28	.00	4.500	.000	.00	1 .0
	25.370	.0067				.0163	.41	7.52	.00	4.50	.013	.00	.00	PIPE
1533.630	2869.550	7.763	2877.313	251.20	15.79	3.87	2881.19	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0400					.0163	.08	7.76	.00		.013	.00	.00	PIPE
1538.630	2869.750	7.651	2877.401	251.10	15.79	3.87	2881.27	.00	4.28	.00	4.500	.000	.00	1 .0
	243.670	.0220				.0163	3.97	7.65	.00	3.22	.013	.00	.00	PIPE

FILE: MAIN-PRO-2.WSW

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:18:54

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-2 ALL FLOW INTO WEST SUMP

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
---------	-------------	------------	------------	---------	-----------	----------	----------------	------------	----------------	----------------	----------------	-----------------	----	----------------

MAIN-PRO-2.OUT

L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1782.300	2875.110	6.264	2881.374	251.10	15.79	3.87	2885.24	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0400					.0163	.08	6.26	.00		.013	.00	.00	PIPE
1787.300	2875.310	6.151	2881.461	251.00	15.78	3.87	2885.33	.00	4.28	.00	4.500	.000	.00	1 .0
28.290	.0513					.0163	.46	6.15	.00	2.42	.013	.00	.00	PIPE
1815.590	2876.760	5.162	2881.922	251.00	15.78	3.87	2885.79	.00	4.28	.00	4.500	.000	.00	1 .0

↑

Proposed Condition WSPG Summary
MAIN-PRO-3

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check¹
1000.00	60" RCP	2864.18	252.20	2868.07	15.39	2869.18	Outlet into DE2, FG set to soffit	OK
1019.30	60" RCP	2864.30	252.20	2868.10	15.75	2872.23	SDMH #7	OK
1020.10	60" RCP	2864.34	252.20	2868.17	15.63	2872.23		OK
1020.90	60" RCP	2864.38	252.20	2868.24	15.49	2872.23		OK
1021.70	60" RCP	2864.42	252.20	2868.32	15.35	2872.23		OK
1022.50	60" RCP	2864.46	252.20	2868.40	15.20	2872.23		OK
1023.30	60" RCP	2864.50	252.20	2868.48	15.04	2872.23		OK
1033.04	60" RCP	2864.61	252.20	2868.61	14.97	2873.26		DI2
1036.04	60" RCP	2864.68	252.20	2868.75	14.73	2873.26	OK	
1039.04	60" RCP	2864.74	252.20	2868.88	14.51	2873.26	OK	
1039.71	60" RCP	2864.81	252.10	2869.25	13.69	2873.26	OK	
1299.83	60" RCP	2866.86	252.10	2870.82	15.12	2877.06	SDMH #6	OK
1300.83	60" RCP	2866.91	252.10	2870.93	14.91	2877.06		OK
1301.83	60" RCP	2866.96	252.10	2871.05	14.66	2877.06		OK
1302.83	60" RCP	2867.01	252.10	2871.20	14.35	2877.06		OK
1303.83	60" RCP	2867.06	252.10	2871.50	13.69	2877.06		OK
1355.48	54" RCP	2867.39	252.10	2872.48	15.85	2877.82	SDMH #5	OK
1356.81	54" RCP	2867.46	252.10	2872.63	15.85	2877.82		OK
1358.15	54" RCP	2867.52	252.10	2872.85	15.85	2877.82		OK
1359.48	54" RCP	2867.59	252.10	2873.06	15.85	2877.82		OK
1454.21	54" RCP	2868.68	252.10	2874.62	15.85	2878.27	SDMH #4 Junction to Facility 5B	OK
1454.21	54" RCP	2868.68	214.10	2876.62	13.46	2878.27		OK
1455.01	54" RCP	2868.72	214.10	2876.65	13.46	2878.27		OK
1455.81	54" RCP	2868.76	214.10	2876.80	13.46	2878.27		OK
1456.61	54" RCP	2868.80	214.10	2876.95	13.46	2878.27		OK
1457.41	54" RCP	2868.84	214.10	2877.09	13.46	2878.27		OK
1458.21	54" RCP	2868.88	214.10	2877.24	13.46	2878.27		OK
1504.26	54" RCP	2869.18	214.10	2877.93	13.46	2879.31		SDMH #12
1506.26	54" RCP	2869.28	214.10	2878.06	13.46	2879.31	OK	
1508.26	54" RCP	2869.38	214.10	2878.23	13.46	2879.31	OK	
1533.63	54" RCP	2869.55	214.10	2878.53	13.46	2880.00	SDMH #3 Junction to DI1 Lateral	OK
1538.63	54" RCP	2869.75	214.00	2878.59	13.46	2880.00		OK
1782.30	54" RCP	2875.11	214.00	2881.48	13.46	2887.08		OK

1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1782.30	60" RCP	2875.11	214.00	2882.93	10.90	2887.08	SDMH #2 Junction to Facility 1B	OK
1782.30	60" RCP	2875.11	173.00	2884.04	8.81	2887.08		OK
1783.30	60" RCP	2875.15	173.00	2884.06	8.81	2887.08		OK
1784.30	60" RCP	2875.19	173.00	2884.12	8.81	2887.08		OK
1785.30	60" RCP	2875.23	173.00	2884.19	8.81	2887.08		OK
1786.30	60" RCP	2875.27	173.00	2884.25	8.81	2887.08		OK
1787.30	60" RCP	2875.31	173.00	2884.32	8.81	2887.08		OK
1813.45	60" RCP	2878.15	173.00	2884.43	8.81	2885.65	Facility 2 Inlet, FG HW<1.5H	OK
1813.45	60" RCP	2878.15	173.00	2884.43	8.81	2885.65		OK

T1 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
T2 PRO CONDITION, ROCKY STORM DRAIN
T3 MAIN-PRO-3 FLOW DISTRIBUTED BY INUNDATION

SO	1000.00	2864.18	60				2866.460			
R	1019.30	2864.30	60	.013					1	
R	1020.10	2864.34	60	.013				1.0		
R	1020.90	2864.38	60	.013				15.0		
R	1021.70	2864.42	60	.013				15.0		
R	1022.50	2864.46	60	.013				15.0		
R	1023.30	2864.50	60	.013				15.0		
R	1033.04	2864.61	60	.013						
R	1036.04	2864.68	60	.013				13.0		
R	1039.04	2864.74	60	.013				15.0		
JX	1039.71	2864.81	60	.013	0.1					
R	1299.83	2866.86	60	.013					1	
R	1300.83	2866.91	60	.013				-4.0		
R	1301.83	2866.96	60	.013				-15.0		
R	1302.83	2867.01	60	.013				-15.0		
R	1303.83	2867.06	60	.013				-15.0		
R	1355.48	2867.39	54	.013					1	
R	1356.81	2867.46	54	.013				-10.0		
R	1358.15	2867.52	54	.013				-15.0		
R	1359.48	2867.59	54	.013				-15.0		
R	1454.21	2868.68	54	.013						
JX	1454.21	2868.68	54 54	.013	38.0		2868.88	0.0		
R	1455.01	2868.72	54	.013				2.0		
R	1455.81	2868.76	54	.013				15.0		
R	1456.61	2868.80	54	.013				15.0		
R	1457.41	2868.84	54	.013				15.0		
R	1458.21	2868.88	54	.013				15.0		
R	1504.26	2869.18	54	.013					1	
R	1506.26	2869.28	54	.013				12.0		
R	1508.26	2869.38	54	.013				15.0		
R	1533.63	2869.55	54	.013						
JX	1538.63	2869.75	54 18	.013	0.1		2872.75	90.0		
R	1782.30	2875.11	54	.013						
WE	1782.30	2875.11	60							
JX	1782.30	2875.11	60 54	.013	41.0		2875.31	0.0		
R	1783.30	2875.15	60	.013				4.0		
R	1784.30	2875.19	60	.013				15.0		
R	1785.30	2875.23	60	.013				15.0		
R	1786.30	2875.27	60	.013				15.0		
R	1787.30	2875.31	60	.013				15.0		
R	1813.45	2878.15	60	.013						
SH	1813.45	2878.15	60							
CD	18	4	1	0.000	1.500	0.000	0.000	0.000	0.0000.00	0.00
CD	24	4	1	0.000	2.000	0.000	0.000	0.000	0.0000.00	0.00
CD	30	4	1	0.000	2.500	0.000	0.000	0.000	0.0000.00	0.00
CD	36	4	1	0.000	3.000	0.000	0.000	0.000	0.0000.00	0.00
CD	42	4	1	0.000	3.500	0.000	0.000	0.000	0.0000.00	0.00
CD	48	4	1	0.000	4.000	0.000	0.000	0.000	0.0000.00	0.00

CD	54	4	1	0.000	4.500	0.000	0.000	0.000	0.0000.00	0.00
CD	60	4	1	0.000	5.000	0.000	0.000	0.000	0.0000.00	0.00
Q				173.000						

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	30	4	1		2.500															
CD	36	4	1		3.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 HEADING LINE NO 2 IS - PRO CONDITION, ROCKY STORM DRAIN
 HEADING LINE NO 3 IS - MAIN-PRO-3 FLOW DISTRIBUTED BY INUNDATION

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
1	IS	A	SYSTEM OUTLET	U/S DATA	1000.000	2864.180	60	2866.460				
2	IS	A	REACH	U/S DATA	1019.300	2864.300	60		.013	.000	.000	1
3	IS	A	REACH	U/S DATA	1020.100	2864.340	60		.013	.000	1.000	0
4	IS	A	REACH	U/S DATA	1020.900	2864.380	60		.013	.000	15.000	0
5	IS	A	REACH	U/S DATA	1021.700	2864.420	60		.013	.000	15.000	0
6	IS	A	REACH	U/S DATA	1022.500	2864.460	60		.013	.000	15.000	0
7	IS	A	REACH	U/S DATA	1023.300	2864.500	60		.013	.000	15.000	0
8	IS	A	REACH	U/S DATA	1033.040	2864.610	60		.013	.000	.000	0
9	IS	A	REACH	U/S DATA	1036.040	2864.680	60		.013	.000	13.000	0
10	IS	A	REACH									

MAIN-PRO-3.EDT

ELEMENT NO	IS	A	JUNCTION	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H		
11					1039.040	2864.740	60				.013	.000	.000	15.000	0	
					*	*	*	*	*	*	*	*	*	*	*	
					1039.710	2864.810	60	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
								0	0	.013	.100	.000	.000	.000	.000	
												RADIUS	ANGLE			
												.000	.000			

