

APPENDIX B

AREA 2 PERIMETER MONITORING PROGRAM

APPENDIX B – AREA 2 PERIMETER MONITORING PROGRAM

1 SCOPE OF WORK

As noted in the cover report, AECOM completed four groundwater monitoring and sampling events for the semi-annual Perimeter Monitoring Program (PMP), two in 2015 and two in 2016.

In Area 2, the wet season events occurred from March 3 to May 12, 2015 and March 7 to May 10, 2016. The dry season events occurred from August 9 to September 22, 2015 and August 8 to September 1, 2016. In 2015 and 2016, 56 wells were included in the program; however, 13 wells did not contain sufficient water for sampling during either event in 2015 (Figure 3, cover report) and one well did not contain sufficient water during either event in 2016.

2 GROUNDWATER ANALYTICAL RESULTS

Groundwater monitoring data collected in Area 2 of the Site are summarized in Table B-1. In 2015, a total of 79 samples (not including duplicates) were collected from 43 wells. In 2016, a total of 89 samples (not including duplicates) were collected from 55 wells. Samples were analyzed for petroleum hydrocarbons (PHCs) including one or more of light and heavy extractable petroleum hydrocarbons (LEPHw/HEPHw) and/or extractable petroleum hydrocarbons (EPHw_{C10-C19}/EPHw_{C19-C32}), volatile hydrocarbons (VHw_{C6-C10}), volatile petroleum hydrocarbons (VPHw), benzene/toluene/ethylbenzene/xylene (BTEX), methyl tertiary-butyl ether (MTBE), polycyclic aromatic hydrocarbons (PAHs), and/or dissolved metals.

Of the 79 samples collected in 2015, 76 were analyzed for PAHs, 42 were analyzed for MTBE, 1 was analyzed for dissolved metals and 6 were analyzed for dissolved copper. Of the 89 samples collected in 2016, 88 were analyzed for PAHs, 48 were analyzed for MTBE and 12 were analyzed for dissolved metals. The reported analytical results for groundwater samples from these wells are presented in the laboratory Certificates of Analysis provided in Appendix G and summarized in Tables B-2 through B-4. The groundwater monitoring well locations are all located along the perimeter of the Site and are presented in Figures 3 and 4 (cover report). Samples from 23 wells in 2015 were not collected due to insufficient water, and mostly during the dry season. Details on these samples are discussed in Section 3.

Concentrations of PHCs, PAHs and dissolved metals in groundwater samples were below the reported detection limits (RDLs) and/or SSSLs, if available, or the Contaminated Sites Regulation (CSR) aquatic life (AW) or no specific water use (NU) standards if SSSLs were not available, in all samples with the exception of the concentration of VHw in A2MW09-11 which was above the SSSL in the May 2015 sample. A sample collected the following year in March 2016 was below the SSSL.

Groundwater concentrations in 75 of the 79 samples from 2015 and in 81 of the 89 samples from 2016 were either below detection and/or below the CSR AW standards. For the remaining samples, concentrations were above the CSR AW or NU standards in 12 samples.

Nine samples collected from seven wells with PHC concentrations above the CSR AW standards included:

- LEPHw was above the CSR AW standard in groundwater from five wells: A2MW09-05I (August 2015 and August 2016), A2MW09-06I (March 2016), A2MW09-11 (May 2015 and March 2016), A2MW09-14 (May 2015) and A2MW09-15 (May and September 2016).
- Concentrations of LEPHw in all of these wells are within an order of magnitude of the 2014 results.
- VPHw in groundwater from three wells were above the CSR AW standard: A2MW09-05I (August 2015 and 2016), A2MW09-10 (March 2016), and A2MW09-11 (May 2015), and VHW_{C6-C10} in one well was above the CSR NU standard: A2MW09-11 (May 2015). The VPHw and VHW_{C6-C10} concentrations are within an order of magnitude of the 2014 results. VPHw in A2MW09-05I exceeded the CSR AW standard for the third time since this well was installed in 2011.
- Benzene was above the CSR AW standard in groundwater from three wells: A2MW09-05I (August 2015 and August 2016), A2MW09-10 (March 2016) and A2MW09-11 (May 2015). These concentrations are within an order of magnitude of the 2014 results.

Five groundwater samples collected from three wells with PAH concentrations above the CSR AW standards included:

- Naphthalene was above the CSR AW standard in groundwater from three wells: A2MW09-05I (August 2015 and 2016), A2MW09-10 (March 2016) and A2MW09-11 (May 2015 and March 2016). Concentrations of naphthalene in these wells were within an order of magnitude of the 2014 results. Historically, the groundwater concentrations of naphthalene in A2MW09-10 and A2MW09-11 have exceeded the CSR AW standard of 10 µg/L and are within an order of magnitude of the results since 2010. The naphthalene concentrations in A2MW09-05I are within an order of magnitude of the results since 2010.

Three groundwater sample collected from MW11-4S in 2015 and 2016 had concentrations of dissolved copper (31, 28, and 33 µg/L) above the CSR AW standard (20 µg/L).

With the exception of MW11-4S, all of the wells with groundwater exceedances are located directly down slope of the Perimeter Extraction System (PES). These wells were showing the effects of earlier contamination prior to the implementation of the PES. MW11-4S is located

more than 40 metres east of the easternmost end of the PES. MW11-4S only had a marginal exceedance.

