

**Table 7-11 Summary of Laboratory Test Results**  
**EAST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
<b>BRIGHTWATER TUNNEL 1</b>																				
E-332	26.0	101.5	Qw	21.4								99.4								
E-332	31.0	96.5	Qw	164.2								29.5								
E-332	36.0	91.5	Qal	21.0								106.6								
E-332	41.0	86.5	Qal	14.7																
E-332	46.0	81.5	Qal	7.0						88.6	11.1	0.3								
E-332	51.0	76.5	Qal	18.0																
E-332	66.0	61.5	Qal	14.4						2.9	94.7	2.4	112.7							
E-332	71.0	56.5	Qal	20.3																
E-332	76.0	51.5	Qal	21.4						3.0	90.0	7.0								
E-332	81.0	46.5	Qal	21.9																
E-332	86.0	41.5	Qal	21.1																
E-332	96.0	31.5	Qal	22.5								102.7								
E-333	56.0	78.2	Qpfnl	29.4						9.4	32.5	58.1								
E-333	75.5	58.7	Qpfnl	23.1								87.6								
E-334	130.0	59.5	Qpfnl	31.0								59.7								
E-334	151.0	38.5	Qpfnl	26.6						0.0	19.1	80.9								
E-334	159.0	30.5	Qpfnl	23.8						0.0	24.7	75.3								
E-334	167.0	22.5	Qpfnl	34.6	51	20	30	0.49										4.9		
E-334	167.3	22.2	Qpfnl	ND														8.9		
E-334	167.6	21.9	Qpfnl	ND														12.4		
E-334	177.5	12.0	Qpfnl	24.2	50	24	26	0.01										6.0		
E-334	178.0	11.5	Qpfnl	ND														9.5		
E-334	178.5	11.0	Qpfnl	ND														14.7		
E-335	222.0	80.7	Qpfnl	31.2	0	0	0					95.9								
E-335	232.0	70.7	Qpfnl	25.7	0	0	0					100.0								
E-335	238.0	64.7	Qpfnl	24.4																
E-335	242.0	60.7	Qpfnl	24.4	30	24	6	0.07												
E-335	247.0	55.7	Qpfnl	31.5																
E-335	252.0	50.7	Qpfnl	32.4	33	21	12	0.95												
E-336	278.0	90.4	Qpfnl	27.9																
E-336	280.0	88.4	Qpfnl	24.4								94.4								
E-336	283.0	85.4	Qpfnl	23.7																
E-336	288.0	80.4	Qpfnf	21.8																
E-336	293.0	75.4	Qpfnf	21.3								22.6								
E-336	298.0	70.4	Qpfnf	23.4																
E-336	303.0	65.4	Qpfnl	26.6	0	0	0					40.6								
E-336	308.0	60.4	Qpfnl	24.5																
E-336	313.0	55.4	Qpfnl	22.0																
E-336	318.0	50.4	Qpfnl	32.4	34	26	7	0.91												
E-336	323.0	45.4	Qpfnf	23.8																
E-336	328.0	40.4	Qpfnf	20.3																
E-337	275.0	91.5	Qpfnl	23.0																
E-337	288.0	78.5	Qpfnl	19.7	0	0	0					94.2						7.5		
E-337	289.0	77.5	Qpfnl	ND														12.9		
E-337	289.5	77.0	Qpfnl	ND														16.5		
E-337	295.0	71.5	Qpfnf	20.9								35.1								
E-337	313.0	53.5	Qpfnl	30.4																
E-337	318.0	48.5	Qpfnl	28.4																
E-337	326.0	40.5	Qpfnf	10.7	0	0	0					26.2						12.2		
E-337	326.5	40.0	Qpfnf	ND														15.7		

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									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-338	245.0	81.8	Qpfnl	19.1					0.0	95.8	4.2										
E-338	255.0	71.8	Qpfnf	31.0							100.0										
E-338	265.0	61.8	Qpfnl	19.6					0.0	0.0	100.0										
E-338	275.0	51.8	Qpfnf	24.2					0.0	49.8	50.2										
E-339	211.0	80.5	Qpfnl	26.5							100.0										
E-339	221.0	70.5	Qpfnl	27.1							100.0										
E-339	231.0	60.5	Qpfnl	30.0							100.0										
E-339	242.0	49.5	Qpfnf	26.9							16.7										
E-339	251.0	40.5	Qpfnf	26.8																	
E-339	261.0	30.5	Qpfnl	28.2																	
E-340	169.0	89.3	Qpfnl	22.5							42.2										
E-340	185.0	73.3	Qpfnl	24.4							75.6										
E-340	195.0	63.3	Qpfnl	27.8							100.0										
E-340	200.0	58.3	Qpfnf	25.4					0.0	38.8	61.2										
E-340	205.0	53.3	Qpfnf	27.6							56.3										
E-340	210.0	48.3	Qpfnf	25.3					0.0	89.7	10.3										
E-340	223.0	35.3	Qpogm	25.6	49	29	20	(0.17)													
E-340	228.0	30.3	Qpogm	24.9							100.0										
E-341	143.0	103.2	Qpfnl	26.5																	
E-341	148.0	98.2	Qpfnf	29.5																	
E-341	153.0	93.2	Qpfnl	30.5																	
E-341	158.0	88.2	Qpfnl	24.3							24.6										
E-341	170.0	76.2	Qpfnl	24.2					0.0	31.3	68.7										
E-341	178.0	68.2	Qpfnl	29.6	0	0	0				98.2										
E-341	183.0	63.2	Qpfnl	28.8							100.0										
E-341	189.0	57.2	Qpfnf	26.1							17.2										
E-341	205.0	41.2	Qpogl	29.0	54	30	24	(0.04)													
E-341	210.0	36.2	Qpogl	26.3																	
E-341	215.0	31.2	Qpogl	24.5																	
E-342	85.0	142.5	Qpfnf	19.4					0.9	80.1	19.0										
E-342	140.0	87.5	Qpogl	21.8	0	0	0				73.4										
E-342	154.5	73.0	Qpogf	25.4	0	0	0				21.5										
E-342	175.0	52.5	Qpogw	24.8	49	29	21	(0.20)													
E-343	115.0	86.9	Qpfnl	23.5							31.4										
E-343	130.0	71.9	Qpogl	24.7	46	23	23	0.07													
E-343	155.0	46.9	Qpogl	23.7	43	26	17	(0.14)													
E-345	110.0	89.8	Qpogl	32.8	44	23	22	0.45													
E-345	120.0	79.8	Qpogl	28.4	52	29	22	(0.03)													
E-345	143.0	56.8	Qpogl	27.3							9.3										
E-346	105.0	104.5	Qpfnl	27.2	0	0	0				95.8										
E-346	145.0	64.5	Qpogl	31.0	51	29	22	0.09													
E-347	120.0	90.9	Qpogl	35.2							93.6										
E-347	145.0	65.9	Qpogl	26.6	50	29	21	(0.11)													
E-347	185.0	25.9	Qpogl	22.8	54	23	31	(0.01)													0.20
E-348	130.0	97.5	Qpogl	29.3	41	27	15	0.15													
E-348	150.0	77.5	Qpogl	30.4							90.7										
E-348	170.0	57.5	Qpogl	28.4	48	29	20	(0.03)													
E-349	130.0	102.3	Qpfnf	23.5					0.0	44.5	55.5										
E-349	150.0	82.3	Qpogl	21.1							41.5										
E-349	170.0	62.3	Qpogl	27.0	40	23	17	0.24													
E-350	130.0	93.4	Qpfnf	28.1							84.9										
E-350	149.3	74.1	Qpogl	22.8								100.4									0.23

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									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-350	150.0	73.4	Qpogl	31.4	53	30	24	0.06													
E-350	170.0	53.4	Qpogl	30.5	56	30	25	0.02													
E-350	200.0	23.4	Qpogl	23.5													13.6				0.19
E-351	130.0	91.9	Qpfnf	28.1							47.2										
E-351	150.0	71.9	Qpogl	29.6	54	28	26	0.06													
E-351	158.5	63.4	Qpogl	32.0	56	26	30	0.20													0.24
E-351	159.0	62.9	Qpogl	ND													11.8				
E-351	159.5	62.4	Qpogl	ND													8.6				
E-351	170.0	51.9	Qpogl	28.5	51	24	27	0.17													
E-352	130.0	101.1	Qpogl	23.1							64.9										
E-352	150.0	81.1	Qpogm	30.1	47	22	24	0.34													
E-352	171.5	59.6	Qpogm	22.4	37	26	11	(0.33)													
E-353	130.0	101.0	Qpogl	24.6	52	28	25	(0.14)													
E-353	150.0	81.0	Qpogl	25.2	51	26	25	(0.03)													
E-353	170.0	61.0	Qpogl	23.2	51	23	28	0.01													
E-354	125.0	106.6	Qpogm	25.5	50	26	24	(0.02)													
E-354	145.0	86.6	Qpogm	19.4	51	23	28	(0.13)													
E-354	165.0	66.6	Qpogm	25.4	50	24	25	0.06													
E-355	125.0	109.6	Qpogm	25.2	37	22	16	0.20													
E-356	100.0	129.0	Qpfnf	22.9					0.0	46.9	53.1										
E-356	120.0	109.0	Qpogl	25.2	29	22	7	0.46													
E-357	95.0	147.1	Qpogm	24.1	45	24	20	0.01													
E-357	115.0	127.1	Qpfnf	1.0					99.5	0.0	0.5										
E-366	129.0	90.2	Qpfnl	27.4																	
E-366	136.0	83.2	Qpfnl	30.5	28	20	7	1.50													
E-366	142.0	77.2	Qpfnl	13.2					0.0	8.1	91.9										
E-366	152.0	67.2	Qpfnl	25.3	35	21	14	0.31													
E-366	162.0	57.2	Qpfnl	32.0	37	23	14	0.64													
E-366	172.0	47.2	Qpfnl	28.5																	
E-517	8.0	119.0	Qal	59.4					1.0	93.6	5.4										
E-517	10.0	117.0	Qal	24.5																	
E-517	10.5	116.5	Qw	123.8								36.4						0.323	0.102		0.18
E-517	10.8	116.2	Qw	125.2														0.521	0.141		
E-517	11.0	116.0	Qw	118.3								39.1		0.4							
E-517	12.0	115.0	Qw	129.1														0.583	0.136		
E-517	12.5	114.5	Qw	115.4																	
E-517	14.0	113.0	Qw	153.2																	
E-517	17.0	110.0	Qw	514.6																	
E-517	19.0	108.0	Qw	414.1																	
E-517	20.0	107.0	Qw	10.5																	
E-517	20.7	106.3	Qw	349.6	291	213	78	1.75				14.6						0.826	0.238		0.29
E-517	21.5	105.5	Qw	401.2																	
E-517	21.8	105.2	Qw	316.9																	
E-517	22.5	104.5	Qw	270.8																	
E-517	28.0	99.0	Qw	337.3																	
E-517	30.0	97.0	Qw	202.5																	
E-517	30.2	96.8	Qw	317.9															0.571	0.243	
E-517	30.5	96.5	Qw	311.3								17.9						0.775	0.289		0.26
E-517	30.8	96.2	Qw	341.0								15.8		0.9							
E-517	31.7	95.3	Qw	340.1	468	283	185	0.31													
E-517	32.0	95.0	Qw	356.8															0.951	0.170	
E-517	37.0	90.0	Qw	296.6																	

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									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
E-517	40.0	87.0	Qw	200.8	212	131	81	0.86										0.441	0.158	
E-517	40.7	86.3	Qw	190.0														0.803	0.226	
E-517	41.0	86.0	Qw	189.4								25.3		0.7						
E-517	41.7	85.3	Qw	136.7																
E-517	43.0	84.0	Qw	77.7																
E-517	44.0	83.0	Qal	21.7						0.4	64.6	35.0								
E-517	64.0	63.0	Qal	18.3						1.8	86.0	12.2								
E-518	30.0	227.2	Qvrf	14.2						10.1	74.6	15.3	124.5							
E-518	35.0	222.2	Qvrf	11.2						33.0	56.4	10.6	126.4							
E-518	45.0	212.2	Qvrf	12.1						25.1	56.1	18.8								
E-518	50.0	207.2	Qvrf	8.3						44.3	46.5	9.2								
E-518	56.5	200.7	Qpfnf	13.7						15.4	76.5	8.1								
E-518	61.5	195.7	Qpfnf	18.9						0.1	57.2	42.7								
E-518	65.5	191.7	Qpfnl	27.2																
E-518	70.0	187.2	Qpfnl	22.2									103.4							
E-519	23.0	225.7	Qvrf	11.9						47.1	45.8	7.1								
E-519	33.0	215.7	Qpfnf	14.0						12.6	75.0	12.4								
E-519	38.0	210.7	Qpfnf	17.3						24.5	64.7	10.8								
E-519	53.0	195.7	NG	19.6						16.3	78.9	4.8								
E-524	15.0	115.2	Qw	230.0									22.3					0.803	0.147	
E-524	25.0	105.2	Qal	18.6									113.1							
E-524	30.0	100.2	Qal	15.4									117.2							
E-524	40.0	90.2	Qpfnf	20.4						1.2	91.3	7.5								
E-524	45.0	85.2	Qpfnf	20.6						1.9	93.7	4.4								
E-524	60.0	70.2	Qpfnf	21.1						7.0	87.0	6.0								
E-524	65.0	65.2	Qpfnf	21.5						8.9	80.1	11.0								
E-524	70.0	60.2	Qpfnf	25.0						0.0	88.9	11.1								
<b>NORTH CREEK PORTAL SITE</b>																				
P41-02	55.0	74.4	Qal	26.1						0.2	92.7	7.1								
P41-02	65.0	64.4	Qal	28.3						0.0	69.2	30.8								
P41-02	77.5	51.9	Qal	28.7						0.0	51.3	48.7								
P41-02	85.0	44.4	Qal	27.4						0.0	54.7	45.3								
P41-02	92.5	36.9	Qvrl	34.2	45	22	23	0.53												
P41-02A	7.0	122.1	af	41.7						3.8	69.6	26.6								
P41-02A	21.0	108.1	Qal	20.6						3.6	91.0	5.4								
P41-02A	34.0	95.1	Qal	26.0						0.0	97.2	2.8								
P41-02A	51.0	78.1	Qal	18.5						24.4	69.8	5.8								
P41-02A	71.0	58.1	Qal	22.3						0.4	82.9	16.7								
P41-02A	80.0	49.1	Qal	22.0						0.0	73.2	26.8								
P41-02A	101.0	28.1	Qal	18.4						0.3	85.2	14.5								
P41-02A	107.0	22.1	Qvi	23.5						3.7	61.8	34.5								
P41-02A	121.0	8.1	Qvrf	5.4						54.9	38.0	7.1								
P41-02A	138.0	(8.9)	Qvrf	16.5						0.0	93.0	7.0								
P41-03	20.0	109.9	Qal	17.8						13.9	82.7	3.4								
P41-03	38.0	91.9	Qal	17.2						1.7	89.3	9.0								
P41-03	50.0	79.9	Qal	18.2						0.0	96.0	4.0								
P41-03	64.0	65.9	Qal	21.2						0.0	62.8	37.2								
P41-03	85.0	44.9	Qal	23.3						0.0	61.7	38.3								
P41-03	92.0	37.9	Qal	29.7						0.0	3.7	96.3								
P41-03	97.0	32.9	Qvrl	32.9	45	22	22	0.50												
P41-03	101.0	28.9	Qvrl	40.2																
P41-03	104.0	25.9	Qvrl	36.6	38	20	17	0.98												