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
12					1299.830	2866.860	60				.013	.000	.000	.000	1
					*	*	*								

W S P G W

PAGE NO 3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
13					1300.830	2866.910	60				.013	.000	.000	-4.000	0
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
14					1301.830	2866.960	60				.013	.000	.000	-15.000	0
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
15					1302.830	2867.010	60				.013	.000	.000	-15.000	0
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
16					1303.830	2867.060	60				.013	.000	.000	-15.000	0
					*	*	*								

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
17					1355.480	2867.390	54				.013	.000	.000	.000	1
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
18					1356.810	2867.460	54				.013	.000	.000	-10.000	0
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
19					1358.150	2867.520	54				.013	.000	.000	-15.000	0
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
20					1359.480	2867.590	54				.013	.000	.000	-15.000	0
					*	*	*								

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
21					1454.210	2868.680	54				.013	.000	.000	.000	0
					*	*	*								

ELEMENT NO	IS	A	JUNCTION	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
22					1454.210	2868.680	54	54	0	.013	38.000	.000	2868.880	.000	.000	.000
					*	*	*	*	*	*	*	*	*	*	*	*
													RADIUS	ANGLE		
													.000	.000		

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO	IS	A	REACH	U/S DATA	STATION	INVERT	SECT				RADIUS	ANGLE	ANG PT	MAN H	
23					1455.010	2868.720	54				.013	.000	.000	2.000	0
					*	*	*								

W S P G W

PAGE NO 4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	24	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1455.810	2868.760	54		.013		.000	.000	15.000	0					
ELEMENT NO	25	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1456.610	2868.800	54		.013		.000	.000	15.000	0					
ELEMENT NO	26	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1457.410	2868.840	54		.013		.000	.000	15.000	0					
ELEMENT NO	27	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1458.210	2868.880	54		.013		.000	.000	15.000	0					
ELEMENT NO	28	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1504.260	2869.180	54		.013		.000	.000	.000	1					
ELEMENT NO	29	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1506.260	2869.280	54		.013		.000	.000	12.000	0					
ELEMENT NO	30	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1508.260	2869.380	54		.013		.000	.000	15.000	0					
ELEMENT NO	31	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1533.630	2869.550	54		.013		.000	.000	.000	0					
ELEMENT NO	32	IS	A	JUNCTION	*	*	*	*		*									
				U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4			
					1538.630	2869.750	54	18	0	.013	.100	.000	2872.750	.000	90.000	.000			
												RADIUS	ANGLE						
												.000	.000						
ELEMENT NO	33	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1782.300	2875.110	54		.013		.000	.000	.000	0					
ELEMENT NO	34	IS	A	WALL ENTRANCE	*														
				U/S DATA	STATION	INVERT	SECT		FP										
					1782.300	2875.110	60		.500										
ELEMENT NO	35	IS	A	JUNCTION	*	*	*	*		*									
				U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4			
					1782.300	2875.110	60	54	0	.013	41.000	.000	2875.310	.000	.000	.000			
												RADIUS	ANGLE						
												.000	.000						

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
 THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

W S P G W

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WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	36	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1783.300	2875.150	60		.013		.000	.000	4.000	0					
ELEMENT NO	37	IS	A	REACH	*	*	*												
				U/S DATA	STATION	INVERT	SECT		N		RADIUS	ANGLE	ANG PT	MAN H					
					1784.300	2875.190	60		.013		.000	.000	15.000	0					

MAIN-PRO-3.EDT

ELEMENT NO	IS A	REACH	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
38	IS A	REACH	1785.300	2875.230	60	.013	.000	.000	15.000	0
39	IS A	REACH	1786.300	2875.270	60	.013	.000	.000	15.000	0
40	IS A	REACH	1787.300	2875.310	60	.013	.000	.000	15.000	0
41	IS A	REACH	1813.450	2878.150	60	.013	.000	.000	.000	0
42	IS A	SYSTEM HEADWORKS	1813.450	2878.150	60	.013	.000	.000	.000	0

U/S DATA STATION INVERT SECT

U/S DATA STATION INVERT SECT

U/S DATA STATION INVERT SECT

U/S DATA STATION INVERT SECT

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U/S DATA STATION INVERT SECT

W S ELEV

WATER SURFACE PROFILE LISTING
 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 PRO CONDITION, ROCKY STORM DRAIN
 MAIN-PRO-3 FLOW DISTRIBUTED BY INUNDATION

Date: 1-20-2023 Time: 9:19:13

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2864.180	3.889	2868.069	252.20	15.39	3.68	2871.75	.00	4.44	4.16	5.000	.000	.00	1 .0
19.300	.0062					.0107	.21	3.89	1.37	5.00	.013	.00	.00	PIPE
1019.300	2864.300	3.800	2868.100	252.20	15.75	3.85	2871.95	.00	4.44	4.27	5.000	.000	.00	1 .0
.800	.0500					.0108	.01	3.80	1.43	2.30	.013	.00	.00	PIPE
1020.100	2864.340	3.830	2868.170	252.20	15.63	3.79	2871.96	.00	4.44	4.23	5.000	.000	.00	1 .0
.800	.0497					.0106	.01	3.83	1.41	2.30	.013	.00	.00	PIPE
1020.900	2864.380	3.863	2868.243	252.20	15.49	3.73	2871.97	.00	4.44	4.19	5.000	.000	.00	1 .0
.800	.0500					.0104	.01	3.86	1.39	2.30	.013	.00	.00	PIPE
1021.700	2864.420	3.899	2868.319	252.20	15.35	3.66	2871.98	.00	4.44	4.14	5.000	.000	.00	1 .0
.800	.0500					.0102	.01	3.90	1.36	2.30	.013	.00	.00	PIPE
1022.500	2864.460	3.938	2868.398	252.20	15.20	3.59	2871.99	.00	4.44	4.09	5.000	.000	.00	1 .0
.800	.0500					.0100	.01	3.94	1.33	2.30	.013	.00	.00	PIPE
1023.300	2864.500	3.982	2868.482	252.20	15.04	3.51	2872.00	.00	4.44	4.03	5.000	.000	.00	1 .0
9.740	.0113					.0099	.10	3.98	1.30	3.75	.013	.00	.00	PIPE
1033.040	2864.610	4.003	2868.613	252.20	14.97	3.48	2872.09	.00	4.44	4.00	5.000	.000	.00	1 .0
3.000	.0233					.0096	.03	4.00	1.28	2.89	.013	.00	.00	PIPE
1036.040	2864.680	4.073	2868.752	252.20	14.73	3.37	2872.12	.00	4.44	3.89	5.000	.000	.00	1 .0
3.000	.0200					.0093	.03	4.07	1.24	3.04	.013	.00	.00	PIPE

Date: 1-20-2023 Time: 9:19:13

MAIN-PRO-3.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-3 FLOW DISTRIBUTED BY INUNDATION

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/ I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1039.040	2864.740	4.140	2868.880	252.20	14.51	3.27	2872.15	.00	4.44	3.77	5.000	.000	.00	1 .0
JUNCT STR	.1046					.0088	.01	4.14	1.19		.013	.00	.00	PIPE
1039.710	2864.810	4.435	2869.245	252.10	13.69	2.91	2872.16	.00	4.44	3.16	5.000	.000	.00	1 .0
194.936	.0079					.0082	1.61	4.44	1.00	5.00	.013	.00	.00	PIPE
1234.646	2866.346	4.771	2871.117	252.10	13.05	2.65	2873.76	.00	4.44	2.09	5.000	.000	.00	1 .0
17.390	.0079					.0081	.14	4.77	.76	5.00	.013	.00	.00	PIPE
1252.035	2866.483	4.779	2871.262	252.10	13.04	2.64	2873.90	.00	4.44	2.05	5.000	.000	.00	1 .0
HYDRAULIC JUMP														
1252.035	2866.483	4.091	2870.574	252.10	14.66	3.34	2873.91	.00	4.44	3.86	5.000	.000	.00	1 .0
47.795	.0079					.0097	.46	4.09	1.22	5.00	.013	.00	.00	PIPE
1299.830	2866.860	3.959	2870.819	252.10	15.12	3.55	2874.37	.00	4.44	4.06	5.000	.000	.00	1 .0
1.000	.0498					.0099	.01	3.96	1.31	2.30	.013	.00	.00	PIPE
1300.830	2866.910	4.019	2870.928	252.10	14.91	3.45	2874.38	.00	4.44	3.97	5.000	.000	.00	1 .0
1.000	.0500					.0096	.01	4.02	1.27	2.30	.013	.00	.00	PIPE
1301.830	2866.960	4.091	2871.051	252.10	14.66	3.34	2874.39	.00	4.44	3.86	5.000	.000	.00	1 .0
1.000	.0500					.0092	.01	4.09	1.22	2.30	.013	.00	.00	PIPE
1302.830	2867.010	4.188	2871.198	252.10	14.35	3.20	2874.40	.00	4.44	3.69	5.000	.000	.00	1 .0
1.000	.0500					.0087	.01	4.19	1.16	2.30	.013	.00	.00	PIPE

FILE: MAIN-PRO-3.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:19:13

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-3 FLOW DISTRIBUTED BY INUNDATION

MAIN-PRO-3.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1303.830	2867.060	4.435	2871.495	252.10	13.69	2.91	2874.41	.00	4.44	3.16	5.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1303.830	2867.060	4.282	2871.343	252.10	16.14	4.04	2875.39	.00	4.28	1.93	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.696	.0064					.0150	.13	4.28	1.00	4.50	.013	.00	.00	PIPE
1312.526	2867.115	4.500	2871.615	252.10	15.85	3.90	2875.52	.00	4.28	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42.954	.0064					.0161	.69	4.50	.00	4.50	.013	.00	.00	PIPE
1355.480	2867.390	5.094	2872.484	252.10	15.85	3.90	2876.39	.00	4.28	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.330	.0527					.0164	.02	5.09	.00	2.40	.013	.00	.00	PIPE
1356.810	2867.460	5.174	2872.634	252.10	15.85	3.90	2876.54	.00	4.28	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.340	.0448					.0164	.02	5.17	.00	2.53	.013	.00	.00	PIPE
1358.150	2867.520	5.329	2872.849	252.10	15.85	3.90	2876.75	.00	4.28	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.330	.0527					.0164	.02	5.33	.00	2.40	.013	.00	.00	PIPE
1359.480	2867.590	5.474	2873.064	252.10	15.85	3.90	2876.97	.00	4.28	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94.730	.0115					.0164	1.56	5.47	.00	4.50	.013	.00	.00	PIPE
1454.210	2868.680	5.941	2874.621	252.10	15.85	3.90	2878.52	.00	4.28	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0000					.0141	.00	5.94	.00		.013	.00	.00	PIPE
1454.210	2868.680	7.939	2876.619	214.10	13.46	2.81	2879.43	.00	4.12	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.800	.0500					.0119	.01	7.94	.00	2.21	.013	.00	.00	PIPE
1455.010	2868.720	7.927	2876.647	214.10	13.46	2.81	2879.46	.00	4.12	.00	4.500	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
.800	.0500					.0119	.01	7.93	.00	2.21	.013	.00	.00	PIPE