2.1 MTBE REMEDIATION

Groundwater data associated with the MTBE remediation area were collected from the 20 wells shown in Figure 4 and assessed as part of the PMP. The MTBE groundwater analytical data collected in 2015 and 2016 support the 2014 PMP report findings, that MTBE remediation is essentially complete in the impacted area; i.e. that groundwater MTBE concentrations continue to remain below the CSR AW standard of 4,400 µg/L. Since sampling in the MTBE remediation area began in 2004, only eight wells had groundwater with MTBE concentrations above the CSR AW standard: WS1-D, WS2-D, WS2-D2, WS2-D3, WS2-D4, WS3-D, WS3-D2 and WS3-D4. By 2010, only two wells had groundwater MTBE concentrations above the CSR AW standard: WS2-D2 and WS2-D3. By 2011, the groundwater MTBE concentrations in those two wells dropped to below the CSR AW standard. Since 2011, groundwater MTBE concentrations in all eight wells that previously exceeded the CSR AW MTBE standard, have been below the standard and exhibit generally declining concentrations. The pump in extraction well EW2, shown in Figure 4, was put on stand-by on November 3, 2014 in order to observe the effects of non-pumping on groundwater MTBE concentrations. Since the pump in EW2 was put on standby, the MTBE concentrations in the 20 wells in the surrounding area have remained either within an order of magnitude of the 2013 and 2014 concentrations or have decreased (Graph B-1). The MTBE concentrations measured in the 20 wells in 2015 and 2016 were generally an order of magnitude below the CSR AW standard of 4,400 µg/L. Based on these results, the remediation of MTBE in this area is considered complete, and the sampling of the 20 wells in this area based on the MTBE remediation will be discontinued. Regular sampling of five wells as part of the larger PMP will continue in this area, specifically G2-9A, G2-9B, G2-10, WS2-D and WS2-D2, since these are wells screened across the water table and provide appropriate coverage to monitoring groundwater quality in the area.

3 SAMPLES NOT COLLECTED

Samples were not collected in 2015 from 22 wells in Area 2 due to insufficient water. Ten of these wells were from the dry season event: MW02-02, MW02-03, A2MW09-11, A2MW09-12, A2MW09-13, A2MW09-14, A2MW09-15, PW03-5, WS5, and PW03-1A. The remaining twelve wells contained insufficient water during both the wet and dry season events: MW02-04, MW03-03, A2MW09-06S, A2MW09-10, PW03-1B, PW03-2A, PW03-2B, PW03-3, PW03-4, PW03-6, U8, and U9.

Samples were not collected in 2016 from 21 wells in Area 2 due to insufficient water during the dry season event: PW03-1A, PW03-1B, PW03-2A, PW03-2B, PW03-3, PW03-4, PW03-5, PW03-6, U8, U9, MW02-02, MW02-03, MW02-04, MW03-03, A2MW09-06S, A2MW09-10, A2MW09-11, A2MW09-12, A2MW09-13, A2MW09-14 and WS5.

The monitoring results for these Area 2 wells are presented in Table B-1.

4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

To ensure the integrity and reliability of the data, AECOM field staff followed pre-existing QA/QC protocols during the 2015 and 2016 PMP. These procedures have resulted in a high-quality dataset that is representative of the groundwater quality and achieves the project objectives for monitoring as described in Appendix F.

4.1 Trip Blanks

Trip blanks were submitted with groundwater samples during the 2015 and 2016 wet and dry season sampling events and analyzed for BTEX/VPHw, VHW_{C6-C10}, and/or MTBE. Concentrations for all samples were less than the reported detection limits (RDLs) and the CSR AW and/or NU standards (Table B-2).

4.2 Precision

Relative percent differences (RPDs) are presented for duplicate samples in Tables B-2 and B-3. RPDs were calculated for BTEX/VPHw, VHW_{C6-C10}, LEPHw/HEPHw, EPHw_{C10-C19}/EPHw_{C19-C32}, PAHs, and MTBE in instances where the concentrations were five times the reported detection limit or greater. The average and median values were calculated using the absolute RPD numbers. It should be noted that the data set is small for statistical purposes as the majority of reported concentrations were less than the RDLs. Twenty three duplicates from 19 wells contained a total of 45 RPD calculations. The average, median, maximum, and minimum RPDs of the field duplicates are presented below:

Relative Percent Differences (RPDs) of Duplicate Analyses

Sample Type	Average RPD (%)	Median RPD (%)	Maximum RPD (%)	Minimum RPD (%)
Groundwater Samples				
Organic Parameters (LEPHw/HEPHw, EPHw, VPHw, VHW, BTEX, MTBE, and PAHs)	5.3	3.9	31.6	0.5

The average RPD values of organic parameters (5.3%) indicates a good correlation for duplicate pairings for the entire analytical program. The maximum RPD value of 31.6% was calculated using the reported MTBE concentrations from well G2-4D and its corresponding duplicate (DUP-3).

The MoE has provided guidance indicating that field RPDs within 1.5 times the laboratory RPDs as defined in the BC Environmental Laboratory Manual⁵ are acceptable. Organics and dissolved metals in water therefore have acceptable field RPDs of 45% and 30%, respectively. Based on

⁵ BC MoE, 2015. British Columbia Environmental Laboratory Manual: 2015. Victoria, BC.
<http://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/sampling-methods-quality-assurance/bc-environmental-laboratory-manual>

this guidance and the above results, the calculated RPDs for organic parameters in groundwater are within acceptable limits; therefore, they do not add uncertainty to the findings of the monitoring program.

4.3 Accuracy

Analytical accuracy was confirmed in a review of percent recoveries reported in the laboratory reports. Percent recoveries are obtained when the project laboratory analyzes samples with known concentrations and compares their analytical results to the known concentrations. The laboratory provided percent recoveries for the majority of the organic parameter analyses. All reported laboratory control spike (LCS) sample recoveries and matrix control spike (MS) sample recoveries were within laboratory quality control (QC) limits or were outside of laboratory QC limits but associated results were not affected.

It is AECOM's opinion that the analytical results are valid with respect to accuracy.

4.4 Completeness

No samples from either sampling program were invalidated by ALS Laboratory. Completeness for the 2015 and 2016 programs was therefore 100%.