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									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
P41-03	109.0	20.9	Qvrl	32.6																
P41-03	111.0	18.9	Qvrl	33.9	42	22	20	0.60												
P41-03	114.0	15.9	Qvrl	28.9																
P41-03	125.0	4.8	Qvrf	6.6					41.3	55.5	3.2									
P41-03	138.0	(8.2)	Qvrf	8.8					41.4	51.4	7.2									
P41-04	60.0	69.6	Qal	25.6					0.2	48.0	51.8									
P41-04	72.0	57.6	Qal	23.1					0.0	69.7	30.3									
P41-04	86.0	43.6	Qal	29.2					0.0	6.4	93.6									
P41-04	101.0	28.6	Qvrl	33.9	41	21	21	0.61												
P41-04	106.0	23.6	Qvrl	29.6																
P41-04	110.0	19.6	Qvrl	24.9	33	19	14	0.42												
P41-04	114.0	15.6	Qvrl	26.8																
P41-04	118.0	11.6	Qvrl	25.0																
P41-04	122.0	7.6	Qvrl	22.0					2.5	45.0	52.5									
P41-04	129.0	0.6	Qvi	17.2					12.1	72.6	15.3									
P41-04	139.0	(9.4)	Qvrf	9.7					0.0	93.6	6.4									
P41-04	159.0	(29.5)	Qvi	16.2					2.1	81.7	16.2									
<b>NORTH CREEK CONNECTOR</b>																				
M-621	10.0	120.2	NG	19.8					3.0	89.2	7.8									
M-621	20.0	110.2	Qal	20.4					2.8	82.4	14.8									
M-621	30.0	100.2	Qal	20.0					0.1	95.5	4.4									
M-621	40.0	90.2	Qal	23.8					0.0	59.6	40.4									
M-621	51.5	78.7	Qal	23.3					0.0	82.2	17.8									
M-621	55.0	75.2	Qal	22.3					0.0	67.9	32.1									
M-621	60.0	70.2	Qal	25.0					0.0	61.9	38.1									
M-621	65.0	65.2	Qal	22.3					0.2	92.9	6.9									
M-621	70.0	60.2	Qal	24.5					0.0	48.8	51.2									
M-621	75.0	55.2	Qal	34.9					0.0	21.7	78.3									
M-621	80.0	50.2	Qal	27.0					0.0	43.6	56.4									
M-621	85.0	45.2	Qvrl	32.7							64.8									
M-622	52.5	76.7	Qal	29.1					0.0	24.6	75.4									
M-622	57.5	71.7	Qal	22.3					1.2	93.9	4.9									
M-622	62.5	66.7	Qal	22.6					0.0	70.8	29.2									
M-622	67.5	61.7	Qal	29.8					0.0	45.1	54.9									
M-622	72.5	56.7	Qal	26.7					0.0	31.5	68.5									
M-623	15.0	112.7	Ql	32.6					0.0	10.7	89.3									
M-623	20.0	107.7	Qal	21.1					0.0	32.5	67.5									
M-623	25.0	102.7	Qal	15.5					8.4	85.8	5.8									
M-623	40.0	87.7	Qal	22.3					0.0	75.6	24.4									
M-623	50.0	77.7	Qal	24.3					0.0	76.4	23.6									
M-623	55.0	72.7	Qal	24.4					0.0	87.3	12.7									
M-623	57.5	70.2	Qal	25.7					0.0	15.5	84.5									
M-623	60.0	67.7	Qal	28.0					0.0	32.4	67.6									
M-623	65.0	62.7	Qal	31.5	32	21	11	0.95												
M-624	51.5	76.9	Qal	25.6					0.0	47.6	52.4									
M-624	56.5	71.9	Qal	25.8					0.0	46.4	53.6									
M-624	60.0	68.4	Ql	29.4	30	22	8	0.92												
M-624	65.0	63.4	Qal	25.7					0.0	36.8	63.2									
M-624	70.0	58.4	Qal	26.2					0.0	10.4	89.6									
M-625	50.0	78.7	Qal	24.5							88.3									
M-625	55.0	73.7	Qal	26.5					0.0	52.1	47.9									
M-625	60.0	68.7	Qal	28.2					0.0	21.3	78.7									

**Table 7-11 Summary of Laboratory Test Results**  
**EAST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>U</sub>	LV	LV residual	
M-625	61.5	67.2	Qal	29.9							93.3									
M-625	65.0	63.7	Qal	28.6	37	22	14	0.47												
<b>TREATMENT PLANT PORTAL SITE</b>																				
P46-01	12.0	238.4	Qvrf	18.0					1.1	83.3	15.6									
P46-01	27.0	223.4	Qvrf	15.8					0.7	58.5	40.8									
P46-01	35.0	215.4	Qvrm	11.1					1.2	54.2	44.6									
P46-01	46.0	204.4	Qvrm	10.4					2.0	44.4	53.6									
P46-01	51.0	199.4	Qpfnl	23.8	38	27	11	(0.29)												
P46-01	54.0	196.4	Qpfnl	21.8	42	28	14	(0.44)												
P46-01	63.0	187.4	Qpfnf	16.2					0.0	65.4	34.6									
P46-01	72.0	178.4	Qpfnf	18.2					0.3	66.8	32.9									
P46-02	9.0	249.1	Qvrf	19.3					2.1	45.6	52.3									
P46-02	14.0	244.1	Qvrf	14.2					1.3	58.6	40.1									
P46-02	21.0	237.1	Qvrf	10.1					31.8	66.3	1.9									
P46-02	26.0	232.1	Qvrf	7.2					50.3	47.9	1.8									
P46-02	34.0	224.1	Qpogm	10.6					3.7	38.5	57.8									
P46-02	42.0	216.1	Qpogm	15.7					1.2	69.7	29.1									
P46-02	52.0	206.1	Qpogm	17.4					0.0	49.2	50.8									
P46-02	60.0	198.1	Qpfnf	18.4					0.9	53.3	45.8									
P46-03	10.0	248.6	NG	13.4					21.1	62.9	16.0									
P46-03	33.0	225.6	Qvrm	13.5					11.6	51.8	36.6									
P46-03	48.0	210.6	Qvrm	14.8					8.0	51.9	40.1									
P46-03	53.0	205.6	Qpfnl	24.7					4.4	38.3	57.3									
P46-03	54.0	204.6	Qpfnl	29.7																
P46-03	55.0	203.6	Qpfnl	22.1	40	26	13	(0.30)												
P46-03	63.0	195.6	Qpfnf	22.2					0.9	60.5	38.6									
P46-03	73.0	185.6	Qpfnf	33.3					1.5	60.3	38.2									
<b>EAST CONTRACT OFF-ALIGNMENT</b>																				
E-126	11.0	118.8	NG	15.0								105.0								
E-126	20.0	109.8	NG	12.7								121.6								
E-126	25.0	104.8	NG	13.6					14.6	82.5	2.9	113.5								
E-126	30.0	99.8	NG	14.9					2.1	90.9	7.0									
E-126	36.0	93.8	NG	17.1								100.4								
E-126	46.0	83.8	NG	16.5								99.6								
E-126	56.0	73.8	NG	17.0					0.0	33.7	66.3	99.6								
E-126	66.0	63.8	NG	25.7					1.5	31.7	66.8	103.7								
E-126	76.0	53.8	NG	23.5					0.0	37.3	62.7	103.2								
E-126	86.0	43.8	NG	20.1								95.3								
E-130	45.0	276.5	NG	20.6																
E-130	65.0	256.5	NG	24.4																
E-130	85.0	236.5	NG	19.9																
E-130	100.0	221.5	NG	22.5																
E-130	120.0	201.5	NG	13.8																
E-130	137.5	184.0	NG	25.5																
E-130	140.0	181.5	NG	32.7																
E-130	150.0	171.5	NG	23.6																
E-130	155.0	166.5	NG	21.6							6.6									
E-130	175.0	146.5	NG	23.9																
E-130	195.0	126.5	NG	21.4	0	0	0												3.02	
E-130	200.0	121.5	NG	24.1							49.0									
E-130	205.0	116.5	NG	25.0	0	0	0												6.45	
E-130	220.0	101.5	NG	24.1																

**Table 7-11 Summary of Laboratory Test Results**  
**EAST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)					Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	
E-130	230.0	91.5	NG	15.3															
E-130	245.0	76.5	NG	24.2															
E-130	250.0	71.5	Qpfnl	25.8															
E-130	252.5	69.0	Qpfnl	25.1															
E-130	255.0	66.5	Qpfnl	24.4	44	23	21	0.07						11.61					
E-130	265.0	56.5	Qpfnl	25.7															
E-130	275.0	46.5	Qpfnl	23.4	43	24	19	(0.03)						11.98					
E-130	290.0	31.5	NG	22.0										21.77					
E-130	290.5	31.0	NG	24.7	0	0	0							1.61					

Notes:

- a) Vertical datum = Metro. All locations surveyed to +/- 0.1 foot accuracy with the exception of some off alignment borings (noted as scaled on the log) which were estimated.
- b) Clay is defined as particles smaller than 0.005 mm.
- c) For all Geologic Unit descriptions please see Figure 3-1.

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
<b>BRIGHTWATER TUNNEL 2</b>																				
E-121	132.5	232.4	Qpogl	24.0																
E-121	264.0	100.9	Qpogf	18.3					0.0	80.5	19.5									
E-121	275.0	89.9	Qpogf	20.7							46.9									
E-121	282.0	82.9	Qpogl	25.1	60	31	30	(0.20)												
E-121	286.0	78.9	Qpogf	11.6					0.4	88.0	11.6									
E-121	295.0	69.9	Qpogf	9.9							100.0									
E-121	299.0	65.9	Qpogl	28.6	54	24	29	0.16												
E-122	118.0	93.6	Qpogl	19.7	46	20	26	(0.01)												
E-122	128.0	83.6	Qpogl	20.7	50	21	29	(0.01)												
E-122	131.0	80.6	Qpogl	22.5	47	20	27	0.09												
E-122	136.0	75.6	Qpogf	21.9					0.2	96.0	3.8									
E-122	146.0	65.6	Qpogl	22.0	39	17	22	0.23												
E-122	155.0	56.6	Qpogl	27.5	60	24	36	0.10												
E-123	140.0	178.0	Qpogtm	8.8					51.4	44.0	4.6									
E-123	230.0	88.0	Qpogd	13.5	41	18	22	(0.20)												
E-123	245.0	73.0	Qpfnf	16.8					0.0	92.1	7.9									
E-123	250.0	68.0	Qpfnf	13.2					11.4	58.2	30.4									
E-123	255.0	63.0	Qpfnl	22.2					2.7	27.3	70.0									
E-123	260.0	58.0	Qpogf	16.6					0.0	89.2	10.8									
E-123	265.0	53.0	Qpogf	17.8					0.0	86.6	13.4									
E-124	269.0	116.9	Qpogt	14.6					43.8	17.1	39.1									
E-124	279.0	106.9	Qpogt	10.2							29.5									
E-124	285.0	100.9	Qpogd	14.0					7.7	16.7	75.6									
E-124	295.0	90.9	Qpogd	20.4	0	0	0				67.0									
E-124	309.0	76.9	Qpogd	14.9	42	21	21	(0.29)												
E-124	317.0	68.9	Qpogl	29.3	0	0	0				53.0									
E-124	326.0	59.9	Qpogl	19.8	31	16	14	0.27												
E-124	337.5	48.4	Qpogd	14.0							43.8									
E-125	54.0	106.2	Qpogt	4.3					44.5	37.1	18.4									
E-125	60.0	100.2	Qpogt	7.4					30.2	43.0	26.8									
E-125	74.0	86.2	Qpogf	10.7					41.0	54.5	4.5									
E-125	79.0	81.2	Qpogf	7.0					52.0	37.8	10.2									
E-125	86.0	74.2	Qpfnl	22.9	26	19	7	0.56												
E-125	92.0	68.2	Qpfnl	20.7							55.7									
E-125	95.0	65.2	Qpfnl	23.8								14.3								
E-125	102.0	58.2	Qpfnl	21.5							77.4	22.0								
E-125	110.0	50.2	Qpfnl	18.4							98.3									
E-219	255.0	106.1	Qpfnf	25.0							74.2									
E-219	277.0	84.1	Qpogl	27.2	60	24	36	0.09												
E-219	285.0	76.1	Qpogl	25.4	54	24	29	0.05												
E-220	240.0	90.0	Qpogf	13.4					0.6	86.6	12.8									
E-220	246.0	84.0	Qpogf	10.9																
E-220	252.5	77.5	Qpogl	23.6	51	25	26	(0.05)												
E-220	260.1	69.9	Qpogl	27.4	51	23	28	0.16												
E-220	265.0	65.0	Qpogl	27.9																
E-220	270.0	60.0	Qpogl	25.4	56	27	28	(0.06)												
E-220	278.0	52.0	Qpogl	25.7																
E-220	283.0	47.0	Qpogl	25.2																
E-221	110.0	87.2	Qpogf	7.4					21.9	71.9	6.2									
E-221	120.0	77.2	Qpogl	18.9	43	23	20	(0.21)												
E-221	128.0	69.2	Qpogl	20.7	0	0	0				82.4									