▲ FILE: MAIN-PRO-3.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:19:13

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

PRO CONDITION, ROCKY STORM DRAIN

MAIN-PRO-3 FLOW DISTRIBUTED BY INUNDATION

MAIN-PRO-3.OUT

L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1782.300	2875.110	6.368	2881.478	214.00	13.46	2.81	2884.29	.00	4.12	.00	4.500	.000	.00	1	.0
WALL ENTRANCE															
1782.300	2875.110	7.818	2882.928	214.00	10.90	1.84	2884.77	.00	4.16	.00	5.000	.000	.00	0	.0
JUNCT STR	.0000					.0056	.00	7.82	.00		.013	.00	.00	PIPE	
1782.300	2875.110	8.929	2884.039	173.00	8.81	1.21	2885.24	.00	3.77	.00	5.000	.000	.00	1	.0
1.000	.0398					.0044	.00	8.93	.00	1.99	.013	.00	.00	PIPE	
1783.300	2875.150	8.909	2884.059	173.00	8.81	1.21	2885.26	.00	3.77	.00	5.000	.000	.00	1	.0
1.000	.0400					.0044	.00	8.91	.00	1.98	.013	.00	.00	PIPE	
1784.300	2875.190	8.933	2884.123	173.00	8.81	1.21	2885.33	.00	3.77	.00	5.000	.000	.00	1	.0
1.000	.0400					.0044	.00	8.93	.00	1.98	.013	.00	.00	PIPE	
1785.300	2875.230	8.957	2884.187	173.00	8.81	1.21	2885.39	.00	3.77	.00	5.000	.000	.00	1	.0
1.000	.0400					.0044	.00	8.96	.00	1.98	.013	.00	.00	PIPE	
1786.300	2875.270	8.981	2884.251	173.00	8.81	1.21	2885.46	.00	3.77	.00	5.000	.000	.00	1	.0
1.000	.0400					.0044	.00	8.98	.00	1.98	.013	.00	.00	PIPE	
1787.300	2875.310	9.005	2884.315	173.00	8.81	1.21	2885.52	.00	3.77	.00	5.000	.000	.00	1	.0
26.150	.1086					.0044	.12	9.01	.00	1.52	.013	.00	.00	PIPE	
1813.450	2878.150	6.280	2884.430	173.00	8.81	1.21	2885.64	.00	3.77	.00	5.000	.000	.00	1	.0



Proposed Condition WSPG Summary

LAT-PRO-3

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check¹
---------------------	------------------------------	------------------------------	------------------------------	-----------------	------------------------	---------------------	-----------------------------	------------------------------

1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1000.00	54" RCP	2875.31	41.00	2884.32	2.58	2887.08	SDMH #2	OK
1028.29	54" RCP	2876.76	41.00	2884.34	2.58	2888.68	SDMH #1	OK
1033.29	36" RCP	2878.26	41.00	2884.34	5.80	2888.68		OK
1069.04	36" RCP	2884.85	41.00	2886.94	7.82	2889.85	Facility TS1 FG Set to HW=5'	OK
1069.04	36" RCP	2884.85	41.00	2886.94	7.82	2889.85		OK

T1 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 T2 PRO CONDITION, ROCKY STORM DRAIN
 T3 LAT-PRO-3

SO	1000.00	2875.31	54		2884.320								
R	1028.29	2876.76	54	.013									
R	1033.29	2878.26	54	.013									
R	1069.04	2884.85	36	.013									
SH	1069.04	2884.85	36										
CD	18	4	1	0.000	1.500	0.000	0.000	0.000	0.0000.00	0.00			
CD	24	4	1	0.000	2.000	0.000	0.000	0.000	0.0000.00	0.00			
CD	30	4	1	0.000	2.500	0.000	0.000	0.000	0.0000.00	0.00			
CD	36	4	1	0.000	3.000	0.000	0.000	0.000	0.0000.00	0.00			
CD	42	4	1	0.000	3.500	0.000	0.000	0.000	0.0000.00	0.00			
CD	48	4	1	0.000	4.000	0.000	0.000	0.000	0.0000.00	0.00			
CD	54	4	1	0.000	4.500	0.000	0.000	0.000	0.0000.00	0.00			
CD	60	4	1	0.000	5.000	0.000	0.000	0.000	0.0000.00	0.00			
Q		41.000											

1
 -3.0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	30	4	1		2.500															
CD	36	4	1		3.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 HEADING LINE NO 2 IS - PRO CONDITION, ROCKY STORM DRAIN
 HEADING LINE NO 3 IS - LAT-PRO-3

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	DESCRIPTION	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
1	IS A SYSTEM OUTLET		1000.000	2875.310	54	2884.320				
2	IS A REACH		1028.290	2876.760	54		.000	.000	.000	1
3	IS A REACH		1033.290	2878.260	54		.000	.000	-3.000	0
4	IS A REACH		1069.040	2884.850	36		.000	.000	.000	0
5	IS A SYSTEM HEADWORKS		1069.040	2884.850	36		.000			

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Prs/Pip	Wth
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	Ch
1000.000	2875.310	9.010	2884.320	41.00	2.58	.10	2884.42	.00	1.84	.00	4.500	.000	.00	1	.0
	.0513					.0004	.01	9.01	.00	.92	.013	.00	.00	PIPE	
1028.290	2876.760	7.578	2884.338	41.00	2.58	.10	2884.44	.00	1.84	.00	4.500	.000	.00	1	.0
	.3000					.0004	.00	7.58	.00	.60	.013	.00	.00	PIPE	
1033.290	2878.260	6.081	2884.341	41.00	5.80	.52	2884.86	.00	2.09	.00	3.000	.000	.00	1	.0
	.1843					.0038	.04	6.08	.00	.77	.013	.00	.00	PIPE	
1044.676	2880.359	4.023	2884.382	41.00	5.80	.52	2884.90	.00	2.09	.00	3.000	.000	.00	1	.0
HYDRAULIC JUMP															
1044.676	2880.359	1.028	2881.386	41.00	19.15	5.70	2887.08	.00	2.09	2.85	3.000	.000	.00	1	.0
	.1843					.0564	.16	1.03	3.89	.77	.013	.00	.00	PIPE	
1047.465	2880.873	1.056	2881.929	41.00	18.45	5.28	2887.21	.00	2.09	2.87	3.000	.000	.00	1	.0
	.1843					.0502	.17	1.06	3.69	.77	.013	.00	.00	PIPE	
1050.764	2881.481	1.094	2882.575	41.00	17.59	4.80	2887.38	.00	2.09	2.89	3.000	.000	.00	1	.0
	.1843					.0440	.12	1.09	3.45	.77	.013	.00	.00	PIPE	
1053.595	2882.003	1.133	2883.136	41.00	16.77	4.37	2887.50	.00	2.09	2.91	3.000	.000	.00	1	.0
	.1843					.0386	.09	1.13	3.22	.77	.013	.00	.00	PIPE	
1056.038	2882.453	1.174	2883.627	41.00	15.99	3.97	2887.60	.00	2.09	2.93	3.000	.000	.00	1	.0
	.1843					.0338	.07	1.17	3.01	.77	.013	.00	.00	PIPE	

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 PRO CONDITION, ROCKY STORM DRAIN
 LAT-PRO-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No With Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1058.153	2882.843	1.217	2884.060	41.00	15.24	3.61	2887.67	.00	2.09	2.95	3.000	.000	.00	1 .0
	1.834	.1843				.0297	.05	1.22	2.81	.77	.013	.00	.00	PIPE
1059.987	2883.181	1.261	2884.442	41.00	14.54	3.28	2887.72	.00	2.09	2.96	3.000	.000	.00	1 .0
	1.591	.1843				.0261	.04	1.26	2.62	.77	.013	.00	.00	PIPE
1061.578	2883.475	1.308	2884.782	41.00	13.86	2.98	2887.76	.00	2.09	2.98	3.000	.000	.00	1 .0
	1.380	.1843				.0229	.03	1.31	2.45	.77	.013	.00	.00	PIPE
1062.958	2883.729	1.356	2885.085	41.00	13.21	2.71	2887.80	.00	2.09	2.99	3.000	.000	.00	1 .0
	1.193	.1843				.0201	.02	1.36	2.28	.77	.013	.00	.00	PIPE
1064.151	2883.949	1.407	2885.355	41.00	12.60	2.46	2887.82	.00	2.09	2.99	3.000	.000	.00	1 .0
	1.027	.1843				.0177	.02	1.41	2.13	.77	.013	.00	.00	PIPE
1065.178	2884.138	1.460	2885.598	41.00	12.01	2.24	2887.84	.00	2.09	3.00	3.000	.000	.00	1 .0
	.878	.1843				.0156	.01	1.46	1.98	.77	.013	.00	.00	PIPE
1066.055	2884.300	1.515	2885.815	41.00	11.45	2.04	2887.85	.00	2.09	3.00	3.000	.000	.00	1 .0
	.744	.1843				.0137	.01	1.52	1.85	.77	.013	.00	.00	PIPE
1066.800	2884.437	1.573	2886.010	41.00	10.92	1.85	2887.86	.00	2.09	3.00	3.000	.000	.00	1 .0
	.622	.1843				.0121	.01	1.57	1.72	.77	.013	.00	.00	PIPE
1067.421	2884.552	1.635	2886.186	41.00	10.41	1.68	2887.87	.00	2.09	2.99	3.000	.000	.00	1 .0
	.510	.1843				.0107	.01	1.63	1.60	.77	.013	.00	.00	PIPE

FILE: LAT-PRO-3.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:19:32

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 PRO CONDITION, ROCKY STORM DRAIN
 LAT-PRO-3