5 SUMMARY AND CONCLUSIONS

The purpose of the semi-annual PMP is to monitor groundwater environmental conditions along the down-gradient Site boundary. This report presents the monitoring and analytical results for two semi-annual groundwater sampling events conducted during 2015 and 2016. Samples were collected along the Area 2 Refinery perimeter from 43 monitoring wells in 2015 and 55 wells in 2016. Concentrations of PHCs, PAHs and dissolved metals in groundwater samples were below the reported detection limits (RDLs) and/or SSSLs, if available, or the CSR AW or NU standards for those parameters where SSSLs were not available with the exception of the concentration of VHw in A2MW09-11 which was above the SSSL in the May 2015 sample. A sample collected the following year in March 2016 was below the SSSL.

Groundwater quality in 39 of the 43 wells sampled (75 of 79 samples) in 2015 and 49 of the 55 wells sampled (81 of 89 samples) in 2016, were either below detection and/or below CSR standards. These analytical results are generally consistent with previous years. Concentrations were above the standards in 12 samples collected from seven wells. Six of these seven wells are within the influence of the PES, located immediately down slope of the PES on the Lower Bench and substantially up slope of Burrard Inlet:

- Of these groundwater samples, nine had PHC exceedances, five had PAH (naphthalene) exceedances, and three samples from one well (MW11-4S) had a minor exceedance of dissolved copper above the CSR AW standards; and,

- All groundwater concentrations are consistent with historical results or within an order of magnitude of the 2014 results and have been generally stable since monitoring and sampling of these wells began.

Further, as noted above, the concentrations of the above PHCs and PAHs in these wells were below the SSSLs (with the one exception), which are the primary basis to evaluate the need for further assessment or remedial action.

The MTBE groundwater analytical data collected in 2015 supported the 2014 PMP Sentry report findings that MTBE remediation is essentially complete in the impacted area, i.e., that groundwater MTBE concentrations continue to remain below the CSR AW standard of 4,400 µg/L. Since sampling in the MTBE remediation area began in 2004, only eight wells had groundwater with MTBE concentrations above the CSR AW standard, and by 2010, only two wells had groundwater MTBE concentrations above the standard. Since 2011, the groundwater MTBE concentrations in the remediation area have been below the CSR AW standard and exhibit generally declining concentrations. Since the pump in EW2 was put on standby, the MTBE concentrations in the 20 wells in the surrounding area have remained either within an order of magnitude of the 2013 and 2014 concentrations or have decreased. The MTBE concentrations measured in the 20 wells in 2015 and 2016 were generally an order of magnitude below the CSR AW standard of 4,400 µg/L. Based on these results, the remediation of MTBE in this area is considered complete, and the sampling of the 20 wells in this area based on the MTBE remediation will be discontinued after 2016. Regular sampling of six wells as part of the larger PMP will continue in this area, specifically A2-9C, WS1-D, WS2-D, WS3-D, WS-5 and WS-7 since these are wells screened across the water table and provide appropriate coverage to monitoring groundwater quality in the area.

The Area 2 2017 PMP is being continued under similar scope and analytical program as the 2015 and 2016 program with the exception that monitoring in the (former) MTBE groundwater remediation area will revert to the general PMP program by sampling the following five wells on a semi-annual basis: G2-9A, G2-9B, G2-10, WS2-D and WS2-D2.