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
E-221	137.0	60.2	Qpogl	19.7	0	0	0				83.7									
E-221	145.0	52.2	Qpogl	16.0							100.0									
E-221	152.0	45.2	Qpogl	23.6						7.9	11.8	80.3								
E-221	158.0	39.2	Qpogl	16.0						0.9	25.6	73.5								
E-222	280.0	98.7	Qpogd	14.9	0	0	0					30.5								
E-222	302.0	76.7	Qpogd	13.7						5.1	66.7	28.2								
E-222	306.0	72.7	Qpogl	19.4	43	23	20	(0.18)												
E-222	312.0	66.7	Qpogl	20.1	44	21	22	(0.04)												
E-223	200.0	158.7	Qpogl	21.7									90.9	9.40						
E-223	200.5	158.2	Qpogl	21.6									114.2	4.78						
E-223	265.0	93.7	Qpogl	26.9																
E-223	310.0	48.7	Qpfnf	14.8						32.4	39.3	28.3								
E-224	42.5	85.8	Qal	19.4						15.9	75.4	8.7								
E-224	47.5	80.8	Qal	26.5						0.0	83.7	16.3								
E-224	52.4	75.9	Qal	21.6									104.7							
E-224	77.5	50.8	Qal	23.3						0.0	88.4	11.6								
E-224	82.5	45.8	Qvrl	32.0	46	24	22	0.36												
E-321	168.0	97.0	Qpogl	32.4	32	25	7	1.06												
E-321	178.0	87.0	Qpfnl	22.3						0.0	44.6	55.4								
E-321	185.0	80.0	Qpfnf	21.4						0.5	58.4	41.1								
E-321	191.0	74.0	Qpfnf	14.0						0.0	91.3	8.7								
E-322	254.5	91.6	Qpogl	19.5						0.0	7.3	92.7								
E-322	265.0	81.1	Qpogl	18.2						0.5	10.8	88.7								
E-322	269.5	76.6	Qpfnf	17.8						0.1	42.3	57.6								
E-322	285.0	61.1	Qpfnf	15.6								45.5								
E-322	286.8	59.3	Qpogt	17.5									92.8	11.30						
E-322	287.4	58.7	Qpogt	16.9									110.0	18.79						
E-322	288.2	57.9	Qpogt	16.9									113.4	21.88						
E-323	275.0	91.8	Qpfnf	19.5						0.0	84.6	15.4								
E-323	286.1	80.7	Qpfnf	9.5						34.5	51.3	14.2								
E-323	291.5	75.3	Qpfnf	11.6								100.0								
E-323	295.0	71.8	Qpogl	18.5	39	22	17	(0.21)												
E-323	310.0	56.8	Qpogf	19.5						0.0	82.9	17.1								
E-324	260.0	84.6	Qpogf	25.4								31.0								
E-324	272.0	72.6	Qpogl	21.6	52	24	28	(0.09)												
E-324	282.0	62.6	Qpogl	13.1								98.1								
E-324	297.0	47.6	Qpogf	19.9													25.1			
E-326	182.0	85.1	Qpogtm	16.1						17.0	50.1	32.9								
E-326	189.0	78.1	Qpogl	33.2								100.0								
E-327	201.0	77.8	Qpfnl	27.2								90.2								
E-327	208.0	70.8	Qpfnl	20.1						0.0	24.3	75.7								
E-327	215.0	63.8	Qpfnl	12.4						1.2	1.9	96.9								
E-327	223.0	55.8	Qpogt	23.0						24.9	44.3	30.8								
E-328	259.0	125.1	Qpogd	6.5						62.6	23.3	14.1								
E-328	300.0	84.1	Qpogt	23.6								57.3								
E-328	322.0	62.1	Qpogt	17.6						1.4	52.5	46.1								
E-328	330.0	54.1	Qpogl	22.7	47	19	28	0.13												
E-329	290.0	75.5	Qpogl	27.4	66	28	38	(0.02)												
E-329	304.0	61.5	Qpogl	21.7						22.1	24.9	53.0								
E-329	315.0	50.5	Qpogl	31.4	66	25	41	0.16												
E-329	319.0	46.5	Qpogl	31.6																
E-329	323.0	42.5	Qpogl	31.9	52	23	30	0.30												

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
 Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
E-329	333.0	32.5	Qpogl	24.4																
E-330	190.0	85.0	Qpfnl	29.3	0	0	0				94.2									
E-330	217.0	58.0	Qpfnf	25.7						0.0	80.1	19.9								
E-330	232.0	43.0	Qpfnf	26.9						0.0	80.0	20.0								
E-331	55.0	80.0	Qal	25.0								11.1								
E-331	66.0	69.0	Qal	28.9						0.0	73.3	26.7								
E-331	71.0	64.0	Qal	27.3						0.0	80.1	19.9								
E-331	81.0	54.0	Qal	24.9						0.0	69.4	30.6								
E-331	86.0	49.0	Qal	27.7						0.0	65.0	35.0								
E-331	91.0	44.0	Qvrf	4.5																
E-331	101.0	34.0	Qvrl	25.8																
E-514	95.0	98.7	Qpogf	0.7						32.3	60.1	7.6								
E-514	100.0	93.7	Qpogf	5.1						52.6	42.9	4.5								
E-514	105.0	88.7	Qpogf	10.5						13.5	80.1	6.4								
E-514	111.0	82.7	Qpogl	17.7	35	20	15	(0.15)												
E-514	114.0	79.7	Qpogl	19.9	32	25	8	(0.64)		0.0	3.6	96.4								
E-514	117.0	76.7	Qpogl	14.6																
E-514	121.0	72.7	Qpogl	16.0																
<b>BRIGHTWATER TUNNEL 3</b>																				
E-111	80.5	312.5	Qpfnl	21.4	50	25	25	(0.14)												
E-111	131.5	261.5	Qpogl	19.7	0	0	0				91.0									
E-111	137.0	256.0	Qpogd	12.2						7.2	56.3	36.5								
E-111	155.0	238.0	Qpogd	11.8								7.3								
E-111	162.0	231.0	Qpogtm	2.1						63.9	33.6	2.5								
E-111	168.0	225.0	Qpogtm	15.8						4.4	63.6	32.0								
E-111	191.0	202.0	Qpogtm	9.8								39.0								
E-111	233.0	160.0	Qpogm	29.1	53	27	26	0.08												
E-111	322.5	70.5	Qpogm	35.2	75	35	40	0.01												
E-112	33.5	278.3	Qpogl	28.4																
E-112	35.0	276.8	Qpogl	21.2																
E-112	45.0	266.8	Qpogl	20.9																
E-112	61.0	250.8	Qpogl	26.0																
E-112	65.0	246.8	Qpogl	18.6																
E-112	71.0	240.8	Qpogl	26.8																
E-112	75.0	236.8	Qpogl	18.2																
E-112	81.5	230.3	Qpogl	27.7																
E-112	85.0	226.8	Qpogl	10.6																
E-112	86.0	225.8	Qpogt	12.0																
E-112	95.0	216.8	Qpogt	8.4	0	0	0													
E-112	98.5	213.3	Qpogt	11.7																
E-112	100.0	211.8	Qpogt	13.2																
E-112	105.0	206.8	Qpogt	18.0	47	23	24	(0.21)												
E-112	110.0	201.8	Qpogt	14.4																
E-112	118.0	193.8	Qpogt	18.1	40	25	15	(0.46)												
E-112	120.0	191.8	Qpogt	12.8																
E-112	123.0	188.8	Qpogl	58.0	56	27	29	1.07				58.2								
E-112	125.0	186.8	Qpogl	14.2	72	27	45	(0.28)												
E-112	131.0	180.8	Qpogl	10.0																
E-112	132.0	179.8	Qpogl	11.0	44	25	19	(0.74)												
E-112	135.0	176.8	Qpogl	12.4																
E-112	140.0	171.8	Qpogt	8.8																
E-112	140.1	171.7	Qpogf	21.7																

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-112	140.6	171.2	Qpogf	12.8																	
E-112	145.0	166.8	Qpogf	10.3																	
E-112	146.5	165.3	Qpogl	30.9																	
E-112	150.0	161.8	Qpogl	9.2																	
E-112	155.0	156.8	Qpogf	17.3																	
E-112	165.0	146.8	Qpogl	8.8																	
E-112	175.0	136.8	Qpogl	13.4																	
E-112	182.0	129.8	Qpogl	20.2																	
E-112	185.0	126.8	Qpogl	17.0																	
E-112	189.5	122.3	Qpogl	16.9																	
E-112	192.5	119.3	Qpogl	13.1																	
E-112	197.5	114.3	Qpogl	18.4	43	19	24	(0.03)													
E-112	202.0	109.8	Qpogl	15.6																	
E-112	202.5	109.3	Qpogl	ND										17.85							
E-112	212.5	99.3	Qpogl	16.0																	
E-112	213.5	98.3	Qpogl	26.9																	
E-112	215.0	96.8	Qpogl	22.8																	
E-112	226.0	85.8	Qpogl	32.3																	
E-112	232.5	79.3	Qpogl	31.3	71	28	42	0.08						4.65							
E-112	236.0	75.8	Qpogl	31.5																	
E-112	242.5	69.3	Qpogl	31.6																	
E-112	245.0	66.8	Qpogl	33.4																	
E-112	249.5	62.3	Qpogl	26.2																	
E-112	256.5	55.3	Qpogl	30.4																	
E-112	263.5	48.3	Qpogl	29.7																	
E-112	265.0	46.8	Qpogl	30.3	47	25	22	0.24						6.01							
E-112	276.0	35.8	Qpogl	25.6																	
E-112	284.0	27.8	Qpogl	27.8																	
E-112	285.0	26.8	Qpogl	29.7																	
E-112	288.0	23.8	Qpogl	26.6																	
E-112	296.0	15.8	Qpogl	28.1																	
E-113	28.0	266.8	Qpogt	6.9						4.6	58.5	36.9									
E-113	45.0	249.8	Qpogtm	8.0						12.6	48.3	39.1									
E-113	72.5	222.3	Qpogtm	7.1						14.0	53.7	32.3									
E-113	77.0	217.8	Qpogtm	11.2								35.2									
E-113	99.0	195.8	Qpogf	9.2						16.3	59.1	24.6									
E-113	112.0	182.8	Qpogl	14.9	0	0	0					69.1									
E-113	121.5	173.3	Qpogl	16.9	41	22	19	(0.27)													
E-113	127.0	167.8	Qpogl	11.7																	
E-113	132.5	162.3	Qpogl	19.2																	
E-113	137.0	157.8	Qpogl	26.3																	
E-113	188.0	106.8	Qpogl	16.1																	
E-113	192.0	102.8	Qpogl	13.5	39	24	14	(0.75)													
E-113	197.0	97.8	Qpogl	14.3	34	18	16	(0.23)													
E-113	202.0	92.8	Qpogl	14.3																	
E-113	207.0	87.8	Qpogl	13.5																	
E-113	212.0	82.8	Qpogl	13.5																	
E-113	217.0	77.8	Qpogl	15.7	30	18	12	(0.19)													
E-113	220.0	74.8	Qpogl	14.2																	
E-113	222.0	72.8	Qpogl	13.3																	
E-113	225.0	69.8	Qpogl	15.3																	
E-113	227.0	67.8	Qpogl	14.5																	

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)					Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV		LV residual
E-113	230.0	64.8	Qpogl	14.3																
E-113	232.0	62.8	Qpogl	14.1																
E-113	236.0	58.8	Qpogl	14.3																
E-113	239.0	55.8	Qpogl	24.1	63	24	39	0.00												
E-113	243.0	51.8	Qpogl	29.5																
E-113	248.0	46.8	Qpogl	13.7																
E-113	253.5	41.3	Qpogl	23.8																
E-113	255.5	39.3	Qpogl	24.7					0.0	0.4	99.6									
E-113	258.0	36.8	Qpogl	23.3	47	22	24	0.05												
E-113	263.0	31.8	Qpogl	23.3																
E-113	269.0	25.8	Qpogl	23.8																
E-113	274.0	20.8	Qpogl	32.8	53	25	28	0.28												
E-113	275.0	19.8	Qpogl	23.4																
E-114	60.0	332.5	Qvlc	17.4																
E-114	80.0	312.5	Qvlc	15.6																
E-114	100.0	292.5	Qvlc	21.3																
E-114	120.0	272.5	Qpfnl	16.6																
E-114	140.0	252.5	Qpfnl	14.9							55.6									
E-114	145.0	247.5	Qpfnl	19.2																
E-114	175.0	217.5	Qpogf	20.9							40.9									
E-114	185.0	207.5	Qpogf	16.8							4.8									
E-114	200.0	192.5	Qpogl	10.8	27	18	9	(0.80)												
E-114	205.0	187.5	Qpogl	15.5																
E-114	210.0	182.5	Qpogl	13.1																
E-114	215.0	177.5	Qpogl	19.9								109.7								
E-114	220.0	172.5	Qpogl	11.7																
E-114	225.0	167.5	Qpogl	15.9								115.5								
E-114	226.0	166.5	Qpogl	21.7	49	21	29	0.02												
E-114	230.0	162.5	Qpogl	18.7								111.1								
E-114	235.0	157.5	Qpogl	24.5	47	22	25	0.10				103.2	15.98							
E-114	240.0	152.5	Qpogl	24.9																
E-114	260.0	132.5	Qpogl	17.2																
E-114	265.0	127.5	Qpogl	22.0																
E-114	270.0	122.5	Qpogl	24.9																
E-114	275.0	117.5	Qpogl	25.3																
E-114	280.0	112.5	Qpogl	17.2																
E-114	290.0	102.5	Qpogl	27.8																
E-114	300.0	92.5	Qpogl	41.0																
E-114	305.0	87.5	Qpogl	28.8	73	25	48	0.08												
E-114	310.0	82.5	Qpogl	16.0																
E-114	315.0	77.5	Qpogl	20.3	64	25	40	(0.12)				95.2	9.26							
E-114	322.5	70.0	Qpogl	23.6																
E-114	327.0	65.5	Qpogl	25.2																
E-114	327.5	65.0	Qpogl	25.2																
E-114	332.5	60.0	Qpogl	19.0																
E-114	335.0	57.5	Qpogl	14.5																
E-114	337.5	55.0	Qpogl	19.6																
E-114	342.5	50.0	Qpogl	16.8																
E-114	345.0	47.5	Qpogl	13.2																
E-114	347.5	45.0	Qpogl	13.7																
E-114	350.0	42.5	Qpogl	17.9	29	17	12	0.07												
E-114	352.5	40.0	Qpogl	19.3								111.7	10.59							