LAT-PRO-3.OUT

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
| Elev | (FT) | Elev | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
L/Elem | Ch Slope | | | | | | | | | | | | | | |
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
1067.932 | 2884.646 | 1.699 | 2886.345 | 41.00 | 9.93 | 1.53 | 2887.88 | .00 | 2.09 | 2.97 | 3.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
.406 | .1843 | | | | | | | | | | | | | | | |
1068.338 | 2884.721 | 1.767 | 2886.488 | 41.00 | 9.47 | 1.39 | 2887.88 | .00 | 2.09 | 2.95 | 3.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
.310 | .1843 | | | | | | | | | | | | | | | |
1068.648 | 2884.778 | 1.839 | 2886.617 | 41.00 | 9.03 | 1.26 | 2887.88 | .00 | 2.09 | 2.92 | 3.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
.218 | .1843 | | | | | | | | | | | | | | | |
1068.866 | 2884.818 | 1.915 | 2886.734 | 41.00 | 8.61 | 1.15 | 2887.88 | .00 | 2.09 | 2.88 | 3.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
.130 | .1843 | | | | | | | | | | | | | | | |
1068.996 | 2884.842 | 1.997 | 2886.839 | 41.00 | 8.20 | 1.05 | 2887.88 | .00 | 2.09 | 2.83 | 3.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |
.044 | .1843 | | | | | | | | | | | | | | | |
1069.040 | 2884.850 | 2.085 | 2886.935 | 41.00 | 7.82 | .95 | 2887.88 | .00 | 2.09 | 2.76 | 3.000 | .000 | .00 | 1 | .0
| | | | | | | | | | | | | | | | |

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Developed Condition WSPG Summary

MAIN-DEV

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q ₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check ¹
1000.00	60" RCP	2864.18	251.40	2868.06	15.37	2869.18	Outlet into DE2, FG set to soffit	OK
1019.30	60" RCP	2864.30	251.40	2868.09	15.73	2872.23	SDMH #7	OK
1020.10	60" RCP	2864.34	251.40	2868.16	15.60	2872.23		OK
1020.90	60" RCP	2864.38	251.40	2868.24	15.47	2872.23		OK
1021.70	60" RCP	2864.42	251.40	2868.31	15.33	2872.23		OK
1022.50	60" RCP	2864.46	251.40	2868.39	15.18	2872.23		OK
1023.30	60" RCP	2864.50	251.40	2868.48	15.02	2872.23		OK
1033.04	60" RCP	2864.61	251.40	2868.61	14.94	2873.26		DI2
1036.04	60" RCP	2864.68	251.40	2868.75	14.70	2873.26	OK	
1039.04	60" RCP	2864.74	251.40	2868.88	14.48	2873.26	OK	
1039.71	60" RCP	2864.81	251.30	2869.24	13.66	2873.26	OK	
1299.83	60" RCP	2866.86	251.30	2870.81	15.09	2877.06	SDMH #6	OK
1300.83	60" RCP	2866.91	251.30	2870.92	14.88	2877.06		OK
1301.83	60" RCP	2866.96	251.30	2871.05	14.63	2877.06		OK
1302.83	60" RCP	2867.01	251.30	2871.19	14.32	2877.06		OK
1303.83	60" RCP	2867.06	251.30	2871.49	13.66	2877.06		OK
1355.48	54" RCP	2867.39	251.30	2872.48	15.80	2877.82	SDMH #5	OK
1356.81	54" RCP	2867.46	251.30	2872.63	15.80	2877.82		OK
1358.15	54" RCP	2867.52	251.30	2872.84	15.80	2877.82		OK
1359.48	54" RCP	2867.59	251.30	2873.05	15.80	2877.82		OK
1454.21	54" RCP	2868.68	251.20	2874.61	15.79	2878.27	SDMH #4 Junction to Facility 5B	OK
1454.21	54" RCP	2868.68	251.20	2874.61	15.79	2878.27		OK
1455.01	54" RCP	2868.72	251.20	2874.65	15.79	2878.27		OK
1455.81	54" RCP	2868.76	251.20	2874.85	15.79	2878.27		OK
1456.61	54" RCP	2868.80	251.20	2875.05	15.79	2878.27		OK
1457.41	54" RCP	2868.84	251.20	2875.26	15.79	2878.27		OK
1458.21	54" RCP	2868.88	251.20	2875.46	15.79	2878.27		OK
1504.26	54" RCP	2869.18	251.20	2876.41	15.79	2879.31		SDMH #12
1506.26	54" RCP	2869.28	251.20	2876.60	15.79	2879.31	OK	
1508.26	54" RCP	2869.38	251.20	2876.82	15.79	2879.31	OK	
1533.63	54" RCP	2869.55	251.20	2877.23	15.79	2880.00	SDMH #3	OK
1538.63	54" RCP	2869.75	251.10	2877.32	15.79	2880.00	Junction to DI1 Lateral	OK
1782.30	54" RCP	2875.11	251.10	2881.29	15.79	2887.08	SDMH #2	OK

1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1787.30	54" RCP	2875.31	251.00	2881.38	15.78	2887.08	Junction to Facility 2	OK
1815.59	54" RCP	2876.76	251.00	2881.84	15.78	2888.68	SDMH #1	OK
1815.59	54" RCP	2876.76	251.00	2881.84	15.78	2888.68		OK

MAIN-DEV.WSW

T1 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 T2 DEV CONDITION, ROCKY STORM DRAIN
 T3 MAIN-DEV

SO	1000.00	2864.18	60						2866.460		
R	1019.30	2864.30	60	.013							1
R	1020.10	2864.34	60	.013						1.0	
R	1020.90	2864.38	60	.013						15.0	
R	1021.70	2864.42	60	.013						15.0	
R	1022.50	2864.46	60	.013						15.0	
R	1023.30	2864.50	60	.013						15.0	
R	1033.04	2864.61	60	.013							
R	1036.04	2864.68	60	.013						13.0	
R	1039.04	2864.74	60	.013						15.0	
JX	1039.71	2864.81	60	.013	0.1						
R	1299.83	2866.86	60	.013							1
R	1300.83	2866.91	60	.013						-4.0	
R	1301.83	2866.96	60	.013						-15.0	
R	1302.83	2867.01	60	.013						-15.0	
R	1303.83	2867.06	60	.013						-15.0	
R	1355.48	2867.39	54	.013							1
R	1356.81	2867.46	54	.013						-10.0	
R	1358.15	2867.52	54	.013						-15.0	
R	1359.48	2867.59	54	.013						-15.0	
R	1454.21	2868.68	54	.013							
JX	1454.21	2868.68	54	.013	0.1			2868.88	0.0		
R	1455.01	2868.72	54	.013						2.0	
R	1455.81	2868.76	54	.013						15.0	
R	1456.61	2868.80	54	.013						15.0	
R	1457.41	2868.84	54	.013						15.0	
R	1458.21	2868.88	54	.013						15.0	
R	1504.26	2869.18	54	.013							1
R	1506.26	2869.28	54	.013						12.0	
R	1508.26	2869.38	54	.013						15.0	
R	1533.63	2869.55	54	.013							
JX	1538.63	2869.75	54	.013	0.1			2872.75	90.0		
R	1782.30	2875.11	54	.013							
JX	1787.30	2875.31	54	.013	0.1			2875.31	64.0		
R	1815.59	2876.76	54	.013							
SH	1815.59	2876.76	54					2881.260			
CD	18	4	1	0.000	1.500	0.000	0.000	0.000	0.0000.00	0.00	
CD	24	4	1	0.000	2.000	0.000	0.000	0.000	0.0000.00	0.00	
CD	30	4	1	0.000	2.500	0.000	0.000	0.000	0.0000.00	0.00	
CD	36	4	1	0.000	3.000	0.000	0.000	0.000	0.0000.00	0.00	
CD	42	4	1	0.000	3.500	0.000	0.000	0.000	0.0000.00	0.00	
CD	48	4	1	0.000	4.000	0.000	0.000	0.000	0.0000.00	0.00	
CD	54	4	1	0.000	4.500	0.000	0.000	0.000	0.0000.00	0.00	
CD	60	4	1	0.000	5.000	0.000	0.000	0.000	0.0000.00	0.00	
Q					251.000						

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	30	4	1		2.500															
CD	36	4	1		3.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 HEADING LINE NO 2 IS -
 DEV CONDITION, ROCKY STORM DRAIN
 HEADING LINE NO 3 IS -
 MAIN-DEV

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
1	IS	A	SYSTEM OUTLET		1000.000	2864.180	60	2866.460				
2	IS	A	REACH		1019.300	2864.300	60	.013	.000	.000	.000	1
3	IS	A	REACH		1020.100	2864.340	60	.013	.000	.000	1.000	0
4	IS	A	REACH		1020.900	2864.380	60	.013	.000	.000	15.000	0
5	IS	A	REACH		1021.700	2864.420	60	.013	.000	.000	15.000	0
6	IS	A	REACH		1022.500	2864.460	60	.013	.000	.000	15.000	0
7	IS	A	REACH		1023.300	2864.500	60	.013	.000	.000	15.000	0
8	IS	A	REACH		1033.040	2864.610	60	.013	.000	.000	.000	0
9	IS	A	REACH		1036.040	2864.680	60	.013	.000	.000	13.000	0
10	IS	A	REACH									

MAIN-DEV.EDT

ELEMENT NO	IS	A	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4	MAN H
				1039.040	2864.740	60			.013			.000	.000	15.000		0
				1039.710	2864.810	60	0	0	.013	.100	.000	.000	.000	.000	.000	
				1299.830	2866.860	60			.013			.000	.000	.000		1
W S P G W																
PAGE NO 3																
WATER SURFACE PROFILE - ELEMENT CARD LISTING																
				1300.830	2866.910	60			.013			.000	.000	-4.000		0
				1301.830	2866.960	60			.013			.000	.000	-15.000		0
				1302.830	2867.010	60			.013			.000	.000	-15.000		0
				1303.830	2867.060	60			.013			.000	.000	-15.000		0
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS																
				1355.480	2867.390	54			.013			.000	.000	.000		1
				1356.810	2867.460	54			.013			.000	.000	-10.000		0
				1358.150	2867.520	54			.013			.000	.000	-15.000		0
				1359.480	2867.590	54			.013			.000	.000	-15.000		0
				1454.210	2868.680	54			.013			.000	.000	.000		0
				1454.210	2868.680	54	54	0	.013	.100	.000	2868.880	.000	.000	.000	.000
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING																
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING																
				1455.010	2868.720	54			.013			.000	.000	2.000		0
W S P G W																
PAGE NO 4																