Graph B-1 MTBE Concentrations in WS Wells

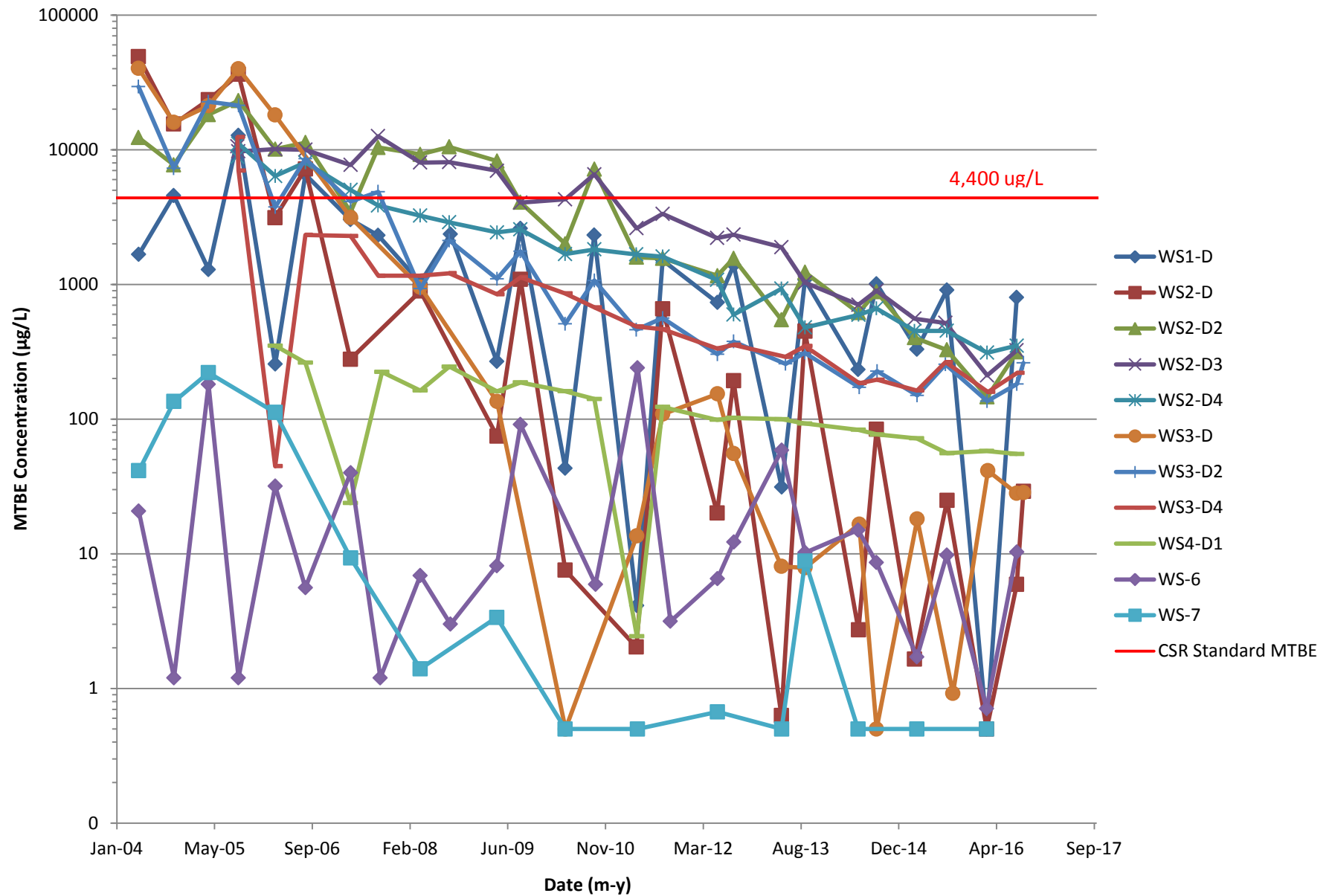


TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNHAM REFINERY

Well ID	Sample ID	Screened Interval (mbs)	Date Sampled	Total Depth of Well (m from TCC)	Ground Elevation (m ASL)	Top of Case Elevation (m ASL)	Headspace Vapour Concentration (ppmv)	Depth to Product (m from TCC)	Apparent Product Thickness (mm)	Depth to Water (m from TCC)	Groundwater Elevation (m ASL)	Observed Oxygen (mg/L)	Temperature (°C)	Electrical Conductivity (µmhos/cm)	TDS (g/L)	Salinity (ppt)	KDP (mv)	Observations
A2-9C	A2-9C	10.71-17	18-Sep-07	11.40	44.61	43.993	nd	nd	nd	8.340	34.653	6.94	12.6	626	mm	mm	mm	---
A2-9C	A2-9C	10.71-17	1-Apr-08	12.50	44.61	43.993	nd	nd	nd	7.590	34.441	6.36	11.3	464	mm	mm	mm	---
A2-9C	A2-9C	10.71-17	29-Apr-09	12.495	44.61	43.993	nd	nd	nd	7.312	36.681	0.5	9.03	12.7	977	mm	mm	Clear
A2-9C	A2-9C	10.71-17	12-Apr-10	12.495	44.61	43.993	nd	nd	nd	8.290	35.673	0.08	5.53	14.9	321	mm	mm	Clear
A2-9C	A2-9C	10.71-17	17-Apr-10	12.410	44.61	43.993	nd	nd	nd	6.340	37.653	0.03	6.57	9.8	523	mm	mm	Clear
A2-9C	A2-9C	10.71-17	9-Sep-10	12.500	44.61	43.993	nd	nd	nd	8.320	35.673	0.08	5.53	14.9	321	mm	mm	Clear
A2-9C	A2-9C	10.71-17	26-Apr-11	12.492	44.61	43.993	nd	nd	nd	6.275	37.264	0.07	6.41	11.4	147	mm	mm	Clear
A2-9C	A2-9C	10.71-17	26-Apr-11	12.410	44.61	43.993	nd	nd	nd	8.400	35.573	0.34	6.59	11.86	411	mm	mm	Records were measured from top of manhole
A2-9C	A2-9C	10.71-17	26-May-12	12.070	44.61	43.993	nd	nd	nd	7.750	36.203	5.4	7.16	17.7	291	mm	mm	Clear
A2-9C	A2-9C	10.71-17	26-Apr-12	12.040	44.61	43.993	nd	nd	nd	8.110	35.883	0.25	6.05	16.67	489	mm	mm	Measured from the top of manhole
A2-9C	A2-9C	10.71-17	26-Apr-13	13.050	44.61	43.993	nd	nd	nd	6.840	37.153	2.62	6.07	14.64	281	mm	mm	Extended height of sec. Pumped dry at 90 L on Apr 24 - Sampled Apr 25
A2-9C	A2-9C	10.71-17	27-May-14	13.100	44.61	43.993	nd	nd	nd	7.530	36.463	5.44	6.54	16.32	302	0.227	0.18	75.1
A2-9C	A2-9C	10.71-17	25-Apr-14	12.900	44.61	43.993	nd	nd	nd	8.100	35.893	1.48	6.06	12.99	427	0.360	0.27	33.1
A2-9C	A2-9C	10.71-17	9-Mar-15	12.910	44.61	43.993	10	nd	nd	7.590	36.709	6.38	7.48	14.46	471	0.17	0.17	113.3
A2-9C	A2-9C	10.71-17	19-Mar-15	13.230	44.61	43.993	nd	nd	nd	7.590	36.403	6.18	6.79	16.81	301	0.233	0.17	-9.1
A2-9C	A2-9C	10.71-17	10-Mar-16	12.910	44.61	43.993	15	nd	nd	6.580	38.013	0.15	6.5	12.68	236	0.200	0.15	37.5
A2-9C	A2-9C	10.71-17	10-Apr-16	12.910	44.61	43.993	nd	nd	nd	7.630	36.983	8.39	7.66	12.37	506	0.39	0.18	---
A2-9C	A2-9C	15.21-18.3	26-Apr-04	17.770	44.61	44.462	20	nd	na	8.170	36.292	nd	9.02	12.7	199.6	mm	mm	---
A2-9C	A2-9C	15.21-18.3	18-Oct-04	17.760	44.61	44.462	145	nd	na	9.716	34.726	nd	7.48	11.9	212	mm	mm	---