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-114	357.5	35.0	Qpogl	17.1																	
E-114	367.5	25.0	Qpogl	21.8							99.4		108.4	2.64							
E-114	372.5	20.0	Qpogl	19.0																	
E-115	126.5	495.6	Qva	7.5						0.0	89.5	10.5									
E-115	213.0	409.1	Qpfnl	22.9																	
E-115	221.0	401.1	Qpfnl	24.5	41	26	16	(0.09)													
E-115	229.0	393.1	Qpfnl	23.8																	
E-115	233.0	389.1	Qpfnl	35.5	54	32	21	0.17													
E-115	240.0	382.1	Qpfnl	29.4																	
E-115	246.0	376.1	Qpogl	38.8																	
E-115	253.5	368.6	Qpogl	34.6	51	26	25	0.34													
E-115	259.0	363.1	Qpogl	26.0																	
E-115	269.0	353.1	Qpogl	26.0	34	19	15	0.47													
E-115	279.0	343.1	Qpogl	25.4																	
E-115	284.0	338.1	Qpogl	24.7																	
E-115	294.0	328.1	Qpogl	21.2	0	0	0					98.7									
E-115	300.0	322.1	Qpogd	17.3																	
E-115	319.0	303.1	Qpogf	15.8						0.0	92.3	7.7									
E-115	394.0	228.1	Qpogf	6.8						26.3	66.1	7.6									
E-115	411.0	211.1	Qpogf	4.9						70.9	21.1	8.0									
E-115	434.0	188.1	Qpogtm	7.2						43.6	43.3	13.1									
E-115A	460.0	160.3	Qpogtm	4.1						67.5	30.4	2.1									
E-115A	492.0	128.3	Qpogl	18.6								86.7									
E-116	20.0	307.4	Qpogt	12.5						18.5	55.3	26.2									
E-116	37.0	290.4	Qpogl	12.0																	
E-116	51.5	275.9	Qpogl	13.5	0	0	0					65.6									
E-116	70.0	257.4	Qpogl	15.6																	
E-116	78.0	249.4	Qpogl	16.4																	
E-116	90.0	237.4	Qpogm	27.7	63	26	37	0.05													
E-116	100.0	227.4	Qpogm	19.2																	
E-116	110.0	217.4	Qpogm	29.8																	
E-116	119.0	208.4	Qpogm	31.3	66	35	31	(0.12)													
E-116	120.0	207.4	Qpogm	19.2	39	21	18	(0.10)													
E-116	130.0	197.4	Qpogm	18.6																	
E-116	140.0	187.4	Qpogm	17.2																	
E-116	155.0	172.4	Qpogl	21.5	56	23	33	(0.05)													
E-116	162.0	165.4	Qpogl	33.1																	
E-116	170.0	157.4	Qpogl	28.2	35	16	18	0.68													
E-116	180.0	147.4	Qpogl	31.7	77	30	47	0.04													
E-116	185.0	142.4	Qpogl	18.3																	
E-116	190.0	137.4	Qpogl	12.2	66	35	31	(0.74)				99.0	88.4								
E-116	196.0	131.4	Qpogl	18.5	56	22	34	(0.10)													
E-116	207.0	120.4	Qpogl	30.3	59	28	31	0.07													
E-116	215.0	112.4	Qpogl	29.9	47	25	22	0.22													
E-116	230.0	97.4	Qpfnl	27.4																	
E-116	242.0	85.4	Qpfne	20.3						1.9	72.1	26.0									
E-116	260.0	67.4	Qpfne	19.9	31	22	9	(0.23)													
E-116	268.0	59.4	Qpogl	20.1	26	20	5	0.02													
E-117	183.0	184.4	Qpogd	6.1						38.0	52.9	9.1									
E-117	208.0	159.4	Qpogf	3.1						69.7	26.5	3.8									
E-117	228.0	139.4	Qpogl	29.3	36	26	10	0.33													
E-117	250.0	117.4	Qpogt	8.5						20.4	50.6	29.0									

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
 Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
E-117	258.0	109.4	Qpogt	8.1					12.9	38.8	48.3									
E-117	275.0	92.4	Qpogf	18.7					0.0	87.0	13.0									
E-117	306.5	60.9	Qpogl	25.8	0	0	0				91.9									
E-117	313.0	54.4	Qpogl	22.3	33	23	10	(0.07)												
E-118	16.8	189.8	Qpogl	13.5	0	0	0				63.6									
E-118	22.0	184.6	Qpogl	18.4																
E-118	28.0	178.6	Qpogl	19.0																
E-118	38.0	168.6	Qpogl	22.9																
E-118	40.0	166.6	Qpogl	21.0																
E-118	48.0	158.6	Qpogl	20.2																
E-118	55.0	151.6	Qpogl	9.5																
E-118	56.5	150.1	Qpogl	9.5	32	23	9	(1.50)												
E-118	73.5	133.1	Qpogf	15.5					0.8	87.1	12.1									
E-118	83.0	123.6	Qpogl	15.6	44	25	19	(0.49)												
E-118	89.0	117.6	Qpogf	16.7					16.6	56.2	27.2									
E-118	95.0	111.6	Qpogf	21.4					0.0	70.5	29.5									
E-118	100.0	106.6	Qpogl	22.7	45	24	21	(0.06)												
E-118	101.0	105.6	Qpogl	24.5	51	28	24	(0.15)						11.66						
E-118	106.5	100.1	Qpogl	28.5	46	24	21	0.21	0.0	0.2	99.8									
E-118	112.0	94.6	Qpogl	28.4	44	24	19	0.23												
E-118	126.0	80.6	Qpogf	0.4					66.5	31.5	2.0									
E-118	138.0	68.6	Qpogf	10.7																
E-118	150.0	56.6	Qpogt	5.1					38.9	37.0	24.1									
E-118	153.0	53.6	Qpogt	9.0	0	0	0													
E-118	158.0	48.6	Qpogt	19.0																
E-118	161.0	45.6	Qpogt	9.1					27.8	48.7	23.5									
E-118	167.5	39.1	Qpogt	11.9					18.7	67.1	14.2									
E-118	170.0	36.6	Qpogt	15.6																
E-119	44.0	122.8	Qvtm	8.6					19.1	43.1	37.8									
E-119	65.0	101.8	Qpogf	10.1					5.0	36.3	58.7									
E-119	73.5	93.3	Qpogtm	13.7	0	0	0		0.7	20.2	79.1									
E-119	76.0	90.8	Qpogtm	11.9																
E-119	81.0	85.8	Qpogtm	9.4					4.4	65.6	30.0									
E-119	83.0	83.8	Qpogtm	15.1																
E-119	93.5	73.3	Qpogf	10.5					8.3	37.9	53.8									
E-119	108.0	58.8	Qpogtm	21.6																
E-119	113.0	53.8	Qpogf	20.5																
E-119	128.0	38.8	Qpogf	5.9					41.6	51.5	6.9									
E-120	10.0	152.3	Qvt	13.3								118.1								
E-120	15.0	147.3	Qvt	11.8								120.9								
E-120	20.0	142.3	Qvtm	15.3								118.0								
E-120	25.0	137.3	Qvtm	10.8																
E-120	30.0	132.3	Qvtm	10.6					17.6	64.9	17.5									
E-120	35.0	127.3	Qvtm	13.5																
E-120	40.0	122.3	Qvtm	20.5	0	0	0					105.8								
E-120	45.0	117.3	Qpogl	20.9	0	0	0													
E-120	50.0	112.3	Qpogl	23.6	0	0	0													
E-120	55.0	107.3	Qpogl	19.3								104.8								
E-120	60.0	102.3	Qpfrf	18.5																
E-120	62.5	99.8	Qpfrf	21.9					14.1	85.3	0.6	104.4								
E-120	65.0	97.3	Qpfrf	18.9																
E-120	70.0	92.3	Qpogf	22.3					0.2	59.6	40.2									

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-120	75.0	87.3	Qpogf	18.3					0.5	87.5	12.0		109.3								
E-120	80.0	82.3	Qpogf	11.1																	
E-120	82.5	79.8	Qpogf	23.1																	
E-120	87.5	74.8	Qpogf	20.6					1.4	84.7	13.9										
E-120	92.5	69.8	Qpogf	22.2																	
E-120	97.5	64.8	Qpogf	20.1					0.5	84.2	15.3										
E-120	102.5	59.8	Qpogf	18.4					0.3	97.5	2.2										
E-120	107.5	54.8	Qpfnf	5.0																	
E-120	115.0	47.3	Qpfnf	1.7																	
E-120	117.5	44.8	Qpfnf	8.7					42.6	53.4	4.0										
E-120	127.5	34.8	Qpfnf	15.5					6.8	88.6	4.6		115.4								
E-120	132.5	29.8	Qpfnf	24.0																	
E-212	16.0	343.8	Qpfnl	20.3																	
E-212	21.0	338.8	Qpfnl	62.6																	
E-212	26.0	333.8	Qpfnl	28.7																	
E-212	31.0	328.8	Qpfnl	26.2																	
E-212	34.0	325.8	Qpfnl	27.1																	
E-212	44.0	315.8	Qpfnl	26.7																	
E-212	49.0	310.8	Qpfnl	26.8																	
E-212	56.0	303.8	Qpogl	27.3																	
E-212	61.0	298.8	Qpogl	20.1																	
E-212	67.0	292.8	Qpogl	24.0																	
E-212	73.0	286.8	Qpogl	25.4																	
E-212	79.0	280.8	Qpogl	26.1																	
E-212	84.0	275.8	Qpogl	29.0																	
E-212	90.0	269.8	Qpogl	27.3																	
E-212	94.0	265.8	Qpogl	21.3																	
E-212	99.0	260.8	Qpogl	28.6																	
E-212	106.0	253.8	Qpogl	22.8																	
E-212	115.1	244.7	Qpogf	17.0																	
E-212	121.0	238.8	Qpogf	22.4																	
E-212	140.0	219.8	Qpogt	7.3					22.6	56.4	21.0										
E-212	152.0	207.8	Qpogt	9.5					19.3	59.1	21.6										
E-212	162.0	197.8	Qpogt	5.0					40.1	40.2	19.7										
E-212	165.0	194.8	Qpogt	8.6	0	0	0														
E-212	168.0	191.8	Qpogt	6.6					24.2	47.0	28.8										
E-212	193.0	166.8	Qpogm	7.6																	
E-212	198.0	161.8	Qpogm	18.0																	
E-212	203.0	156.8	Qpogm	9.7																	
E-212	205.5	154.3	Qpogm	15.8																	
E-212	212.5	147.3	Qpogm	16.8																	
E-212	215.1	144.7	Qpogm	18.0																	
E-212	218.5	141.3	Qpogm	18.5																	
E-212	225.0	134.8	Qpogm	18.9																	
E-212	228.0	131.8	Qpogm	18.1																	
E-212	235.5	124.3	Qpogm	16.5																	
E-212	240.0	119.8	Qpogm	18.3																	
E-212	248.0	111.8	Qpogm	15.8																	
E-212	252.5	107.3	Qpogm	18.5																	
E-212	255.0	104.8	Qpogm	17.4																	
E-212	267.5	92.3	Qpogm	20.8																	
E-212	273.5	86.3	Qpogm	17.8																	