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:19:48

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

DEV CONDITION, ROCKY STORM DRAIN

MAIN-DEV

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2864.180	3.883	2868.063	251.40	15.37	3.67	2871.73	.00	4.43	4.17	5.000	.000	.00	1 .0
	19.300	.0062				.0106	.21	3.88	1.37	5.00	.013	.00	.00	PIPE
1019.300	2864.300	3.794	2868.094	251.40	15.73	3.84	2871.93	.00	4.43	4.28	5.000	.000	.00	1 .0
	.800	.0500				.0108	.01	3.79	1.43	2.30	.013	.00	.00	PIPE
1020.100	2864.340	3.824	2868.164	251.40	15.60	3.78	2871.94	.00	4.43	4.24	5.000	.000	.00	1 .0
	.800	.0497				.0106	.01	3.82	1.41	2.30	.013	.00	.00	PIPE
1020.900	2864.380	3.857	2868.237	251.40	15.47	3.72	2871.95	.00	4.43	4.20	5.000	.000	.00	1 .0
	.800	.0500				.0104	.01	3.86	1.39	2.30	.013	.00	.00	PIPE
1021.700	2864.420	3.893	2868.313	251.40	15.33	3.65	2871.96	.00	4.43	4.15	5.000	.000	.00	1 .0
	.800	.0500				.0102	.01	3.89	1.36	2.30	.013	.00	.00	PIPE
1022.500	2864.460	3.932	2868.392	251.40	15.18	3.58	2871.97	.00	4.43	4.10	5.000	.000	.00	1 .0
	.800	.0500				.0100	.01	3.93	1.33	2.30	.013	.00	.00	PIPE
1023.300	2864.500	3.976	2868.476	251.40	15.02	3.50	2871.98	.00	4.43	4.04	5.000	.000	.00	1 .0
	9.740	.0113				.0098	.10	3.98	1.30	3.74	.013	.00	.00	PIPE
1033.040	2864.610	3.997	2868.607	251.40	14.94	3.47	2872.07	.00	4.43	4.00	5.000	.000	.00	1 .0
	3.000	.0233				.0096	.03	4.00	1.28	2.89	.013	.00	.00	PIPE
1036.040	2864.680	4.067	2868.747	251.40	14.70	3.35	2872.10	.00	4.43	3.90	5.000	.000	.00	1 .0
	3.000	.0200				.0093	.03	4.07	1.24	3.03	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:19:48

MAIN-DEV.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
DEV CONDITION, ROCKY STORM DRAIN
MAIN-DEV

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No With Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1039.040	2864.740	4.135	2868.875	251.40	14.48	3.25	2872.13	.00	4.43	3.78	5.000	.000	.00	1 .0
JUNCT STR	.1046					.0087	.01	4.13	1.19		.013	.00	.00	PIPE
1039.710	2864.810	4.430	2869.240	251.30	13.66	2.90	2872.14	.00	4.43	3.18	5.000	.000	.00	1 .0
202.895	.0079					.0082	1.66	4.43	1.00	5.00	.013	.00	.00	PIPE
1242.605	2866.409	4.749	2871.159	251.30	13.04	2.64	2873.80	.00	4.43	2.18	5.000	.000	.00	1 .0
HYDRAULIC JUMP														
1242.605	2866.409	4.114	2870.523	251.30	14.54	3.28	2873.81	.00	4.43	3.82	5.000	.000	.00	1 .0
57.225	.0079					.0096	.55	4.11	1.20	5.00	.013	.00	.00	PIPE
1299.830	2866.860	3.954	2870.814	251.30	15.09	3.54	2874.35	.00	4.43	4.07	5.000	.000	.00	1 .0
1.000	.0498					.0098	.01	3.95	1.31	2.30	.013	.00	.00	PIPE
1300.830	2866.910	4.013	2870.923	251.30	14.88	3.44	2874.36	.00	4.43	3.98	5.000	.000	.00	1 .0
1.000	.0500					.0095	.01	4.01	1.27	2.29	.013	.00	.00	PIPE
1301.830	2866.960	4.085	2871.045	251.30	14.63	3.32	2874.37	.00	4.43	3.87	5.000	.000	.00	1 .0
1.000	.0500					.0092	.01	4.09	1.22	2.29	.013	.00	.00	PIPE
1302.830	2867.010	4.183	2871.193	251.30	14.32	3.19	2874.38	.00	4.43	3.70	5.000	.000	.00	1 .0
1.000	.0500					.0087	.01	4.18	1.16	2.29	.013	.00	.00	PIPE
1303.830	2867.060	4.430	2871.490	251.30	13.66	2.90	2874.39	.00	4.43	3.18	5.000	.000	.00	1 .0
1303.830	2867.060	4.280	2871.340	251.30	16.09	4.02	2875.36	.00	4.28	1.94	4.500	.000	.00	1 .0
8.901	.0064					.0149	.13	4.28	1.00	4.50	.013	.00	.00	PIPE

FILE: MAIN-DEV.WSW

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WATER SURFACE PROFILE LISTING

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MAIN-DEV.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
DEV CONDITION, ROCKY STORM DRAIN
MAIN-DEV

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1312.731	2867.117	4.500	2871.617	251.30	15.80	3.88	2875.49	.00	4.28	.00	4.500	.000	.00	1 .0
42.749	.0064					.0160	.68	4.50	.00	4.50	.013	.00	.00	PIPE
1355.480	2867.390	5.086	2872.476	251.30	15.80	3.88	2876.35	.00	4.28	.00	4.500	.000	.00	1 .0
1.330	.0527					.0163	.02	5.09	.00	2.40	.013	.00	.00	PIPE
1356.810	2867.460	5.165	2872.625	251.30	15.80	3.88	2876.50	.00	4.28	.00	4.500	.000	.00	1 .0
1.340	.0448					.0163	.02	5.17	.00	2.52	.013	.00	.00	PIPE
1358.150	2867.520	5.319	2872.839	251.30	15.80	3.88	2876.72	.00	4.28	.00	4.500	.000	.00	1 .0
1.330	.0527					.0163	.02	5.32	.00	2.40	.013	.00	.00	PIPE
1359.480	2867.590	5.463	2873.053	251.30	15.80	3.88	2876.93	.00	4.28	.00	4.500	.000	.00	1 .0
94.730	.0115					.0163	1.55	5.46	.00	4.50	.013	.00	.00	PIPE
JUNCT STR	.0000					.0163	.00	5.92	.00	.00	.013	.00	.00	PIPE
1454.210	2868.680	5.926	2874.606	251.20	15.79	3.87	2878.48	.00	4.28	.00	4.500	.000	.00	1 .0
.800	.0500					.0163	.01	5.93	.00	2.44	.013	.00	.00	PIPE
1455.010	2868.720	5.925	2874.645	251.20	15.79	3.87	2878.52	.00	4.28	.00	4.500	.000	.00	1 .0
.800	.0500					.0163	.01	5.92	.00	2.44	.013	.00	.00	PIPE
1455.810	2868.760	6.089	2874.849	251.20	15.79	3.87	2878.72	.00	4.28	.00	4.500	.000	.00	1 .0
.800	.0501					.0163	.01	6.09	.00	2.44	.013	.00	.00	PIPE

FILE: MAIN-DEV.WSW

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WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:19:48

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
DEV CONDITION, ROCKY STORM DRAIN
MAIN-DEV

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
---------	-------------	------------	------------	---------	-----------	----------	----------------	------------	----------------	----------------	----------------	-----------------	----	----------------

MAIN-DEV.OUT

L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1456.610	2868.800	6.254	2875.054	251.20	15.79	3.87	2878.93	.00	4.28	.00	4.500	.000	.00	1 .0
	.800 .0500					.0163	.01	6.25	.00	2.44	.013	.00	.00	PIPE
1457.410	2868.840	6.419	2875.259	251.20	15.79	3.87	2879.13	.00	4.28	.00	4.500	.000	.00	1 .0
	.800 .0497					.0163	.01	6.42	.00	2.44	.013	.00	.00	PIPE
1458.210	2868.880	6.584	2875.464	251.20	15.79	3.87	2879.34	.00	4.28	.00	4.500	.000	.00	1 .0
	46.050 .0065					.0163	.75	6.58	.00	4.50	.013	.00	.00	PIPE
1504.260	2869.180	7.229	2876.409	251.20	15.79	3.87	2880.28	.00	4.28	.00	4.500	.000	.00	1 .0
	2.000 .0500					.0163	.03	7.23	.00	2.44	.013	.00	.00	PIPE
1506.260	2869.280	7.315	2876.595	251.20	15.79	3.87	2880.47	.00	4.28	.00	4.500	.000	.00	1 .0
	2.000 .0499					.0163	.03	7.31	.00	2.44	.013	.00	.00	PIPE
1508.260	2869.380	7.439	2876.819	251.20	15.79	3.87	2880.69	.00	4.28	.00	4.500	.000	.00	1 .0
	25.370 .0067					.0163	.41	7.44	.00	4.50	.013	.00	.00	PIPE
1533.630	2869.550	7.683	2877.233	251.20	15.79	3.87	2881.11	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0400					.0163	.08	7.68	.00		.013	.00	.00	PIPE
1538.630	2869.750	7.571	2877.321	251.10	15.79	3.87	2881.19	.00	4.28	.00	4.500	.000	.00	1 .0
	243.670 .0220					.0163	3.97	7.57	.00	3.22	.013	.00	.00	PIPE
1782.300	2875.110	6.184	2881.294	251.10	15.79	3.87	2885.16	.00	4.28	.00	4.500	.000	.00	1 .0
JUNCT STR	.0400					.0163	.08	6.18	.00		.013	.00	.00	PIPE

FILE: MAIN-DEV.WSW

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WATER SURFACE PROFILE LISTING

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PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

DEV CONDITION, ROCKY STORM DRAIN

MAIN-DEV

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch

MAIN-DEV.OUT

1787.300	2875.310	6.072	2881.382	251.00	15.78	3.87	2885.25	.00	4.28	.00	4.500	.000	.00	1	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
28.290	.0513					.0163	.46	6.07	.00	2.42	.013	.00	.00	PIPE	
1815.590	2876.760	5.082	2881.843	251.00	15.78	3.87	2885.71	.00	4.28	.00	4.500	.000	.00	1	.0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