A2-9C	A2-9C	15.21-18.3	12-Dec-05	17.760	44.61	44.462	5	nd	na	7.992	36.470	nd	7.36	12.2	131.2	mm	mm	---
A2-9C	A2-9C	15.21-18.3	12-Sep-06	17.220	44.61	44.462	nd	nd	na	10.600	35.800	nd	7.78	15.1	304	mm	mm	Sampled Seat 13
A2-9C	A2-9C	15.21-18.3	20-Mar-06	17.200	44.61	44.462	60	nd	na	9.580	34.882	7.02	7.33	12.9	28	mm	mm	---
A2-9C	A2-9C	15.21-18.3	23-Aug-06	17.200	44.61	44.462	nd	nd	na	11.175	34.263	nd	7.28	16.5	285	mm	mm	---
A2-9C	A2-9C	15.21-18.3	16-Apr-07	17.400	44.61	44.462	20	nd	na	9.150	35.312	0.23	7.89	12.1	425	mm	mm	DUP (A2-9C)
A2-9C	A2-9C	15.21-18.3	10-Sep-07	17.200	44.61	44.462	20	nd	na	12.530	31.932	0.24	8.22	14	546	mm	mm	---
A2-9C	A2-9C	15.21-18.3	1-Apr-08	17.100	44.61	44.462	nd	nd	na	9.819	35.953	0.12	7.15	13.4	144	mm	mm	---
A2-9C	A2-9C	15.21-18.3	27-Aug-08	17.152	44.61	44.462	290	nd	na	11.696	30.766	0.3	7.54	13	552	mm	mm	---
A2-9C	A2-9C	15.21-18.3	29-Apr-09	17.198	44.61	44.462	nd	nd	na	10.267	34.175	0.4	7.57	13.8	981	mm	mm	Clear
A2-9C	A2-9C	15.21-18.3	26-Apr-09	17.200	44.61	44.462	nd	nd	na	10.790	32.677	0.2	7.84	13.4	541	mm	mm	---
A2-9C	A2-9C	15.21-18.3	12-Apr-10	17.180	44.61	44.462	nd	nd	na	8.760	36.709	0.03	6.62	11.6	324	mm	mm	Clear
A2-9C	A2-9C	15.21-18.3	10-Sep-10	17.150	44.61	44.462	nd	nd	na	11.686	34.871	nd	7.27	13.1	165	mm	mm	---
A2-9C	A2-9C	15.21-18.3	14-Apr-11	17.160	44.61	44.462	nd	nd	na	5.570	38.802	0.3	7.52	10.6	522	mm	mm	Slightly silty
A2-9C	A2-9C	15.21-18.3	26-Apr-11	17.165	44.61	44.462	65	nd	na	10.705	34.697	9.02	6.68	11.88	249	mm	mm	Clear, DUP-12
A2-9C	A2-9C	15.21-18.3	28-May-12	17.170	44.61	44.462	20	nd	na	9.890	34.572	0.96	7.88	12.98	396	mm	mm	---
A2-9C	A2-9C	15.21-18.3	20-Aug-12	17.170	44.61	44.462	nd	nd	na	10.670	33.792	1.84	6.94	11.8	406	mm	mm	Clear, Sampled from Bailer
A2-9C	A2-9C	15.21-18.3	23-Jul-13	17.120	44.61	44.462	nd	nd	na	8.460	35.563	0.39	7.55	15.26	404	mm	mm	Silty
A2-9C	A2-9C	15.21-18.3	22-Jul-13	17.150	44.61	44.462	nd	nd	na	10.910	33.652	0.52	8.39	12.46	371	mm	mm	---
A2-9C	A2-9C	15.21-18.3	27-May-14	17.160	44.61	44.462	5	nd	na	9.905	34.957	3.51	7.24	14.28	411	0.336	0.26	110.5
A2-9C	A2-9C	15.21-18.3	8-Mar-15	17.180	44.61	44.462	nd	nd	na	10.650	33.133	0.65	6.64	13.32	388	mm	mm	Clear
A2-9C	A2-9C	15.21-18.3	9-Mar-15	17.210	44.61	44.462	nd	nd	na	9.115	35.947	0.65	7.29	13.28	399	0.34	0.26	96.2
A2-9C	A2-9C	15.21-18.3	18-May-15	17.390	44.61	44.462	80	nd	na	10.610	33.852	2.29	7.43	14.35	396	0.323	0.24	15.8
A2-9C	A2-9C	15.21-18.3	8-Mar-16	16.980	44.61	44.462	5	nd	na	7.790	37.709	0.44	7.23	11.36	339	0.288	0.64	-102.7
A2-9C	A2-9C	15.21-18.3	10-Apr-16	17.200	44.61	44.462	nd	nd	na	10.330	34.132	4.3	6.22	13.9	411	0.339	0.25	227.3
G2-3B	G2-3B	10.11-11	26-Apr-04	11.300	45.86	45.742	50	nd	na	7.580	38.162	nd	6.67	14.2	555	mm	mm	---