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-212	278.0	81.8	Qpogm	28.4																	
E-212	283.0	76.8	Qpogm	22.5																	
E-212	290.5	69.3	Qpogm	28.4																	
E-212	295.5	64.3	Qpogm	32.6																	
E-212	300.0	59.8	Qpogm	29.5																	
E-212	302.0	57.8	Qpogm	23.4																	
E-212	305.0	54.8	Qpogm	33.8																	
E-212	310.1	49.7	Qpogm	33.1																	
E-213	53.0	269.6	Qpogf	20.4																	
E-213	60.0	262.6	Qpogf	17.7																	
E-213	99.0	223.6	Qpogl	15.7																	
E-213	110.0	212.6	Qpogl	13.8																	
E-213	122.1	200.5	Qpogl	19.8																	
E-213	129.0	193.6	Qpogl	15.0																	
E-213	134.0	188.6	Qpogl	14.8	32	21	11	(0.56)													
E-213	135.1	187.5	Qpogl	13.7																	
E-213	140.0	182.6	Qpogl	22.7	51	30	21	(0.35)													
E-213	143.0	179.6	Qpogl	21.1																	
E-213	147.0	175.6	Qpogl	21.1					0.8	44.2	55.0										
E-213	159.0	163.6	Qpogl	16.1																	
E-213	160.0	162.6	Qpogl	14.6							77.7										
E-213	163.0	159.6	Qpogl	28.0																	
E-213	165.0	157.6	Qpogl	24.6																	
E-213	172.0	150.6	Qpogl	30.5																	
E-213	187.0	135.6	Qpogl	20.4																	
E-213	205.0	117.6	Qpogl	21.3																	
E-213	222.0	100.6	Qpogl	34.3																	
E-213	239.0	83.6	Qpogl	32.0																	
E-213	253.5	69.1	Qpogl	29.3																	
E-213	261.5	61.1	Qpogl	30.6																	
E-213	265.5	57.1	Qpogl	26.3																	
E-213	271.0	51.6	Qpogl	13.3																	
E-213	275.5	47.1	Qpogl	30.0																	
E-214	166.0	252.0	Qpogl	13.3	32	21	11	(0.70)													0.15
E-214	226.0	192.0	Qpogt	12.2										9.85							
E-214	255.0	163.0	Qpogl	16.6	36	18	18	(0.08)													
E-214	265.0	153.0	Qpogl	19.3	43	22	21	(0.13)			90.7	47.5									
E-214	280.0	138.0	Qpogl	19.0	39	23	16	(0.25)													
E-215	204.0	199.4	Qpogl	20.1																	
E-215	235.0	168.4	Qpogd	8.8					27.7	47.9	24.4										
E-215	240.0	163.4	Qpogd	21.0	48	24	25	(0.12)													
E-215	244.0	159.4	Qpogl	19.9																	
E-215	249.0	154.4	Qpogl	25.4																	
E-215	255.0	148.4	Qpogm	19.7	40	25	15	(0.35)													
E-215	256.0	147.4	Qpogm	17.3																	
E-215	263.0	140.4	Qpogm	16.8																	
E-215	265.0	138.4	Qpogm	17.0	39	21	18	(0.22)													
E-215	267.0	136.4	Qpogm	17.3							92.7	54.6									
E-215	271.0	132.4	Qpogm	20.8																	
E-215	275.0	128.4	Qpogm	21.2	44	23	21	(0.09)													
E-215	278.0	125.4	Qpogm	22.2																	
E-215	282.0	121.4	Qpogm	21.1							67.8										

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-215	283.0	120.4	Qpogm	23.3																	
E-215	288.0	115.4	Qpogm	20.6																	
E-215	291.0	112.4	Qpogm	26.4	50	26	24	0.02													
E-215	292.0	111.4	Qpogm	25.9																	
E-215	298.0	105.4	Qpogm	21.9																	
E-215	303.0	100.4	Qpogm	16.8																	
E-215	306.0	97.4	Qpogm	30.4																	
E-215	310.0	93.4	Qpogm	32.8	60	32	28	0.03													
E-215	311.0	92.4	Qpogm	28.4																	
E-215	316.0	87.4	Qpogm	33.9																	
E-215	324.0	79.4	Qpogm	29.8																	
E-215	327.0	76.4	Qpogm	32.7																	
E-215	331.0	72.4	Qpogm	31.8																	
E-215	335.0	68.4	Qpogm	29.4	49	27	22	0.11													
E-215	339.0	64.4	Qpogl	34.3																	
E-215	342.0	61.4	Qpogl	34.3																	
E-215	345.0	58.4	Qpogl	30.3																	
E-215	351.0	52.4	Qpogl	28.5																	
E-215	357.0	46.4	Qpogl	27.4																	
E-216	188.0	206.7	Qpfnw	24.4																	
E-216	190.0	204.7	Qpfnl	35.8																	
E-216	196.0	198.7	Qpfnl	41.6																	
E-216	210.0	184.7	Qpfnf	12.3					1.4	86.3	12.3										
E-216	247.0	147.7	Qpfnf	23.9							73.2										
E-216	255.0	139.7	Qpfnl	26.1																	
E-216	263.0	131.7	Qpfnf	16.8							12.4										
E-216	270.0	124.7	Qpfnf	16.3							9.4										
E-216	280.0	114.7	Qpfnf	19.0							7.2										
E-216	303.0	91.7	Qpfnl	24.7																	
E-216	310.0	84.7	Qpfnl	26.5																	
E-216	315.0	79.7	Qpfnl	21.0																	
E-216	323.0	71.7	Qpfnl	24.1																	
E-216	335.0	59.7	Qpfnl	25.1																	
E-217	56.0	362.8	Qpfnl	24.9																	
E-217	96.0	322.8	Qpogl	28.6	55	30	25	(0.06)													
E-217	116.0	302.8	Qpogl	37.4																	
E-217	236.0	182.8	Qpogd	25.1																	
E-217	285.0	133.8	Qpfnf	1.0					95.3	3.9	0.8										
E-217	290.0	128.8	Qpfnf	3.3					85.5	13.7	0.8										
E-218	51.0	108.6	Qvt	10.0					3.2	51.2	45.6										
E-218	58.0	101.6	Qvt	8.3					3.5	59.8	36.7										
E-218	64.0	95.6	Qvt	9.0					5.0	56.9	38.1										
E-218	69.0	90.6	Qpogf	9.2					20.3	69.1	10.6										
E-218	72.0	87.6	Qpogf	8.1					36.6	60.9	2.5										
E-218	85.0	74.6	Qpogf	17.5					1.6	95.4	3.0										
E-301	100.0	204.5	Qpogm	24.5	30	17	13	0.58													
E-301	112.0	192.5	Qpogm	12.1	28	17	11	(0.45)													
E-301	119.0	185.5	Qpogm	11.8	27	18	9	(0.69)													
E-301	128.0	176.5	Qpogm	22.4																	
E-302	120.0	201.6	Qpogl	15.6	46	29	16	(0.84)													
E-302	128.0	193.6	Qpogl	22.2	37	18	18	0.23			69.9										
E-302	138.0	183.6	Qpogl	24.7	50	24	25	0.03			52.8										

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-302	142.0	179.6	Qpogtm	8.9																	
E-302	146.0	175.6	Qpogtm	6.9	0	0	0				23.3										
E-302	160.0	161.6	Qpogtm	11.8							39.1										
E-303	99.0	186.6	Qpogl	17.3	41	20	21	(0.13)	0.0	8.4	91.6	35.2									
E-303	107.0	178.6	Qpogl	19.3																	
E-303	113.0	172.6	Qpogl	16.3	41	27	14	(0.76)	0.4	52.4	47.2										
E-303	130.0	155.6	Qpogl	18.6	43	28	15	(0.63)													
E-304	155.7	183.3	Qpogl	14.1	32	18	13	(0.30)													
E-304	168.0	171.0	Qpogl	12.9	29	17	12	(0.34)													
E-304	173.0	166.0	Qpogl	14.9																	
E-304	190.0	149.0	Qpogl	14.4	35	22	13	(0.58)													
E-305	267.0	176.4	Qpogl	29.5																	
E-305	273.0	170.4	Qpogl	25.1					0.0	27.0	73.0										
E-305	278.0	165.4	Qpogl	23.4																	
E-305	283.0	160.4	Qpogl	20.7					1.3	38.8	59.9										
E-305	288.0	155.4	Qpogl	17.6																	
E-305	295.0	148.4	Qpogl	20.5	48	22	25	(0.06)													
E-305	297.0	146.4	Qpogl	ND												8.5					
E-306	330.0	167.6	Qpogl	21.7							91.9	4.9									
E-306	345.0	152.6	Qpogf	22.1							4.9										
E-306	353.0	144.6	Qpogl	1.7					0.0	16.3	83.7	27.1									
E-307	441.0	166.0	Qpogl	14.8	28	17	10	(0.22)													
E-307	451.0	156.0	Qpogl	21.8	43	27	16	(0.32)													
E-307	455.0	152.0	Qpogl	6.4					0.0	10.4	89.6	53.9									
E-307	471.0	136.0	Qpogd	11.6	55	24	31	(0.40)													
E-307	475.0	132.0	Qpogd	19.0	36	23	13	(0.31)													
E-308	447.0	166.2	Qpogm	20.7																	
E-308	452.0	161.2	Qpogm	20.1																	
E-308	457.0	156.2	Qpogm	44.7	49	21	28	0.85													
E-308	460.0	153.2	Qpogm	20.9	49	22	27	(0.04)	0.0	19.6	80.4	35.9									
E-308	462.0	151.2	Qpogm	27.2																	
E-308	485.0	128.2	Qpogd	8.0							40.4										
E-309	405.0	184.1	Qpogl	17.8							66.5										
E-309	425.0	164.1	Qpogt	11.6							35.7										
E-309	440.0	149.1	Qpogl	16.0	48	25	23	(0.39)	0.0	82.7	17.3										
E-309	463.5	125.6	Qpogl	17.5	0	0	0														0.13
E-310	160.0	193.2	Qpogl	11.6																	
E-310	200.0	153.2	Qpogl	22.6																	
E-310	204.0	149.2	Qpogl	18.1	31	22	9	(0.43)													0.11
E-310	214.0	139.2	Qpogl	12.6	0	0	0		3.9	21.6	74.5	23.8									
E-310	219.0	134.2	Qpogl	14.2	34	19	16	(0.30)			72.1	23.0									
E-310	219.1	134.1	Qpogl	13.3																	
E-310	232.0	121.2	Qpogl	25.8	60	33	27	(0.27)								2.9					
E-310	232.5	120.7	Qpogl	ND												6.4					
E-310	233.0	120.2	Qpogl	ND												7.5					
E-310	240.0	113.2	Qpogl	31.2																	
E-310	249.0	104.2	Qpogl	27.7																	
E-311	148.0	131.1	Qpfnf	13.3					0.0	93.3	6.7										
E-311	155.0	124.1	Qpfnf	26.8					0.0	96.3	3.7										
E-311	161.0	118.1	Qpfnf	26.0	0	0	0				5.8										
E-311	161.5	117.6	Qpfnf	ND												5.2					
E-311	162.0	117.1	Qpfnf	ND												10.9					



**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
TW-201	260.0	357.5	Qpogl	17.5	46	30	17	(0.74)													
TW-201	280.0	337.5	Qpogl	25.9	57	31	26	(0.20)													
<b>NORTH KENMORE PORTAL SITE</b>																					
P44-01	9.0	177.2	Qvrl	25.0	45	25	20	0.00													0.14
P44-01	75.0	111.2	Qpogd	17.1					17.9	20.2	61.9										
P44-01	80.0	106.2	Qpogd	24.8					0.4	9.6	90.0										
P44-01	94.0	92.2	Qpfnf	24.4					0.0	76.8	23.2										
P44-01	103.0	83.2	Qpfnf	24.9					0.6	45.5	53.9										
P44-01	110.0	76.2	Qpogm	16.2	39	19	20	(0.14)													
P44-01	115.0	71.2	Qpogm	21.4	40	22	18	(0.03)													
P44-01	119.0	67.2	Qpogm	15.7																	
P44-01	123.0	63.2	Qpogm	14.3																	
P44-01	130.0	56.2	Qpogf	23.9					4.5	68.8	26.7										
P44-02	20.0	159.1	Qvrm	14.3					6.4	43.1	50.5	126.6									
P44-02	40.0	139.1	Qpogl	32.0					0.0	1.8	98.2	97.1									
P44-02	60.0	119.1	Qpogf	14.9					13.6	74.1	12.3										
P44-02	90.0	89.1	Qpogf	4.6					71.3	23.5	5.2										
P44-02	95.0	84.1	Qpfnf	23.6							94.7										
P44-02	110.0	69.1	Qpfnf	13.7					17.0	56.0	27.0										
P44-03	60.0	96.7	Qpogd	20.6	24	18	5	0.52	5.8	23.5	70.7	119.1									
P44-03	65.0	91.7	Qpogd	21.7					8.9	63.8	27.3										
P44-03	75.0	81.7	Qpogd	18.2					0.1	59.0	40.9	109.9									
P44-03	85.0	71.7	Qpogf	26.3							84.8										
P44-03A	20.0	136.7	Qvi	15.0								121.6									
P44-03A	30.0	126.7	Qvi	8.8					18.1	54.1	27.8	139.9									
TP44-01N	7.0	152.1	af	55.2																	
TP44-01N	9.0	150.1	Qw	22.5					3.1	54.4	42.5										
TP44-01N	10.0	149.1	Qw	90.9	73	40	33	1.54													
TP44-01N	14.0	145.1	Ql	40.6	33	20	13	1.58													
TP44-01S	4.0	161.3	Qal	16.0					1.5	78.4	20.1										
TP44-01S	6.0	159.3	Qal	20.0					5.8	79.6	14.6										
TP44-01S	8.0	157.3	Qal	23.6					0.3	81.5	18.2										
TP44-02N	4.0	151.3	Qw	37.2	44	27	17	0.60													
TP44-02N	7.0	148.3	Qw	20.1					0.8	87.9	11.3										
TP44-02N	7.5	147.8	Qal	19.7					3.8	90.7	5.5										
TP44-02N	9.0	146.3	Qal	18.5					2.1	82.4	15.5										
TP44-02S	3.0	161.2	Qal	1.5					8.3	73.7	18.0										
TP44-02S	10.0	154.2	Qw	183.7	184	123	61	1.00													
TP44-03N	8.5	149.1	Qal	18.8					0.4	83.4	16.2										
TP44-03N	9.5	148.1	Qal	296.5	306	231	75	0.87													
TP44-03N	10.0	147.6	Qw	23.1							74.5										
TP44-03N	12.0	145.6	Qal	16.2					2.8	94.4	2.8										
TP44-03S	3.5	159.4	Qal	8.5					18.0	41.5	40.5										
TP44-03S	5.0	157.9	Qal	27.9					0.0	76.4	23.6										
W44-01	36.0	142.5	Qpogl	22.0	41	24	16	(0.12)													
W44-01	44.0	134.5	Qpogf	5.7					44.2	50.1	5.7										
W44-01	54.0	124.5	Qpogf	6.5					40.6	58.2	1.2										
W44-01	66.0	112.5	Qpogf	13.8					25.3	72.8	1.9										
W44-01	68.0	110.5	Qpogf	4.5					67.7	31.5	0.8										
W44-01	86.0	92.5	Qpogl	20.8							90.2										
W44-01	97.0	81.5	Qpfnf	15.4					0.0	79.8	20.2										
W44-01	101.0	77.5	Qpfnf	18.4					0.0	87.2	12.8										