↑

Ultimate Condition WSPG Summary
MAIN-ULT

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check¹
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1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1000.00	54" RCP	2860.98	178.00	2864.11	15.07	2867.48	Future tie-in to downstream facility, FG set to 2-ft above soffit	OK
1145.81	54" RCP	2862.66	178.00	2865.73	15.42	2874.50	SDMH #9	OK
1147.81	54" RCP	2862.76	178.00	2865.87	15.17	2874.50		OK
1149.81	54" RCP	2862.86	178.00	2866.03	14.89	2874.50		OK
1198.74	54" RCP	2863.39	178.00	2866.53	15.04	2874.33	SDMH #8	OK
1200.07	54" RCP	2863.46	178.00	2866.64	14.84	2874.33		OK
1201.41	54" RCP	2863.52	178.00	2866.73	14.67	2874.33		OK
1202.74	54" RCP	2863.59	178.00	2866.85	14.44	2874.33	SDMH #6	OK
1515.63	54" RCP	2866.89	178.00	2869.93	15.60	2877.06		OK
1516.96	54" RCP	2867.06	178.00	2870.19	15.08	2877.06		OK
1518.30	54" RCP	2867.22	178.00	2870.46	14.52	2877.06		OK
1519.63	54" RCP	2867.39	178.00	2870.79	13.80	2877.06	SDMH #5	OK
1571.28	54" RCP	2867.89	178.00	2871.29	13.80	2877.82		OK
1572.61	54" RCP	2867.96	178.00	2871.45	13.46	2877.82		OK
1573.95	54" RCP	2868.02	178.00	2871.60	13.12	2877.82		OK
1575.28	54" RCP	2868.09	178.00	2871.96	12.24	2877.82	SDMH #4 / Junction to LAT-ULT	OK
1670.01	54" RCP	2868.68	178.00	2872.94	11.43	2878.27		OK
1674.01	54" RCP	2868.88	141.00	2874.43	8.87	2878.27	SDMH #12	OK
1728.08	54" RCP	2869.22	141.00	2874.71	8.87	2878.50		OK
1728.08	54" RCP	2869.22	141.00	2874.71	8.87	2878.50		OK

MAIN-ULT.WSW

T1 PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 T2 ULT CONDITION, MICHELLI CREST STORM DRAIN
 T3 MAIN-ULT

SO	1000.00	2860.98	54							2865.480		
R	1145.81	2862.66	54	.013								1
R	1147.81	2862.76	54	.013					-15.0			
R	1149.81	2862.86	54	.013					-15.0			
R	1198.74	2863.39	54	.013								1
R	1200.07	2863.46	54	.013					1.0			
R	1201.41	2863.52	54	.013					15.0			
R	1202.74	2863.59	54	.013					15.0			
R	1515.63	2866.89	54	.013								1
R	1516.96	2867.06	54	.013					10.0			
R	1518.30	2867.22	54	.013					15.0			
R	1519.63	2867.39	54	.013					15.0			
R	1571.28	2867.89	54	.013								1
R	1572.61	2867.96	54	.013					-10.0			
R	1573.95	2868.02	54	.013					-15.0			
R	1575.28	2868.09	54	.013					-15.0			
R	1670.01	2868.68	54	.013								
JX	1674.01	2868.88	54	.013	37.0					2868.88	62.0	
R	1728.08	2869.22	54	.013								
SH	1728.08	2869.22	54							2873.720		
CD	18	4	1	0.000	1.500	0.000	0.000	0.000	0.0000.00	0.00		
CD	24	4	1	0.000	2.000	0.000	0.000	0.000	0.0000.00	0.00		
CD	42	4	1	0.000	3.500	0.000	0.000	0.000	0.0000.00	0.00		
CD	48	4	1	0.000	4.000	0.000	0.000	0.000	0.0000.00	0.00		
CD	54	4	1	0.000	4.500	0.000	0.000	0.000	0.0000.00	0.00		
CD	60	4	1	0.000	5.000	0.000	0.000	0.000	0.0000.00	0.00		
CD	1	3	0	0.000	5.000	8.000	0.000	0.000	0.0000.00	0.00		
Q					141.000							

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															
CD	1	3	0	.000	5.000	8.000	.000	.000	.00											

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS - PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
HEADING LINE NO 2 IS - ULT CONDITION, MICHELLI CREST STORM DRAIN
HEADING LINE NO 3 IS - MAIN-ULT

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV	RADIUS	ANGLE	ANG PT	MAN H
ELEMENT NO 1	IS	A	SYSTEM OUTLET	U/S DATA	1000.000	2860.980	54	2865.480				
ELEMENT NO 2	IS	A	REACH	U/S DATA	1145.810	2862.660	54		.000	.000	.000	1
ELEMENT NO 3	IS	A	REACH	U/S DATA	1147.810	2862.760	54		.000	.000	-15.000	0
ELEMENT NO 4	IS	A	REACH	U/S DATA	1149.810	2862.860	54		.000	.000	-15.000	0
ELEMENT NO 5	IS	A	REACH	U/S DATA	1198.740	2863.390	54		.000	.000	.000	1
ELEMENT NO 6	IS	A	REACH	U/S DATA	1200.070	2863.460	54		.000	.000	1.000	0
ELEMENT NO 7	IS	A	REACH	U/S DATA	1201.410	2863.520	54		.000	.000	15.000	0
ELEMENT NO 8	IS	A	REACH	U/S DATA	1202.740	2863.590	54		.000	.000	15.000	0
ELEMENT NO 9	IS	A	REACH	U/S DATA	1515.630	2866.890	54		.000	.000	.000	1
ELEMENT NO 10	IS	A	REACH	U/S DATA								

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:20: 0

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

ULT CONDITION, MICHELLI CREST STORM DRAIN

MAIN-ULT

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
         | Elev   | (FT)  | Elev   | (CFS) | (FPS) | Head | Grd.El. | Elev  | Depth  | Width  | Dia.-FT | or I.D. | ZL | Prs/Pip
L/Elem | Ch Slope | | | | | | | | | | | | | | | |
***** | | | | | | | | | | | | | | | | |
1000.000 | 2860.980 | 3.131 | 2864.111 | 178.00 | 15.07 | 3.53 | 2867.64 | .00 | 3.87 | 4.14 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
145.810 | .0115 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1145.810 | 2862.660 | 3.066 | 2865.726 | 178.00 | 15.42 | 3.69 | 2869.42 | .00 | 3.87 | 4.19 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
2.000 | .0500 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1147.810 | 2862.760 | 3.113 | 2865.873 | 178.00 | 15.17 | 3.57 | 2869.44 | .00 | 3.87 | 4.16 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
2.000 | .0500 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1149.810 | 2862.860 | 3.165 | 2866.026 | 178.00 | 14.89 | 3.44 | 2869.47 | .00 | 3.87 | 4.11 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
48.930 | .0108 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1198.740 | 2863.390 | 3.136 | 2866.525 | 178.00 | 15.04 | 3.51 | 2870.04 | .00 | 3.87 | 4.14 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
1.330 | .0527 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1200.070 | 2863.460 | 3.175 | 2866.635 | 178.00 | 14.84 | 3.42 | 2870.06 | .00 | 3.87 | 4.10 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
1.340 | .0448 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1201.410 | 2863.520 | 3.209 | 2866.729 | 178.00 | 14.67 | 3.34 | 2870.07 | .00 | 3.87 | 4.07 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
1.330 | .0527 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1202.740 | 2863.590 | 3.256 | 2866.846 | 178.00 | 14.44 | 3.24 | 2870.09 | .00 | 3.87 | 4.02 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
186.998 | .0105 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
1389.738 | 2865.562 | 3.169 | 2868.731 | 178.00 | 14.87 | 3.43 | 2872.17 | .00 | 3.87 | 4.11 | 4.500 | .000 | .00 | 1 .0
         | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -
125.892 | .0105 | | | | | | | | | | | | | | | |
         | | | | | | | | | | | | | | | | |
*****

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:20: 0

MAIN-ULT.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 ULT CONDITION, MICHELLI CREST STORM DRAIN
 MAIN-ULT

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth |
        | Elev   | (FT)  | Elev   | (CFS) | (FPS) | Head | Grd.El. | Elev  | Depth  | Width  | Dia.-FT | or I.D. | ZL  | Prs/Pip |
L/Elem | Ch Slope |      |      |      |      | SF Ave | HF   | SE Dpth | Froude N | Norm Dp | "N"   | X-Fall | ZR  | Type Ch |
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|
1515.630 | 2866.890 | 3.035 | 2869.925 | 178.00 | 15.60 | 3.78 | 2873.70 | .00 | 3.87 | 4.22 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | 1.330 | .1279 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1516.960 | 2867.060 | 3.129 | 2870.189 | 178.00 | 15.08 | 3.53 | 2873.72 | .00 | 3.87 | 4.14 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | 1.340 | .1193 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1518.300 | 2867.220 | 3.239 | 2870.459 | 178.00 | 14.52 | 3.28 | 2873.73 | .00 | 3.87 | 4.04 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | .107 | .1278 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1518.407 | 2867.234 | 3.250 | 2870.484 | 178.00 | 14.47 | 3.25 | 2873.74 | .00 | 3.87 | 4.03 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | 1.223 | .1278 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1519.630 | 2867.390 | 3.402 | 2870.792 | 178.00 | 13.80 | 2.96 | 2873.75 | .00 | 3.87 | 3.87 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | 51.650 | .0097 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1571.280 | 2867.890 | 3.402 | 2871.292 | 178.00 | 13.80 | 2.96 | 2874.25 | .00 | 3.87 | 3.87 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | 1.330 | .0527 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1572.610 | 2867.960 | 3.486 | 2871.446 | 178.00 | 13.46 | 2.81 | 2874.26 | .00 | 3.87 | 3.76 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | 1.340 | .0448 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1573.950 | 2868.020 | 3.580 | 2871.600 | 178.00 | 13.12 | 2.67 | 2874.27 | .00 | 3.87 | 3.63 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | .685 | .0527 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
1574.635 | 2868.056 | 3.663 | 2871.719 | 178.00 | 12.84 | 2.56 | 2874.28 | .00 | 3.87 | 3.50 | 4.500 | .000 | .00 | 1 | .0 |
        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
        | .646 | .0527 | | | | | | | | | | | | | | | |
        | | | | | | | | | | | | | | | | | |
  FILE: MAIN-ULT.WSW
  W S P G W - CIVILDESIGN Version 14.08
  Program Package Serial Number: 7189
  WATER SURFACE PROFILE LISTING
  Date: 1-20-2023 Time: 9:20: 0
  PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
  ULT CONDITION, MICHELLI CREST STORM DRAIN
  MAIN-ULT
  PAGE 3
  