G2-3B	G2-3B	10.11-11	15-Oct-04	11.320	45.86	45.742	175	nd	na	7.632	38.110	nd	6.85	14.1	834	mm	mm	---
G2-3B	G2-3B	10.11-11	12-Dec-05	11.340	45.86	45.742	nd	nd	na	7.800	38.293	nd	6.67	13.8	765	mm	mm	---
G2-3B	G2-3B	10.11-11	12-Sep-06	11.350	45.86	45.742	49	nd	na	7.979	37.772	nd	6.65	14.5	632	mm	mm	Sample collected 13-Sept-06
G2-3B	G2-3B	10.11-11	22-Mar-06	11.450	45.86	45.742	30	nd	na	7.450	38.292	8.65	nd	nd	nd	mm	mm	---
G2-3B	G2-3B	10.11-11	22-Apr-06	11.340	45.86	45.742	nd	nd	na	7.845	37.791	nd	6.75	14	60.7	mm	mm	DUP-5
G2-3B	G2-3B	10.11-11	11-Apr-07	11.300	45.86	45.742	25	nd	na	7.460	38.342	0.99	6.94	13.2	759	mm	mm	---
G2-3B	G2-3B	10.11-11	10-Sep-07	11.300	45.86	45.742	nd	nd	na	7.660	37.786	0.07	7.21	13.5	515	mm	mm	---
G2-3B	G2-3B	10.11-11	1-Apr-08	11.355	45.86	45.742	30	nd	na	7.370	39.372	0.24	6.27	13.3	707	mm	mm	---
G2-3B	G2-3B	10.11-11	2-Sep-08	11.321	45.86	45.742	50	nd	na	7.738	38.004	0.5	nd	13.6	748	mm	mm	Clear
G2-3B	G2-3B	10.11-11	26-Apr-09	11.318	45.86	45.742	nd	nd	na	7.630	39.217	0.62	6.62	12.4	1599	mm	mm	Clear
G2-3B	G2-3B	10.11-11	31-Aug-09	11.300	45.86	45.742	25	nd	na	8.010	37.732	0.6	6.34	14.1	721	mm	mm	Clear
G2-3B	G2-3B	10.11-11	14-Apr-10	11.320	45.86	45.742	5	nd	na	7.360	38.362	0.38	6.53	13.4	790	mm	mm	Clear
G2-3B	G2-3B	10.11-11	18-May-10	11.305	45.86	45.742	30	nd	na	7.895	38.801	0.17	6.35	13.2	614	mm	mm	Mostly Clear
G2-3B	G2-3B	10.11-11	18-Apr-11	10.865	45.86	45.742	80	nd	na	7.478	38.364	0.67	6.42	13.5	712	mm	mm	Clear
G2-3B	G2-3B	10.11-11	8-May-11	11.220	45.86	45.742	nd	nd	na	7.270	38.743	0.63	6.36	12.68	548	mm	mm	Clear
G2-3B	G2-3B	10.11-11	17-May-12	10.885	45.86	45.742	20	nd	na	7.695	38.095	0.24	6.89	12.97	499	mm	mm	Clear
G2-3B	G2-3B	10.11-11	22-Aug-12	10.970	45.86	45.742	30	nd	na	8.100	37.642	0.29	6.7	13.3	570	mm	mm	Clear
G2-3B	G2-3B	10.11-11	9-Mar-13	10.985	45.86	45.742	65	nd	na	7.745	39.917	0.47	6.49	15.06	551	mm	mm	Sampled with downhole pump, Clear
G2-3B	G2-3B	10.11-11	23-Sep-13	10.390	45.86	45.742	10	nd	na	8.120	37.622	4.16	6.3	14.15	220	mm	mm	Clear
G2-3B	G2-3B	10.11-11	27-May-14	10.400	45.86	45.742	130	nd	na	7.745	38.292	2.45	6.03	14.41	463	0.463	0.31	-29
G2-3B	G2-3B	10.11-11	26-Apr-14	10.400	45.86	45.742	5	nd	na	8.270	37.472	1.82	6.24	14.78	505	0.406	0.31	-79.1
G2-3B	G2-3B	10.11-11	3-Mar-15	10.380	45.86	45.742	5	nd	na	7.670	38.072	1.12	6.13	12.75	406	0.344	0.26	-172
G2-3B	G2-3B	10.11-11	16-Sep-15	10.390	45.86	45.742	30	nd	na	8.130	37.612	0.3	6.49	14.33	515	0.433	0.3	3.7
G2-3B	G2-3B	10.11-11	9-Mar-16	10.990	45.86	45.742	nd	nd	na	7.480	38.262	0.97	6.52	12.42	494	0.423	0.32	-142.7
G2-3B	G2-3B	10.11-11	11-Aug-16	10.390	45.86	45.742	5	nd	na	8.100	37.642	0.48	6.44	14.35	330	0.272	0.2	-46.4
G2																		