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**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
W44-01	109.0	69.5	Qpfnf	13.8					0.0	92.6	7.4									
W44-01	117.0	61.5	Qpfnf	27.6					0.2	66.0	33.8									
<b>SWAMP CREEK CONNECTOR</b>																				
M-11	10.0	138.4	Qvrf	5.6					50.6	42.5	6.9									
M-11	12.5	135.9	Qvrf	0.8					62.3	33.2	4.5									
M-11	15.0	133.4	Qvrf	19.3					2.6	68.8	28.6									
M-11	22.5	125.9	Qvt	14.2					7.0	63.1	29.9									
M-13	7.5	137.2	Qvrf	15.5					31.6	62.0	6.4	121.4								
M-13	15.0	129.7	Qvrf	20.8					16.6	33.5	49.9	106.6								
M-15	10.0	131.4	Qal	10.4								146.1								
M-15	12.5	128.9	Qvrf	12.0					20.5	68.5	11.0									
M-15	25.0	116.4	Qvrf	17.9					0.6	80.6	18.8	116.0								
M-16	7.5	150.3	af	18.0																
M-16	10.0	147.8	af	11.6																
M-16	12.5	145.3	Weathered Qvt	11.1					10.1	41.2	48.7	130.9								
M-16	15.0	142.8	Weathered Qvt	13.7					8.0	28.9	63.1									
M-16	20.0	137.8	Qvt	11.9					10.7	39.6	49.7	124.3								
M-16	22.5	135.3	Qvtm	13.7							45.4									
M-16	37.5	120.3	Qpogl	18.3	35	20	14	(0.12)				115.2								
M-16	40.0	117.8	Qpogl	19.5																
M-16	42.5	115.3	Qpogl	18.9																
M-16	45.0	112.8	Qpogl	24.9																
M-16	47.5	110.3	Qpogl	25.0	52	27	25	(0.08)				100.4								0.21
M-16	50.0	107.8	Qpogl	26.2																
M-16	52.5	105.3	Qpogl	27.9																
M-16	55.0	102.8	Qpogl	25.2																
M-17	27.5	130.9	Qvi	9.4							20.6									
M-17	37.5	120.9	Qpogl	23.0																
M-17	40.0	118.4	Qpogl	27.7																
M-17	42.5	115.9	Qpogl	24.9																
M-17	45.0	113.4	Qpogl	25.0	46	26	20	(0.05)				98.3								0.17
M-17	47.5	110.9	Qpogl	25.8																
M-17	52.5	105.9	Qpogl	25.7																
M-17	57.5	100.9	Qpogl	20.0																
M-17	62.5	95.9	Qpogl	23.1																
M-19	7.5	150.7	Af	234.8																
M-19	12.5	145.7	Qw	229.3																
M-19	17.5	140.7	Qvri	38.5	39	23	16	0.97				84.1								
M-19	37.5	120.7	Qvtm	5.4					47.5	30.1	22.4	137.9								
M-19	42.5	115.7	Qpogtm	17.2					4.7	15.8	79.5									
M-19	50.0	108.2	Qpogl	22.1					0.0	11.7	88.3	114.6								
M-19	52.5	105.7	Qpogl	21.5																
M-19	55.0	103.2	Qpogl	22.7					0.0	49.4	50.6									
M-21	15.0	134.1	Qvi	9.7					22.1	36.6	41.3									
M-21	17.5	131.6	Qvi	9.2					24.5	42.2	33.3									
M-21	20.0	129.1	Qvi	13.4					10.4	43.8	45.8									
M-21	22.5	126.6	Qvt	7.9					28.2	27.1	44.7									
M-21	25.0	124.1	Qvt	10.6					9.2	43.6	47.2									
M-21	27.5	121.6	Qpogl	18.6	45	23	23	(0.19)												
M-21	30.0	119.1	Qpogl	27.0	48	24	24	0.12												
M-21	35.0	114.1	Qpogl	23.0	46	22	24	0.04												
M-22	10.0	132.5	af	13.5					6.0	60.1	33.9									

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
M-22	12.5	130.0	Qal	11.1					28.3	43.9	27.8									
M-22	20.0	122.5	Qvi	12.3					12.2	47.8	40.0									
M-22	22.5	120.0	Qvt	13.7					10.7	54.2	35.1									
M-22	25.0	117.5	Qvt	8.5					26.8	33.7	39.5									
M-22	30.0	112.5	Qvt	18.0	36	21	14	(0.21)												
<b>BALLINGER WAY PORTAL SITE</b>																				
P5-01	67.0	338.0	Qpfnl	32.9	37	22	15	0.73												
P5-01	90.0	315.0	Qpfnl	20.9	0	0	0				97.2									
P5-01	96.0	309.0	Qpogl	26.5																
P5-01	102.0	303.0	Qpogl	24.2					34.4	2.3	63.3									
P5-01	112.0	293.0	Qpogl	29.4	35	22	13	0.57												
P5-01	122.0	283.0	Qpogl	27.6	0	0	0				80.5									
P5-01	132.0	273.0	Qpogl	34.1	0	0	0				19.3									
P5-01	142.0	263.0	Qpogd	10.6					56.5	15.6	27.9									
P5-01	150.0	255.0	Qpogd	10.4					17.2	53.9	28.9									
P5-01	177.0	228.0	Qpogtm	7.5					35.8	49.0	15.2									
P5-01	188.0	217.0	Qpogl	31.5	54	24	30	0.25												
P5-01	204.0	201.0	Qpogl	24.4	47	21	26	0.13												
P5-01	215.0	190.0	Qpogt	5.8					58.1	25.3	16.6									
P5-01	236.0	169.0	Qpogl	18.5																
P5-01	243.0	162.0	Qpogl	20.6																
P5-02	10.0	395.8	Qvrf	8.0					20.3	57.4	22.3									
P5-02	27.0	378.8	Qvtm	10.8					8.4	62.6	29.0									
P5-02	37.0	368.8	Qva	13.7					2.7	65.6	31.7									
P5-02	59.5	346.3	Qpfnl	14.8																
P5-02	61.0	344.8	Qpfnl	18.9																
P5-02	66.0	339.8	Qpfnl	22.6																
P5-02	77.0	328.8	Qpfnl	25.1																
P5-02	80.0	325.8	Qpfnl	29.8																
P5-02	102.0	303.8	Qpogl	31.3																
P5-02	108.0	297.8	Qpogl	33.2																
P5-02	122.0	283.8	Qpogl	28.9																
P5-02	130.0	275.8	Qpogl	66.5																
P5-02	136.0	269.8	Qpogl	27.3																
P5-02	145.0	260.8	Qpogd	25.2																
P5-02	152.0	253.8	Qpogt	11.2																
P5-02	155.0	250.8	Qpogt	11.9					5.2	47.8	47.0									
P5-02	160.0	245.8	Qpogf	10.2					51.0	44.0	5.0									
P5-02	170.0	235.8	Qpogt	9.8																
P5-02	182.0	223.8	Qpogl	25.2																
P5-02	188.0	217.8	Qpogl	11.8																
P5-02	203.0	202.8	Qpogl	26.2																
P5-02	213.0	192.8	Qpogd	8.4																
P5-02	225.0	180.8	Qpogl	20.4																
P5-02	232.0	173.8	Qpogl	16.3																
P5-02	237.0	168.8	Qpogl	14.3																
P5-02	244.0	161.8	Qpogl	17.2																
P5-02	249.0	156.8	Qpogt	33.0																
P5-02	252.0	153.8	Qpogl	21.9																
P5-03	6.0	402.9	Qvrf	5.8																
P5-03	11.0	397.9	Qvrf	7.9																
P5-03	15.0	393.9	Qvrf	6.4																

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)					Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV		LV residual
P5-03	18.0	390.9	Qvrf	5.9																
P5-03	22.0	386.9	Qvit	7.3																
P5-03	27.0	381.9	Qvit	6.5																
P5-03	31.0	377.9	Qva	13.1						2.9	81.7	15.4								
P5-03	41.0	367.9	Qva	16.4																
P5-03	42.0	366.9	Qva	21.1						1.5	36.4	62.1								
P5-03	53.0	355.9	Qva	21.2																
P5-03	60.0	348.9	Qvlc	23.8	56	27	29	(0.11)												
P5-03	65.0	343.9	Qvlc	22.1																
P5-03	70.0	338.9	Qpfnl	20.9																
P5-03	74.0	334.9	Qpfnl	29.0																
P5-03	76.0	332.9	Qpfnl	27.7																
P5-03	83.0	325.9	Qpfnl	26.5																
P5-03	86.0	322.9	Qpfnl	27.7																
P5-03	95.0	313.9	Qpfnl	32.5																
P5-03	99.0	309.9	Qpfnl	35.7																
P5-03	109.0	299.9	Qpfnl	34.9																
P5-03	112.0	296.9	Qpogl	29.6																
P5-03	118.0	290.9	Qpogl	33.3																
P5-03	121.0	287.9	Qpfnl	30.3																
P5-03	130.0	278.9	Qpfnl	32.1	33	25	9	0.79												
P5-03	135.0	273.9	Qpfnl	32.1																
P5-03	155.0	253.9	Qpogt	9.1																
P5-03	160.0	248.9	Qpogt	9.3						10.3	51.7	38.0								
P5-03	165.0	243.9	Qpogt	8.3																
P5-03	168.0	240.9	Qpogtm	10.3																
P5-03	174.5	234.4	Qpogtm	8.3																
P5-03	182.0	226.9	Qpogd	15.0								42.4								
P5-03	184.0	224.9	Qpogd	24.7																
P5-03	186.5	222.4	Qpogl	24.4																
P5-03	188.0	220.9	Qpogl	16.4																
P5-03	195.0	213.9	Qpogl	10.7	24	16	8	(0.66)												
P5-03	197.0	211.9	Qpogl	11.8																
P5-03	204.0	204.9	Qpogl	22.0	62	25	38	(0.08)												
P5-03	204.5	204.4	Qpogl	22.0																
P5-03	208.0	200.9	Qpogd	18.3																
P5-03	210.0	198.9	Qpogd	9.1						12.7	39.7	47.6								
P5-03	213.5	195.4	Qpogd	8.5																
P5-03	218.5	190.4	Qpogd	8.3																
P5-03	222.5	186.4	Qpogd	15.7																
P5-03	229.0	179.9	Qpogd	16.4																
P5-03	232.0	176.9	Qpogd	16.5																
P5-03	238.0	170.9	Qpogd	15.0																
P5-03	248.0	160.9	Qpogd	14.2																
P5-03	255.5	153.4	Qpogf	15.2																
P5-03	265.0	143.9	Qpogm	19.2	43	19	24	0.01												
P5-03	267.0	141.9	Qpogm	16.5																
P5-03	275.0	133.9	Qpogm	18.9																
P5-03	279.0	129.9	Qpogm	21.2																
P5-03	285.0	123.9	Qpogm	20.4																
P5-03	290.0	118.9	Qpogm	20.8																
P5-03	296.0	112.9	Qpogm	26.1																

**Table 7-11 Summary of Laboratory Test Results**  
**CENTRAL CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
P5-04	104.0	302.0	Qpogl	28.6																
P5-04	131.0	275.0	Qpogl	29.4																
P5-04	131.5	274.5	Qpogl	29.4																
P5-04	152.0	254.0	Qpogd	10.0					14.3	47.9	37.8									
P5-04	162.0	244.0	Qpogt	6.4					51.4	25.8	22.8									
P5-04	167.0	239.0	Qpogt	8.2					15.4	49.5	35.1									
P5-04	191.7	214.3	Qpogl	30.3																
P5-04	207.0	199.0	Qpogt	8.0					28.4	36.0	35.6									
<b>CENTRAL CONTRACT OFF-ALIGNMENT</b>																				
N-151	47.0	101.3	NG	23.4					0.0	97.8	2.2									
N-151	79.0	69.3	Qpogl	21.7					0.0	66.9	33.1									
N-151	95.0	53.3	NG	10.4					30.5	66.8	2.7									
N-151	88.0	60.3	Qpogf	23.6					0.1	49.0	50.9									
N-152	10.0	157.0	NG	13.2					35.3	39.1	25.6		119.6							
N-152	30.0	137.0	NG	9.1									111.4							
N-152	50.0	117.0	NG	2.4																
N-152	115.0	52.0	NG	9.8																
N-152	83.0	84.0	NG	24.0																
N-152	95.0	72.0	NG	25.6	0	0	0				48.5									
N-152	77.0	90.0	NG	19.5	32	19	13	0.04												
N-154	40.0	109.6	Qvt	9.0					25.8	51.4	22.8									
N-154	105.0	44.6	NG	19.6					0.4	91.8	7.8									
N-154	87.5	62.1	NG	18.3					0.0	89.4	10.6									
N-154	85.0	64.6	NG	21.5					0.0	19.1	80.9									
N-154	57.3	92.3	Qva	15.0					19.8	55.5	24.7									
N-154	70.0	79.6	NG	7.4																
N-154	50.0	99.6	NG	6.3																
E-417	20.0	104.5	Qvrf	21.5							73.4		93.1							
E-417	25.0	99.5	Qvrf	17.7									114.5							
E-417	30.0	94.5	Qvrf	15.6							4.0		107.0							
E-417	35.0	89.5	Qvrl	16.4									108.8							
E-417	40.0	84.5	Qvrl	16.2							74.4		105.1							
E-417	45.0	79.5	Qvrl	16.1							64.2		103.1							
E-417	50.0	74.5	Qvrl	20.3									98.0							
E-417	57.5	67.0	Qpfnf	14.6									115.5							
N-153	11.5	118.1	Qvrf	9.9					40.2	56.1	3.7									
N-153	20.0	109.6	Qvrf	19.9					0.3	96.7	3.0									
N-153	25.0	104.6	Qvrl	20.2																
N-153	37.5	92.1	Qpfnf	25.5					0.0	61.1	38.9									
N-153	42.5	87.1	Qpfnf	19.2							31.4									
N-153	50.0	79.6	Qpfnl	15.5									106.0							
N-153	52.5	77.1	Qpfnl	22.3																
N-153	57.5	72.1	Qpfnf	5.5					62.6	36.4	1.0									
N-153	62.5	67.1	Qpfnf	12.0					31.3	60.8	7.9									
N-153	77.5	52.1	Qpogtm	3.0					0.0	53.3	46.7									
N-423	105.0	108.7	Qpogl	22.0	38	21	16	0.06												
N-423	125.0	88.7	Qpfnf	38.3					0.0	91.6	8.4									
N-423	140.0	73.7	Qpfnl	30.8	0	0	0				42.9									
N-424	92.0	129.4	Qpogtm	16.1					9.0	75.6	15.4									
N-424	110.0	111.4	Qpogf	22.0							10.0									
N-424	120.0	101.4	Qpogl	27.2																
N-424	125.0	96.4	Qpogl	25.3	25	21	4	1.08												