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MAIN-ULT.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt/or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1575.280	2868.090	3.868	2871.958	178.00	12.24	2.33	2874.28	.00	3.87	3.13	4.500	.000	.00	1 .0
34.290	.0062					.0074	.25	3.87	1.00	4.50	.013	.00	.00	PIPE
1609.570	2868.304	4.119	2872.422	178.00	11.67	2.11	2874.54	.00	3.87	2.51	4.500	.000	.00	1 .0
60.440	.0062					.0071	.43	4.12	.83	4.50	.013	.00	.00	PIPE
1670.010	2868.680	4.257	2872.937	178.00	11.43	2.03	2874.97	.00	3.87	2.04	4.500	.000	.00	1 .0
JUNCT STR	.0500					.0061	.02	4.26	.73		.013	.00	.00	PIPE
1674.010	2868.880	5.550	2874.430	141.00	8.87	1.22	2875.65	.00	3.49	.00	4.500	.000	.00	1 .0
54.070	.0063					.0051	.28	5.55	.00	3.35	.013	.00	.00	PIPE
1728.080	2869.220	5.488	2874.708	141.00	8.87	1.22	2875.93	.00	3.49	.00	4.500	.000	.00	1 .0

↑

**Ultimate Condition WSPG Summary
LAT-ULT**

WSPG Station	Storm Drain Dimension	Invert Elevation (ft)	Q₁₀₀ (cfs)	WSE (ft)	Velocity (ft/s)	FG Elevation	Facility Description	HGL Check¹
---------------------	------------------------------	------------------------------	------------------------------	-----------------	------------------------	---------------------	-----------------------------	------------------------------

1 - 'HGL Check' reflects the minimum 1-ft below finished grade.

1000.00	54" RCP	2868.88	37.20	2874.43	2.34	2878.27	SDMH #4	OK
1048.05	54" RCP	2869.18	37.20	2874.45	2.34	2879.31	SDMH #12	OK
1050.05	54" RCP	2869.28	37.20	2874.46	2.34	2879.31		OK
1052.05	54" RCP	2869.38	37.20	2874.46	2.34	2879.31		OK
1077.42	54" RCP	2869.55	37.20	2874.47	2.34	2880.00	SDMH #3	OK
1082.42	54" RCP	2869.75	37.10	2874.47	2.33	2880.00	Junction to DI1 Lateral	OK
1326.09	54" RCP	2875.11	37.10	2876.19	12.59	2887.08	SDMH #2	OK
1331.09	54" RCP	2875.31	37.00	2876.41	12.35	2887.08		OK
1359.38	54" RCP	2876.76	37.00	2878.51	6.48	2888.68	SDMH #1	OK
1359.38	54" RCP	2876.76	37.00	2878.51	6.48	2888.68		OK

LAT-ULT.EDT

FILE: LAT-ULT.WSW

W S P G W - EDIT LISTING - Version 14.10

Date: 1-20-2023 Time: 9:25:30

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)	
CD	18	4	1		1.500															
CD	24	4	1		2.000															
CD	42	4	1		3.500															
CD	48	4	1		4.000															
CD	54	4	1		4.500															
CD	60	4	1		5.000															
CD	1	3	0	.000	5.000	8.000	.000	.000	.00											

W S P G W

PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

HEADING LINE NO 2 IS -

ULT CONDITION, ROCKY STORM DRAIN

HEADING LINE NO 3 IS -

LAT-ULT

W S P G W

PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	IS	A	SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT	W S ELEV												
ELEMENT NO 1	IS	A	SYSTEM OUTLET	U/S DATA	1000.000	2868.880	54	2874.430												
ELEMENT NO 2	IS	A	REACH	U/S DATA	1048.050	2869.180	54		N	.013		RADIUS	ANGLE	ANG PT	MAN H					
ELEMENT NO 3	IS	A	REACH	U/S DATA	1050.050	2869.280	54		N	.013		RADIUS	ANGLE	ANG PT	MAN H					
ELEMENT NO 4	IS	A	REACH	U/S DATA	1052.050	2869.380	54		N	.013		RADIUS	ANGLE	ANG PT	MAN H					
ELEMENT NO 5	IS	A	REACH	U/S DATA	1077.420	2869.550	54		N	.013		RADIUS	ANGLE	ANG PT	MAN H					
ELEMENT NO 6	IS	A	JUNCTION	U/S DATA	1082.420	2869.750	54		N	.013	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4				
											.100	.000	2872.750	.000	90.000	.000				
													RADIUS	ANGLE						
													.000	.000						
ELEMENT NO 7	IS	A	REACH	U/S DATA	1326.090	2875.110	54		N	.013			RADIUS	ANGLE	ANG PT	MAN H				
ELEMENT NO 8	IS	A	JUNCTION	U/S DATA	1331.090	2875.310	54		N	.013	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4				
											.100	.000	2875.310	.000	64.000	.000				
													RADIUS	ANGLE						
													.000	.000						
ELEMENT NO 9	IS	A	REACH																	

	U/S DATA	STATION	INVERT	SECT	LAT-ULT.EDT				
		1359.380	2876.760	54	N		RADIUS	ANGLE	ANG PT
					.013		.000	.000	.000
ELEMENT NO	10 IS A	SYSTEM HEADWORKS			*	*			MAN H
	U/S DATA	STATION	INVERT	SECT			W S ELEV		
		1359.380	2876.760	54			2881.260		
					W S P G W				PAGE NO
					WATER SURFACE PROFILE - ELEMENT CARD LISTING				3

Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:25:31

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

ULT CONDITION, ROCKY STORM DRAIN

LAT-ULT

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*****
Station | Invert | Depth | Water | Q | Vel | Vel | Energy | Super | Critical | Flow Top | Height/ | Base Wt | | No Wth
| Elev | (FT) | Elev | (CFS) | (FPS) | Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip
L/Elem | Ch Slope | | | | | SF Ave | HF | SE Dpth | Froude N | Norm Dp | "N" | X-Fall | ZR | Type Ch
*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****|*****
1000.000 | 2868.880 | 5.550 | 2874.430 | 37.20 | 2.34 | .08 | 2874.51 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
48.050 | .0062 | | | | | .0004 | .02 | 5.55 | .00 | 1.50 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1048.050 | 2869.180 | 5.271 | 2874.451 | 37.20 | 2.34 | .08 | 2874.54 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
2.000 | .0500 | | | | | .0004 | .00 | 5.27 | .00 | .88 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1050.050 | 2869.280 | 5.175 | 2874.456 | 37.20 | 2.34 | .08 | 2874.54 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
2.000 | .0499 | | | | | .0004 | .00 | 5.18 | .00 | .89 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1052.050 | 2869.380 | 5.081 | 2874.460 | 37.20 | 2.34 | .08 | 2874.55 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
25.370 | .0067 | | | | | .0004 | .01 | 5.08 | .00 | 1.47 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1077.420 | 2869.550 | 4.919 | 2874.469 | 37.20 | 2.34 | .08 | 2874.55 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
JUNCT STR | .0400 | | | | | .0004 | .00 | 4.92 | .00 | .013 | .00 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1082.420 | 2869.750 | 4.722 | 2874.472 | 37.10 | 2.33 | .08 | 2874.56 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
10.268 | .0220 | | | | | .0004 | .00 | 4.72 | .00 | 1.08 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1092.688 | 2869.976 | 4.500 | 2874.476 | 37.10 | 2.33 | .08 | 2874.56 | .00 | 1.75 | .00 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
18.815 | .0220 | | | | | .0003 | .01 | 4.50 | .00 | 1.08 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1111.503 | 2870.390 | 4.083 | 2874.473 | 37.10 | 2.45 | .09 | 2874.57 | .00 | 1.75 | 2.61 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
10.750 | .0220 | | | | | .0003 | .00 | 4.08 | .18 | 1.08 | .013 | .00 | .00 | PIPE
| | | | | | | | | | | | | | | |
1122.253 | 2870.626 | 3.841 | 2874.467 | 37.10 | 2.57 | .10 | 2874.57 | .00 | 1.75 | 3.18 | 4.500 | .000 | .00 | 1 .0
| | | | | | | | | | | | | | | |
8.757 | .0220 | | | | | .0003 | .00 | 3.84 | .21 | 1.08 | .013 | .00 | .00 | PIPE

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:25:31

LAT-ULT.OUT

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 ULT CONDITION, ROCKY STORM DRAIN
 LAT-ULT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1131.010	2870.819	3.641	2874.460	37.10	2.69	.11	2874.57	.00	1.75	3.54	4.500	.000	.00	1 .0
	7.576	.0220				.0004	.00	3.64	.24	1.08	.013	.00	.00	PIPE
1138.587	2870.986	3.466	2874.451	37.10	2.82	.12	2874.58	.00	1.75	3.79	4.500	.000	.00	1 .0
	6.732	.0220				.0004	.00	3.47	.27	1.08	.013	.00	.00	PIPE
1145.319	2871.134	3.308	2874.442	37.10	2.96	.14	2874.58	.00	1.75	3.97	4.500	.000	.00	1 .0
	6.068	.0220				.0005	.00	3.31	.29	1.08	.013	.00	.00	PIPE
1151.387	2871.267	3.164	2874.431	37.10	3.10	.15	2874.58	.00	1.75	4.11	4.500	.000	.00	1 .0
	5.522	.0220				.0005	.00	3.16	.32	1.08	.013	.00	.00	PIPE
1156.909	2871.389	3.031	2874.419	37.10	3.26	.16	2874.58	.00	1.75	4.22	4.500	.000	.00	1 .0
	5.039	.0220				.0006	.00	3.03	.35	1.08	.013	.00	.00	PIPE
1161.948	2871.500	2.906	2874.406	37.10	3.42	.18	2874.59	.00	1.75	4.30	4.500	.000	.00	1 .0
	4.619	.0220				.0007	.00	2.91	.38	1.08	.013	.00	.00	PIPE
1166.567	2871.601	2.790	2874.391	37.10	3.58	.20	2874.59	.00	1.75	4.37	4.500	.000	.00	1 .0
	4.019	.0220				.0008	.00	2.79	.41	1.08	.013	.00	.00	PIPE
1170.586	2871.690	2.680	2874.370	37.10	3.76	.22	2874.59	.00	1.75	4.42	4.500	.000	.00	1 .0
HYDRAULIC JUMP														
1170.586	2871.690	1.084	2872.773	37.10	12.58	2.46	2875.23	.00	1.75	3.85	4.500	.000	.00	1 .0
	23.432	.0220				.0220	.52	1.08	2.53	1.08	.013	.00	.00	PIPE