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNHAM REFINERY

Well ID	Sample ID	Screened Interval (mbs)	Date Sampled	Top of Well (m TWC)	Depth of Water (m TWC)	Ground Elevation (m TWC)	Top of Screen (m TWC)	Top of Screen Elevation (m TWC)	Hydraulic Head (m TWC)	Hydraulic Head Concentration (ppm)	Depth to Product (m TWC)	Apparent Product Thickness (mm)	Depth to Water (m TWC)	Groundwater Elevation (m TWC)	Observed Oxygen (mg/L)	Temperature (°C)	Barometric Pressure (mm Hg)	Flow Rate (L/min)	Turbidity (NTU)	Specific Gravity	DOF (mV)	Observations	
G2-98	G2-98	18.9-21.9	16-Sep-15	21.640	44.62	44.683	nd	nd	nd	nd	nd	nd	8.390	36.331	2.26	6.69	12.72	421	0.367	0.77	28.1	Clear	
G2-98	G2-98	18.9-21.9	9-Mar-16	21.760	44.62	44.683	nd	nd	nd	nd	nd	nd	7.440	36.241	1.87	7.02	10.91	408	0.37	0.78	28.6	Turbid	
G2-98	G2-98	18.9-21.9	11-Aug-16	21.760	44.62	44.683	60	nd	nd	nd	nd	nd	8.310	36.371	2.54	5.72	13.1	401	0.387	0.26	37.2	---	
G2-10	G2-10	4.9-6.4	26-Apr-04	6.120	45.16	45.349	150	nd	na	na	na	na	4.340	41.009	mm	5.77	11.6	191	1	mm	mm	---	
G2-10	G2-10	4.9-6.4	18-Oct-04	6.090	45.16	45.349	225	nd	na	na	na	na	4.130	41.219	mm	6.32	13.1	228	mm	mm	mm	---	
G2-10	G2-10	4.9-6.4	12-Apr-05	6.090	45.16	45.349	nd	nd	na	na	na	na	3.510	41.838	mm	5.96	12.1	103	2	mm	mm	---	
G2-10	G2-10	4.9-6.4	12-Sep-05	6.140	45.16	45.349	nd	nd	na	na	na	na	5.990	39.999	mm	6.83	15.4	411	mm	mm	mm	Sample collected 13-Sept-05	
G2-10	G2-10	4.9-6.4	20-Mar-06	6.140	45.16	45.349	130	nd	na	na	na	na	4.960	41.385	mm	5.86	10.2	137	mm	mm	mm	---	
G2-10	G2-10	4.9-6.4	30-Jul-06	6.140	45.16	45.349	225	nd	na	na	na	na	4.840	39.999	mm	6.04	mm	mm	mm	mm	mm	Trace aroundwater, no sample	
G2-10	G2-10	4.9-6.4	23-Apr-07	6.150	45.16	45.349	40	nd	na	na	na	na	3.765	41.584	NA	5.45	11.5	123	mm	mm	mm	Insufficient water to sample	
G2-10	G2-10	4.9-6.4	11-Sep-07	6.150	45.16	45.349	60	nd	na	na	na	na	5.860	39.209	mm	6.43	10.9	273	mm	mm	mm	---	
G2-10	G2-10	4.9-6.4	1-Apr-08	6.150	45.16	45.349	75	nd	na	na	na	na	3.785	41.564	0.26	5.43	10.2	257	mm	mm	mm	---	
G2-10	G2-10	4.9-6.4	2-Sep-08	6.300	45.16	45.349	25	nd	na	na	na	na	4.310	41.039	1	5.55	12.6	212	mm	mm	mm	Duplicate label	
G2-10	G2-10	4.9-6.4	28-Apr-08	6.137	45.16	45.349	125	nd	na	na	na	na	3.937	41.446	0.8	5.68	10.6	486	mm	mm	mm	Cloudy orange precipitate in first 2 L, pungent. Clear after	
G2-10	G2-10	4.9-6.4	27-Aug-09	6.139	45.16	45.349	nd	nd	na	na	na	na	na	na	mm	mm	mm	mm	mm	mm	mm	Dry, No sample	
G2-10	G2-10	4.9-6.4	14-Apr-10	6.150	45.16	45.349	nd	nd	na	na	na	na	3.538	41.713	0.73	5.76	11.1	306	mm	mm	mm	Orange sediment	
G2-10	G2-10	4.9-6.4	9-Sep-10	6.135	45.16	45.349	60	nd	na	na	na	na	5.539	39.816	0.3	5.78	13.3	363	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	20-Apr-11	6.135	45.16	45.349	160	nd	na	na	na	na	3.447	41.902	0.47	5.83	10.7	249	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	13-Sep-11	6.140	45.16	45.349	60	nd	na	na	na	na	5.440	39.909	3.07	6.04	13.09	473	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	28-May-12	6.150	45.16	45.349	15	nd	na	na	na	na	4.390	40.999	0.98	5.04	10.39	174	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	20-Aug-12	6.135	45.16	45.349	10	nd	na	na	na	na	5.240	40.109	2.77	5.24	11.46	202	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	22-Apr-13	6.150	45.16	45.349	80	nd	na	na	na	na	3.290	41.059	2.5	5.35	10.3	197	mm	mm	mm	Orange haloid in well - purged until Clear	
G2-10	G2-10	4.9-6.4	22-Aug-13	6.120	45.16	45.349	75	nd	na	na	na	na	5.480	39.869	1.2	5.21	13.23	250	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	15-Mar-14	6.130	45.16	45.349	nd	nd	na	na	na	na	3.580	42.540	mm	4.76	10.9	246	mm	mm	mm	Clear	
G2-10	G2-10	4.9-6.4	20-Aug-14	6.140	45.16	45.349	25	nd	na	na	na	na	5.430	39.919	1.5	4.84	13.04	224	0.189	0.14	152.7	Clear	
G2-10	G2-10	4.9-6.4	3-Mar-15	6.140	45.16	45.349	360	nd	na	na	na	na	3.790	41.559	0.27	5.41	11.09	236	0.209	0.15	177.7	Clear	
G2-10	G2-10	4.9-6.4	16-Sep-15	6.160	45.16	45.349	15	nd	na	na	na	na	5.610	37.758	mm	5.37	13.36	262	0.18	38.7	Clear		
G2-10	G2-10	4.9-6.4	7-Mar-16	6.150	45.16	45.349	200	nd	na	na	na	na	3.095	42.294	1.43	4.27	10.75	231	0.206	0.15	276.4	Clear	
G2-10	G2-10	4.9-6.4	10-Aug-16	6.140	45.16	45.349	35	nd	na	na	na	na	4.970	40.279	1.96	10.38	13.9	212	0.175	0.13	150.8	Clear	
G2-11A	G2-11A	4.6-6.1	29-Apr-04	5.990	50.46	50.341	2750	nd	na	na	na	na	5.550	44.793	mm	6.08	12.2	424	mm	mm	mm	---	