**Table 7-11 Summary of Laboratory Test Results**  
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Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)					Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV		LV residual
N-424	130.0	91.4	Qpogl	22.4																
N-424	135.0	86.4	Qpogl	29.2	32	26	6	0.53												
N-424	140.0	81.4	Qpogl	27.7																
N-424	145.0	76.4	Qpogl	26.4																
N-424	150.0	71.4	Qpogl	24.0																
N-425	83.0	124.1	Qpfnl	26.8																
N-425	88.0	119.1	Qpfnl	31.6							88.4									
N-425	98.0	109.1	Qpfnl	29.4																
N-425	105.0	102.1	Qpfnl	28.7							100.0									
N-425	112.0	95.1	Qpfnl	27.3							86.2									
N-425	117.0	90.1	Qpfnl	31.0							86.4									
N-425	122.0	85.1	Qpfnl	27.8																
N-425	128.0	79.1	Qpfnl	28.3																
N-426	59.0	107.0	Qpfnl	27.7							23.0									
N-426	68.0	98.0	Qpfnl	26.2							7.7									
N-426	78.0	88.0	Qpfnl	24.1																
N-426	83.0	83.0	Qpfnl	25.2																
N-426	88.0	78.0	Qpfnl	29.2																
N-427	74.0	71.2	Qpfnl	24.6							18.3									
N-427	85.0	60.2	Qpfnl	33.9	34	28	6	0.98												
N-428	50.0	102.3	Qvrf	20.0							92.0									
N-428	77.0	75.3	Qvt	0.1						99.9	(0.0)	0.1								
N-428	77.0	75.3	Qvt	0.1																
N-428	102.0	50.3	Qpfnl	23.2							16.8									
N-428	112.0	40.3	Qpfnl	23.7							89.4									
N-429	40.0	109.4	Qvrf	20.1						1.2	96.2	2.6								
N-429	50.0	99.4	Qvrf	0.3						99.9	(0.0)	0.1								
N-429	60.0	89.4	Qvrf	0.6						99.9	(0.0)	0.1								
N-429	70.0	79.4	Qvrf	0.3						99.8	0.0	0.2								
N-430	27.0	103.6	Qvrl	8.5							49.4									
N-430	32.0	98.6	Qvrf	20.5						2.4	88.5	9.1								
N-430	40.0	90.6	Qvrf	8.0						60.5	34.9	4.6								
N-430	50.0	80.6	Qpfnf	20.0							11.0									
P41-01	72.0	100.0	Qpfnl	20.0																
P41-01	77.0	95.0	Qpfnl	12.9																
P41-01	82.0	90.0	Qpfnl	23.3	25	21	4	0.58												
P41-01	87.0	85.0	Qpfnl	30.9																
P41-01	92.0	80.0	Qpfnl	23.9	31	22	9	0.21												
P41-01	97.0	75.0	Qpfnl	28.8																
P41-01	103.0	69.0	Qpfnl	29.5	30	26	3	1.17												

Notes:

- a) Vertical datum = Metro. All locations surveyed to +/- 0.1 foot accuracy with the exception of some off alignment borings (noted as scaled on the log) which were estimated.
- b) Clay is defined as particles smaller than 0.005 mm.
- c) For all Geologic Unit descriptions please see Figure 3-1.

**Table 7-11 Summary of Laboratory Test Results**  
**WEST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
<b>BRIGHTWATER TUNNEL 4</b>																				
E-101	20.0	111.2	Qpfnf	18.7					3.2	86.3	10.5									
E-101	55.0	76.2	Qpfnf	23.3							41.5									
E-101	60.0	71.2	Qpfnf	17.2					0.0	75.9	24.1	112.7								
E-101	70.0	61.2	Qpfnf	22.3							32.6									
E-101	80.0	51.2	Qpfnf	8.3					58.9	38.1	3.0									
E-101	107.1	24.1	Qpfnf	11.1					33.9	59.7	6.4									
E-101	139.0	(7.8)	Qpfnf	13.4					3.5	84.9	11.6									
E-102	160.0	131.2	Qpfnf	10.3					0.0	36.9	63.1	113.9								
E-102	175.0	116.2	Qpfnf	13.4					0.0	89.3	10.7	110.7								
E-102	180.0	111.2	Qpfnf	17.4					0.4	90.0	9.6									
E-102	190.0	101.2	Qpfnf	13.7					1.7	88.7	9.6	112.1								
E-102	195.0	96.2	Qpfnf	13.2								111.4								
E-102	225.0	66.2	Qpfnf	16.9					0.8	87.5	11.7									
E-102	235.0	56.2	Qpfnl	22.4							55.7									
E-103	160.0	244.3	Qpfnl	25.5							82.9									
E-103	220.0	184.3	Qpfnl	38.0	62	34	28	0.14												
E-103	230.0	174.3	Qpfnl	39.3																
E-103	240.0	164.3	Qpfnl	39.4	77	33	43	0.15												
E-103	246.5	157.8	Qpfnf	18.9					0.0	85.0	15.0									
E-103	255.0	149.3	Qpfnf	24.3					0.0	21.3	78.7									
E-103	262.0	142.3	Qpfnf	17.1					0.0	84.0	16.0									
E-103	325.0	79.3	Qpfnf	10.0					4.1	87.2	8.7									
E-103	328.0	76.3	Qpfnw	29.4																
E-103	358.0	46.3	Qpfnl	28.8																
E-103	361.0	43.3	Qpfnl	24.5							72.7									
E-103	366.0	38.3	Qpfnf	14.4																
E-104	192.0	209.3	Qpfnl	23.1	0	0	0				85.1									
E-104	215.1	186.2	Qpfnl	24.3																
E-104	223.0	178.3	Qpfnl	31.5																
E-104	225.5	175.8	Qpfnl	34.4																
E-104	231.0	170.3	Qpfnl	26.5	48	29	19	(0.13)												
E-104	240.0	161.3	Qpfnf	28.7	76	42	33	(0.40)												
E-104	344.0	57.3	Qpfnw	55.8																
E-105	324.0	225.0	Qpfnl	32.1	50	26	24	0.25												
E-105	351.0	198.0	Qpfnl	21.9	36	29	8	(0.89)												
E-105	362.0	187.0	Qpfnf	17.8					0.1	64.7	35.2									
E-105	367.0	182.0	Qpfnl	25.3	0	0	0				83.7									
E-105	373.0	176.0	Qpfnl	23.9	49	26	23	(0.09)			45.6									
E-105	377.0	172.0	Qpfnl	23.6					0.0	52.1	47.9									
E-105	383.0	166.0	Qpfnl	34.0	78	32	45	0.04												
E-105	404.0	145.0	Qpfnl	21.4							34.2									
E-105	413.0	136.0	Qpfnl	12.9	0	0	0				50.0									
E-105	425.0	124.0	Qpfnf	17.9					0.3	52.7	47.0									
E-105	431.0	118.0	Qpfnl	16.3							48.3									
E-105	461.0	88.0	Qpfnf	14.7					0.4	87.3	12.3									
E-105	502.0	47.0	Qpfnf	17.6					0.5	78.7	20.8									
E-106	392.0	189.9	Qpfnl	29.6	52	29	23	0.03												
E-106	397.0	184.9	Qpfnl	31.4																
E-106	403.0	178.9	Qpfnl	32.6	50	27	23	0.24												
E-106	410.0	171.9	Qpfnf	22.2					0.0	42.2	57.8									
E-106	415.0	166.9	Qpfnl	29.3							58.5									

**Table 7-11 Summary of Laboratory Test Results**  
**WEST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
E-106	424.0	157.9	Qpfnf	23.7							6.3									
E-106	450.0	131.9	Qpfnf	29.1																
E-106	458.0	123.9	Qpfnw	28.8																
E-106	460.0	121.9	Qpfnf	20.3																
E-106	547.0	34.9	Qpogl	17.1																
E-107	335.0	214.5	Qpfnl	35.1	69	34	35	0.03												
E-107	353.0	196.5	Qpfnl	16.7	28	21	8	(0.54)												
E-107	365.5	184.0	Qpfnf	29.4					2.0	69.1	28.9									
E-107	380.0	169.5	Qpfnf	19.7					0.9	92.4	6.7									
E-107	382.0	167.5	Qpfnf	20.3					0.0	28.7	71.3									
E-107	389.0	160.5	Qpfnl	19.4																
E-107	398.5	151.0	Qpfnf	17.5					0.6	92.0	7.4									
E-107	434.0	115.5	Qpfnf	18.1							7.1									
E-107	478.0	71.5	Qpfnf	20.6					0.0	93.8	6.2									
E-107	508.0	41.5	Qpfnf	18.3					0.0	87.9	12.1									
E-107	541.5	8.0	Qpfnf	20.9					0.0	96.6	3.4									
E-108	233.0	220.1	Qpfnmw	17.6	0	0	0													
E-108	240.0	213.1	Qpfnf	20.1	0	0	0													
E-108	252.0	201.1	Qpfnf	21.4	0	0	0				9.0	0.5								
E-108	252.1	201.0	Qpogf	8.7																
E-108	260.0	193.1	Qpogf	20.1					2.7	56.6	40.7									
E-109	180.5	214.5	Qpogt	26.5	54	28	27	(0.06)												
E-109	185.0	210.0	Qpogl	35.0					4.6	44.8	50.6									
E-109	192.0	203.0	Qpogl	39.2	73	30	43	0.21												
E-109	201.0	194.0	Qpogl	15.8	58	27	31	(0.36)												
E-110	215.0	229.7	Qpogl	17.7	36	22	15	(0.29)												
E-110	218.0	226.7	Qpogf	31.9							85.2									
E-110	229.0	215.7	Qpogl	26.8	52	26	26	0.03												
E-110	237.0	207.7	Qpogl	13.9	49	27	22	(0.60)												
E-110	241.5	203.2	Qpogl	21.3																
E-110	243.0	201.7	Qpogl	16.5	38	20	18	(0.19)	0.0	96.2	3.8	3.5								
E-110	245.0	199.7	Qpogl	21.3																
E-110	251.5	193.2	Qpogl	29.7																
E-110	255.0	189.7	Qpogl	29.7																
E-110	260.0	184.7	Qpogl	13.6								128.8	11.53							
E-110	260.5	184.2	Qpogl	13.6																
E-110	262.0	182.7	Qpogd	13.3					13.3	49.7	37.0									
E-110	287.0	157.7	Qpogm	31.5	46	23	23	0.37												
E-110	315.0	129.7	Qpogm	34.3																
E-110	318.5	126.2	Qpogm	33.4																
E-110	322.0	122.7	Qpogm	20.8																
E-201	22.0	238.6	Qvlc	22.9																
E-201	27.0	233.6	Qvlc	26.3																
E-201	34.0	226.6	Qpfnl	31.4																
E-201	38.0	222.6	Qpfnl	21.6																
E-201	45.0	215.6	Qpfnl	28.4																
E-201	53.0	207.6	Qpfnl	35.9																
E-201	75.0	185.6	Qpfnl	24.6																
E-201	94.0	166.6	Qpfnl	22.5																
E-201	97.0	163.6	Qpfnl	29.4																
E-201	105.0	155.6	Qpfnl	34.7																
E-201	119.0	141.6	Qpfnl	24.0																