FILE: LAT-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08
 Program Package Serial Number: 7189
 WATER SURFACE PROFILE LISTING
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PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP
 ULT CONDITION, ROCKY STORM DRAIN
 LAT-ULT

LAT-ULT.OUT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1194.018	2872.205	1.084	2873.289	37.10	12.58	2.46	2875.74	.00	1.75	3.85	4.500	.000	.00	1 .0
	.0220					.0220	2.91	1.08	2.53	1.08	.013	.00	.00	PIPE
1326.090	2875.110	1.083	2876.193	37.10	12.59	2.46	2878.66	.00	1.75	3.85	4.500	.000	.00	1 .0
JUNCT STR	.0400					.0215	.11	1.08	2.54		.013	.00	.00	PIPE
1331.090	2875.310	1.096	2876.406	37.00	12.35	2.37	2878.78	.00	1.75	3.86	4.500	.000	.00	1 .0
	.0513					.0202	.06	1.10	2.47	.88	.013	.00	.00	PIPE
1334.218	2875.470	1.115	2876.586	37.00	12.04	2.25	2878.84	.00	1.75	3.89	4.500	.000	.00	1 .0
	.0513					.0183	.09	1.12	2.39	.88	.013	.00	.00	PIPE
1339.267	2875.729	1.154	2876.883	37.00	11.48	2.05	2878.93	.00	1.75	3.93	4.500	.000	.00	1 .0
	.0513					.0160	.07	1.15	2.24	.88	.013	.00	.00	PIPE
1343.419	2875.942	1.194	2877.136	37.00	10.95	1.86	2879.00	.00	1.75	3.97	4.500	.000	.00	1 .0
	.0513					.0140	.05	1.19	2.09	.88	.013	.00	.00	PIPE
1346.854	2876.118	1.235	2877.353	37.00	10.44	1.69	2879.05	.00	1.75	4.02	4.500	.000	.00	1 .0
	.0513					.0122	.03	1.23	1.96	.88	.013	.00	.00	PIPE
1349.701	2876.264	1.278	2877.542	37.00	9.95	1.54	2879.08	.00	1.75	4.06	4.500	.000	.00	1 .0
	.0513					.0107	.03	1.28	1.83	.88	.013	.00	.00	PIPE
1352.054	2876.385	1.322	2877.707	37.00	9.49	1.40	2879.11	.00	1.75	4.10	4.500	.000	.00	1 .0
	.0513					.0094	.02	1.32	1.72	.88	.013	.00	.00	PIPE

FILE: LAT-ULT.WSW

W S P G W - CIVILDESIGN Version 14.08

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Program Package Serial Number: 7189

WATER SURFACE PROFILE LISTING

Date: 1-20-2023 Time: 9:25:31

PAR2004.002 - KCG UNIT 2 - SUPPLEMENT TO UP

ULT CONDITION, ROCKY STORM DRAIN

LAT-ULT

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
---------	-------------	------------	------------	---------	-----------	----------	----------------	------------	----------------	----------------	----------------	-----------------	----	----------------

LAT-ULT.OUT

L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1353.988	2876.484	1.368	2877.852	37.00	9.05	1.27	2879.12	.00	1.75	4.14	4.500	.000	.00	1	.0
	1.571	.0513				.0082	.01	1.37	1.60	.88	.013	.00	.00	PIPE	
1355.559	2876.564	1.416	2877.981	37.00	8.63	1.16	2879.14	.00	1.75	4.18	4.500	.000	.00	1	.0
	1.255	.0513				.0072	.01	1.42	1.50	.88	.013	.00	.00	PIPE	
1356.814	2876.629	1.466	2878.095	37.00	8.23	1.05	2879.15	.00	1.75	4.22	4.500	.000	.00	1	.0
	.973	.0513				.0063	.01	1.47	1.40	.88	.013	.00	.00	PIPE	
1357.787	2876.678	1.518	2878.196	37.00	7.84	.96	2879.15	.00	1.75	4.26	4.500	.000	.00	1	.0
	.721	.0513				.0055	.00	1.52	1.31	.88	.013	.00	.00	PIPE	
1358.507	2876.715	1.572	2878.287	37.00	7.48	.87	2879.16	.00	1.75	4.29	4.500	.000	.00	1	.0
	.492	.0513				.0048	.00	1.57	1.23	.88	.013	.00	.00	PIPE	
1359.000	2876.740	1.628	2878.368	37.00	7.13	.79	2879.16	.00	1.75	4.32	4.500	.000	.00	1	.0
	.287	.0513				.0042	.00	1.63	1.15	.88	.013	.00	.00	PIPE	
1359.286	2876.755	1.686	2878.441	37.00	6.80	.72	2879.16	.00	1.75	4.36	4.500	.000	.00	1	.0
	.094	.0513				.0037	.00	1.69	1.07	.88	.013	.00	.00	PIPE	
1359.380	2876.760	1.748	2878.508	37.00	6.48	.65	2879.16	.00	1.75	4.39	4.500	.000	.00	1	.0

↑

Project Name: KCG Unit 2
 Project Number: PAR2004.002
 Date: Jan-23
 By: PLM

Westwood

STORM DRAIN HYDRAULIC CALCULATIONS

CONDUIT DATA							FLOW DATA						LOSS PIPE	HGL PIPE		COMMENTS		
STATION		SIZE / TYPE	n Manning's Roughness	INVERTS		LENGTH	A (FT ²)	R (FT)	Φ	Q (CFS)	V (FPS)	H _v = V ² /2g (FT)	S _f (FT/FT)	H _f (FT)	D/S HGL ELEV.	U/S HGL ELEV.	PRESS. FLOW?	OTHER
FROM	TO			D / S ELEV.	U / S ELEV.										D/S HGL ELEV.	U/S HGL ELEV.		

1000	1006.32	ROUND 18" RCP	0.013	2872.75	2874.27	6.32	1.77	0.375	0.004925	1	0.57	0.004972	0.00009026	0.001	2878.59	2878.59	Yes	SDDI #1 PRO3
1000	1006.32	ROUND 18" RCP	0.013	2872.75	2874.27	6.32	1.77	0.375	0.004925	1.4	0.79	0.009746	0.00017691	0.001	2874.47	2875.77	No	SDDI #1 ULT

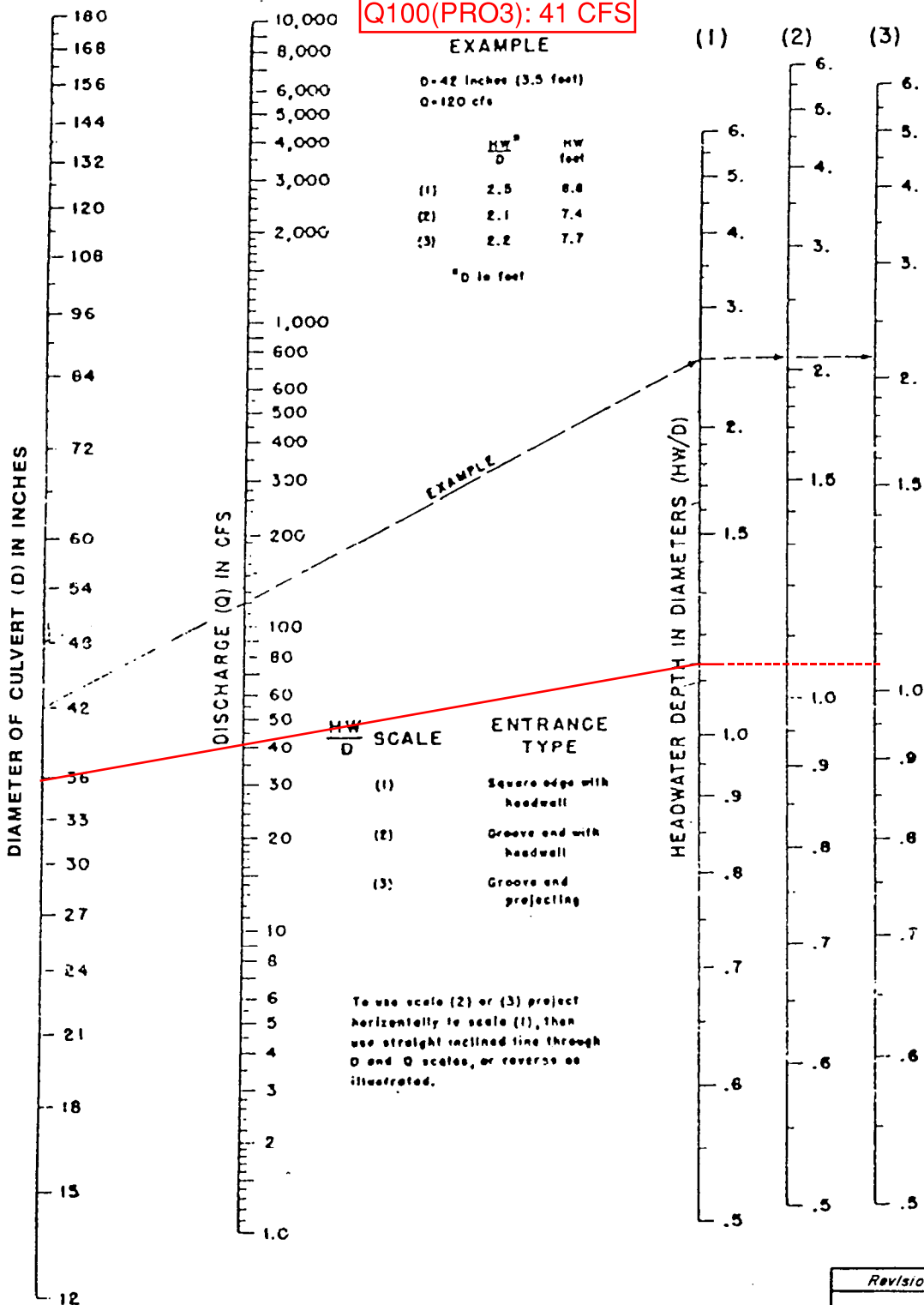
$$S_f = \Phi H_v / R^{1.33}$$

$$\Phi = 2g (n^2) / 2.21$$

1 - Where pipes are not under pressure, assume U/S HGL is at top of pipe

NOMOGRAPH - INLET CONTROL RCP

TS1:
Q100(PRO3): 41 CFS



HW/D	1.15
D	36
HW	3.5

Revision	Date