**Table 7-11 Summary of Laboratory Test Results**  
**WEST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-201	141.0	119.6	Qpfnf	19.8					3.3	92.1	4.6										
E-201	147.0	113.6	Qpfnf	8.6					24.1	72.7	3.2										
E-201	158.0	102.6	Qpfnf	10.7					9.5	85.0	5.5										
E-201	166.0	94.6	Qpfnf	7.7					20.8												
E-201	192.0	68.6	Qpfnf	17.3																	
E-201	195.0	65.6	Qpfnw	56.0																	
E-201	199.0	61.6	Qpfnl	22.7																	
E-201	202.0	58.6	Qpfnw	22.5																	
E-201	208.0	52.6	Qpfnw	26.3																	
E-201	216.0	44.6	Qpfnl	21.3																	
E-201	230.0	30.6	Qpfnf	6.3					48.0	46.3	5.7										
E-202	180.0	219.1	Qvlc	ND	44	26	18										12.1				
E-202	181.5	217.6	Qvlc	ND													6.4				
E-202	182.0	217.1	Qvlc	ND													8.6				
E-202	225.0	174.1	Qpfnl	35.0	79	39	40	(0.10)													
E-202	247.0	152.1	Qpfnl	26.0							98.2										
E-202	250.0	149.1	Qpfnf	24.2	0	0	0														
E-202	256.0	143.1	Qpfnf	23.7					0.0	92.5	7.5										
E-202	270.0	129.1	Qpfnf	19.4					0.0	94.2	5.8										
E-203	140.0	253.2	Qpfnl	30.3								93.6									
E-203	160.0	233.2	Qpfnl	26.3								95.0									
E-203	180.0	213.2	Qpfnl	23.8								101.3									
E-203	202.0	191.2	Qpogl	51.0																	
E-203	206.0	187.2	Qpogl	28.0	39	25	14	0.21													
E-203	210.0	183.2	Qpogl	28.0					0.0	11.1	88.9	33.3									
E-203	220.0	173.2	Qpogl	36.4																	
E-203	230.0	163.2	Qpogl	27.8																	
E-203	234.0	159.2	Qpogl	21.9	42	27	15	(0.34)			98.6										
E-203	240.0	153.2	Qpogl	27.2																	
E-203	245.0	148.2	Qpogl	20.3	42	28	15	(0.51)			19.4										
E-203	260.0	133.2	Qpfnf	20.5							9.8										
E-203	300.0	93.2	Qpfnf	12.8					12.8	82.6	4.6										
E-204	321.0	195.3	Qpfnl	32.5													33.3				
E-204	321.5	194.8	Qpfnl	38.5							12.0						10.6				
E-204	322.0	194.3	Qpfnf	ND													14.8				
E-204	334.0	182.3	Qpfnl	25.7							86.2										
E-204	338.0	178.3	Qpfnl	25.0	0	0	0				88.5										
E-204	351.0	165.3	Qpfnf	20.9							30.3										
E-204	353.0	163.3	Qpfnf	26.1																	
E-204	358.0	158.3	Qpfnl	25.8																	
E-204	363.0	153.3	Qpfnl	27.1	45	27	18	0.01													
E-204	380.0	136.3	Qpfnf	41.0					0.0	94.1	5.9										
E-205	325.0	181.1	Qpfnl	17.1	36	19	17	(0.11)													0.20
E-205	329.0	177.1	Qpfnl	16.7					0.1	48.6	51.3										0.22
E-205	335.0	171.1	Qpfnl	16.5					0.0	84.8	15.2										
E-205	344.0	162.1	Qpfnf	17.1					0.0	85.3	14.7										
E-205	353.0	153.1	Qpfnl	25.9	0	0	0				96.1										
E-205	360.0	146.1	Qpfnl	23.7	39	25	14	(0.09)													
E-205	409.0	97.1	Qpfnl	17.7	37	25	12	(0.61)													0.17
E-206	381.5	184.6	Qpfnl	32.6	0	0	0				66.2										
E-206	392.0	174.1	Qpfnl	22.9	0	0	0				84.1										
E-206	399.5	166.6	Qpfnf	11.3					0.0	67.3	32.7										

**Table 7-11 Summary of Laboratory Test Results**  
**WEST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
E-206	404.0	162.1	Qpfnf	18.9					0.0	39.8	60.2									
E-207	311.1	197.4	Qpfnl	14.7							62.8									
E-207	317.0	191.5	Qpfnl	25.3	31	26	5	(0.14)												
E-207	326.0	182.5	NG	14.5					6.4	87.0	6.6									
E-207	330.0	178.5	Qpfnf	16.1					1.7	89.9	8.4									
E-208	217.5	233.5	Qpfnl	31.8								84.0								
E-208	242.0	209.0	Qpogf	1.3					97.3	1.6	1.1									
E-208	250.0	201.0	Qpogf	0.8					98.8	0.8	0.4									
E-208	258.0	193.0	Qpogd	13.6					28.0	36.5	35.5									
E-208	266.0	185.0	Qpogd	17.6					3.2	43.6	53.2									
E-208	275.0	176.0	Qpogd	14.0					0.0	56.8	43.2									
E-209	213.0	217.1	Qpogl	24.8	52	24	27	0.03			52.4									
E-209	218.0	212.1	Qpogl	21.4	34	22	12	(0.05)			78.7									
E-209	228.0	202.1	Qpogl	24.2	50	24	26	0.01			25.6									
E-209	241.0	189.1	Qpogt	9.0					19.7	52.7	27.6	3.8								
E-209	241.1	189.0	Qpogt	11.5																
E-210	160.0	249.5	Qpogl	ND												8.1				
E-210	175.0	234.5	Qpogl	18.1																
E-210	182.0	227.5	Qpogl	31.4	0	0	0													
E-210	188.0	221.5	Qpogl	31.9					1.9	12.8	85.3	45.8								
E-210	192.0	217.5	Qpogl	31.4	30	16	14	1.10												
E-210	204.0	205.5	Qpogl	20.1	45	20	24	0.00												
E-210	212.0	197.5	Qpogl	29.9																
E-210	215.0	194.5	Qpogl	25.2																
E-210	222.0	187.5	Qpogd	9.8	26	17	9	(0.80)												
E-211	185.0	228.4	Qpogt	5.4					33.0	49.1	17.9									
E-211	190.0	223.4	Qpogt	5.9					21.4	65.6	13.0									
E-211	198.0	215.4	Qpogl	19.2	0	0	0													
E-211	211.0	202.4	Qpogl	24.2	33	24	9	0.02												
E-401	70.0	141.8	Qpfnf	29.5							82.8									
E-401	90.0	121.8	Qpfnf	19.9							61.8									
E-401	115.0	96.8	Qpfnf	28.7					0.0	95.5	4.5									
E-402	167.0	137.4	Qpfnf	16.8					0.0	84.0	16.0									
E-402	185.0	119.4	Qpfnf	15.5					1.4	68.6	30.0									
E-402	200.0	104.4	Qpfnf	30.7					1.1	97.0	1.9									
E-403	213.0	165.1	Qpfnf	22.9							17.1									
E-403	225.0	153.1	Qpfnf	19.9							21.9									
E-403	231.0	147.1	Qpfnf	19.1					4.0	86.8	9.2									
E-403	240.0	138.1	Qpfnf	17.4					0.0	87.6	12.4									
E-404	271.0	169.7	Qpfnl	15.4							20.3									
E-404	285.0	155.7	Qpfnl	24.0	0	0	0													
E-404	290.0	150.7	Qpfnl	25.6							55.8									
E-404	310.0	130.7	Qpfnf	22.1					0.0	89.3	10.7									
E-405	236.0	157.0	Qpfnl	29.0	0	0	0				87.9									
E-405	242.0	151.0	Qpfnl	20.3	0	0	0													
E-405	244.5	148.5	Qpfnl	27.1	46	24	21	0.15												
E-405	250.0	143.0	Qpfnl	28.9							98.5									
E-405	255.0	138.0	Qpfnl	26.7							91.7									
E-406	329.0	184.4	Qpfnl	21.1							11.4									
E-406	334.0	179.4	Qpfnl	34.0	62	33	29	0.03				95.8								
E-406	347.0	166.4	Qpfnl	31.2	45	27	17	0.25												
E-406	358.0	155.4	Qpfnl	30.4	49	27	22	0.15												

**Table 7-11 Summary of Laboratory Test Results**  
**WEST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio	
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual		
E-406	375.0	138.4	Qpfnf	22.1							32.4										
E-407	360.0	178.2	Qpfnl	35.4	62	35	27	0.01													
E-407	385.0	153.2	Qpfnl	29.6	51	30	21	(0.02)													
E-407	400.0	138.2	Qpfnf	16.6					0.0	90.4	9.6										
E-408	390.0	186.7	Qpfnl	21.7							100.0										
E-408	408.0	168.7	Qpfnf	26.5	0	0	0				47.4										
E-408	413.3	163.4	Qpfnl	20.0																	25.5
E-408	414.0	162.7	Qpfnl	25.9																	16.8
E-408	420.0	156.7	Qpfnf	24.6							92.0										
E-409	305.0	191.4	Qpfnf	16.2					0.0	88.4	11.6										
E-409	320.0	176.4	Qpfnf	16.9					0.3	93.6	6.1										
E-409	340.0	156.4	Qpfnf	18.5					0.0	87.3	12.7										
E-409	383.0	113.4	Qpogl	16.0																	13.1
E-409	383.5	112.9	Qpogl	19.6																	27.6
E-412	180.0	220.7	Qpogl	23.9	56	28	28	(0.15)													
E-412	195.0	205.7	Qpogl	18.0	63	24	39	(0.15)													
E-412	210.0	190.7	Qpogl	39.5	71	33	38	0.17													
E-412	248.5	152.2	Qpfnf	20.8																	20.8
E-412	249.0	151.7	Qpfnf	21.0																	33.0
E-412	249.5	151.2	Qpogl	21.5																	29.1
E-412	258.0	142.7	Qpogm	35.4																	8.6
E-412	258.5	142.2	Qpogm	25.1																	1.8
E-413	190.0	223.1	Qpogt	25.5	40	27	13	(0.12)													
E-413	205.0	208.1	Qpogl	38.0	30	16	14	1.57													
E-413	225.0	188.1	Qpogt	52.5					6.0	36.6	57.4										
E-414	191.0	248.7	Qpogd	12.5	32	22	11	(0.86)													
E-414	209.7	230.0	Qpogl	14.9	38	21	17	(0.36)													
E-414	220.0	219.7	Qpogl	23.1	30	20	11	0.28													
E-415	175.0	252.7	Qpogtm	23.0							42.7										
E-415	195.0	232.7	Qpogl	17.1	37	20	16	(0.18)													
E-415	210.0	217.7	Qponl	19.8							34.0										
E-415	251.0	176.7	Qpogl	27.7	63	27	36	0.02													0.27
E-503	224.0	215.1	Qpogd	20.7	38	16	21	0.22	3.1	20.3	76.6										
E-503	225.0	214.1	Qpogd	25.1	0	0	0		0.1	12.0	87.9										
E-503	230.0	209.1	Qpogf	21.5					5.0	23.5	71.5										
E-503	233.0	206.1	Qpogl	20.0	48	18	30	0.07	1.7	9.6	88.7										
E-503	239.0	200.1	Qpogl	27.3	51	20	31	0.23													
E-503	245.0	194.1	Qpogl	23.4	37	17	20	0.32													
E-503	254.0	185.1	Qpogl	24.4	32	15	17	0.55	1.6	26.6	71.8										
<b>POINT WELLS PORTAL SITE AND MARINE OUTFALL CONNECTOR</b>																					
P19-01	18.0	92.5	Qpfnf	18.7								119.8									
P19-04	19.0	92.0	Qpfnl	47.4																	
P19-04	23.0	88.0	Qpfnf	23.7					0.0	84.8	15.2										
P19-04	26.0	85.0	Qpfnf	47.8	64	40	24	0.32													
P19-04	35.0	76.0	Qpfnf	20.5					0.0	58.8	41.2										
P19-04	41.0	70.0	Qpfnl	28.0																	
P19-04	46.0	65.0	Qpfnf	26.2					0.0	49.8	50.2										
P19-04	55.0	56.0	Qpfnl	39.6																	
P19-04	57.0	54.0	Qpfnl	33.1																	
P19-04	67.0	44.0	Qpfnf	4.7					62.3	32.0	5.7										
P19-04	77.0	34.0	Qpfnf	4.5					77.5	17.6	4.9										
P19-05	26.0	85.1	Qpfnl	33.6																	

**Table 7-11 Summary of Laboratory Test Results**  
**WEST CONTRACT**  
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) <sup>a</sup>	Geologic Soil Unit	Water Content (%)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	Liquidity Index (LI)	Gradation				$\gamma_{dry}$ (pcf)	Shear Strength (ksf)						Compression Ratio
									% Gravel	% Sand	% Fines	% Clay <sup>b</sup>		UC	UU	CIU	CK <sub>0</sub> U	LV	LV residual	
P19-05	32.0	79.1	Qpfnw	26.1																
P19-05	41.0	70.1	Qpfnl	49.8																
P19-05	45.0	66.1	Qpfnf	24.7						0.2	55.3	44.5								
P19-05	50.0	61.1	Qpfnw	39.6																
P19-05	54.0	57.1	Qpfnw	26.8																
P19-05	57.0	54.1	Qpfnl	19.2																
P19-05	64.0	47.1	Qpfnf	7.5						52.3	41.6	6.1								
P19-05	70.0	41.1	Qpfnf	6.4						51.6	38.4	10.0								
P19-05	80.0	31.1	Qpfnf	6.8						56.5	37.9	5.6								
P19-05	87.0	24.1	Qpfnf	10.3						12.8	83.4	3.8								
P19-08	10.0	107.3	af	12.8																
P19-08	12.5	104.8	Qe	13.7																
P19-08	15.0	102.3	Qe	27.9																
P19-08	17.5	99.8	Qpfnl	21.0																
P19-08	20.0	97.3	Qpfnf	33.7	42	34	8	(0.04)												
P19-08	22.5	94.8	Qpfnl	27.4									97.6							
P19-08	25.0	92.3	Qpfnl	31.0																
P19-08	32.5	84.8	Qpfnf	25.2									100.7							
P19-08	38.5	78.8	Qpfnl	39.5	40	30	9	1.06												
P19-08	40.0	77.3	Qpfnl	35.6																
P19-08	42.5	74.8	Qpfnl	18.7									112.4		8.32					
P19-08	43.5	73.8	Qpfnl	39.5	44	27	16	0.78												
P19-08	50.0	67.3	Qpfnw	32.0																
P19-09	38.0	72.5	Qpfnf	24.9						0.0	62.2	37.8								
P19-09	42.0	68.5	Qpfnl	28.6	41	32	8	(0.42)												
P19-09	45.0	65.5	Qpfnf	26.6						0.0	54.5	45.5								
P19-09	75.0	35.5	Qpfnf	4.1						78.0	18.4	3.6								

Notes:

- a) Vertical datum = Metro. All locations surveyed to +/- 0.1 foot accuracy with the exception of some off alignment borings (noted as scaled on the log) which were estimated.
- b) Clay is defined as particles smaller than 0.005 mm.
- c) For all Geologic Unit descriptions please see Figure 3-1.