G2-11A	G2-11A	4.6-6.1	21-Oct-04	6.007	50.46	50.341	250	nd	na	na	na	na	5.439	44.807	mm	6.01	12.1	265	mm	mm	mm	---	
G2-11A	G2-11A	4.6-6.1	11-Apr-05	6.007	50.46	50.341	mm	nd	na	na	na	na	5.450	44.893	mm	6.18	12.2	340	mm	mm	mm	---	
G2-11A	G2-11A	4.6-6.1	20-Sep-05	6.000	50.46	50.341	mm	nd	na	na	na	na	5.690	44.493	mm	6.17	16.2	400	mm	mm	mm	Sample collected 21-Sept-05. Samples collected before parameters	
G2-11A	G2-11A	4.6-6.1	27-Mar-06	6.050	50.46	50.341	mm	nd	na	na	na	na	5.470	44.871	mm	5.96	12.1	103	2	mm	mm	---	
G2-11A	G2-11A	4.6-6.1	30-Aug-06	6.000	50.46	50.341	mm	nd	na	na	na	na	5.780	44.561	mm	mm	mm	mm	mm	mm	mm	Orange sediment	
G2-11A	G2-11A	4.6-6.1	11-Nov-07	6.000	50.46	50.341	mm	nd	na	na	na	na	5.590	44.711	mm	6.03	16.08	15.2	399	mm	mm	mm	Clear
G2-11A	G2-11A	4.6-6.1	6-Sep-07	6.020	50.46	50.341	6000	nd	na	na	na	na	5.590	44.711	mm	6.03	16.08	15.2	399	mm	mm	mm	Clear
G2-11A	G2-11A	4.6-6.1	8-Apr-08	6.011	50.46	50.341	290	nd	na	na	na	na	5.095	45.289	0.62	6.04	11.5	229	mm	mm	mm	Clear	
G2-11A	G2-11A	4.6-6.1	1-Sep-08	6.010	50.46	50.341	190	nd	na	na	na	na	5.472	44.869	0.4	6.04	11.1	260	mm	mm	mm	Slow recharge	
G2-11A	G2-11A	4.6-6.1	26-Apr-09	6.005	50.46	50.341	>11000	nd	na	na	na	na	5.519	44.822	0.6	mm	mm	mm	mm	mm	mm	Well dry during pumping and didn't recharge in 24 hour period	
G2-11A	G2-11A	4.6-6.1	31-Aug-09	6.010	50.46	50.341	>11000	nd	na	na	na	na	5.508	44.733	0.2	mm	mm	mm	mm	mm	mm	No recharge. Dry, No sample	
G2-11A	G2-11A	4.6-6.1	21-Apr-10	6.000	50.46	50.341	290	nd	na	na	na	na	5.515	44.826	0.99	6.33	11.3	429	mm	mm	mm	No Lubrit and low sediment	
G2-11A	G2-11A	4.6-6.1	15-Sep-10	6.003	50.46	50.341	70	nd	na	na	na	na	5.474	44.867	0.17	6.27	14.8	350	mm	mm	mm	Clear	
G2-11A	G2-11A	4.6-6.1	5-May-11	6.000	50.46	50.341	100	nd	na	na	na	na	5.474	44.871	0.82	5.98	11.4	350	mm	mm	mm	Clear	
G2-11A	G2-11A	4.6-6.1	8-Sep-11	6.000	50.46	50.341	130	nd	na	na	na	na	5.650	44.721	3.35	5.88	16.69	2247	mm	mm	mm	Clear	
G2-11A	G2-11A	4.6-6.1	24-May-12	6.020	50.46	50.341	130	nd	na	na	na	na	5.660	44.781	0.75	6.15	12.82	1401	mm	mm	mm	Clear	
G2-11A	G2-11A	4.6-6.1	29-Aug-12	6.005	50.46	50.341	>11000	nd	na	na	na	na	5.630	44.731	0.05	5.94	13.19	180	mm	mm	mm	Clear	
G2-11A	G2-11A	4.6-6.1	17-Apr-13	6.000	50.46	50.341	75	nd	na	na	na	na	5.600	44.881	0.78	6.3	11.37	1625	mm	mm	mm	Sulfur odour. Clear. DUP-26	
G2-11A	G2-11A	4.6-6.1	20-Aug-13	6.005	50.46	50.341	200	nd	na	na	na	na	5.675	44.695	2.35	6.15	13.14	1591	mm	mm	mm	Clear with some particulates. Ran dry during BTEX collection. DUP-10	
G2-11A	G2-11A	4.6-6.1	6-Oct-13	6.000	50.46	50.341	95	nd	na	na	na	na	5.690	44.691	1.73	6.28	13.23	115	0.72	28.8	Clear		
G2-11A	G2-11A	4.6-6.1	18-Aug-14	6.010	50.46	50.341	95	nd	na	na	na	na	5.660	44.693	1.16	6.25	14.63	1207	0.107	0.8	29.3	Clear	
G2-11A	G2-11A	4.6-6.1	11-May-15	6.005	50.46	50.341	100	nd	na	na	na	na	5.690	44.741	mm	6.37	12.9	291	0.229	0.19	278.1	Clear	
G2-11A	G2-11A	4.6-6.1	16-Sep-15	6.000	50.46	50.341	>11000	nd	na	na	na	na	5.510	44.831	0.54	6.15	14.74	1135	0.918	0.71	7.4	Clear. Hydrocarbon odour. DUP-16	
G2-11A	G2-11A	4.6-6.1	4-Apr-16	5.990	54.8	50.341	110	nd	na	na	na	na	5.480	44.851	0.37	6.41	12.52	1205	1.08	0.84	19.8	Clear	
G2-11A	G2-11A	4.6-6.1	1-Sep-16	6.010	54.8	50.341	190	nd	na	na	na	na	5.610	44.531	1.87	6.34	14.61	1110	0.903	0.7	21.2	Clear	
G2-11B	G2-11B	7.0-8.5	29-Apr-04	8.380	50.54	50.347	250	nd	na	na	na	na	5.660	44.687	mm	6.37	12.5	664	mm	mm	mm	---	
G2-11B	G2-11B	7.0-8.5	11-Oct-04	8.395	50.54	50.347	250	nd	na	na	na	na	5.570	44.771	mm	6.3	13.6	450	mm	mm	mm	---	
G2-11B	G2-11B	7.0-8.5	11-Apr-05	8.395	50.54	50.347	mm	nd	na	na	na	na	5.578	44.769	mm	6.10	12.6	450	mm	mm	mm	---	
G2-11B	G2-11B	7.0-8.5	20-Sep-05	8.380	50.54	50.347	mm	nd	na	na	na	na	5.720	44.347	mm	6.23	13.5	460	mm	mm	mm	Sample collected 21-Sept-05	
G2-11B	G2-11B	7.0-8.5	6-Apr-06	8.450	50.54	50.347	100	nd	na	na	na	na	5.600	44.727	1.67	6.23	14.77	377	mm	mm	mm	---	
G2-11B	G2-11B	7.0-8.5	30-Aug-06	8.300	50.54	50.347	mm	nd															

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNHAM REFINERY

Well ID	Sample ID	Screened Interval (m)	Date Sampled	Top of Well (m TWC)	Depth of Water (m TWC)	Ground Elevation (m TWC)	Top of casing Elevation (m TWC)	Headspace Vapour Concentration (ppmv)	Depth of Product from TWC	Apparent Product Thickness (mm)	Depth to Water (m TWC)	Groundwater Elevation (m TWC)	Observed Oxygen (mg/L)	Temperature (°C)	Resistivity (ohm-cm)	TDS (g/L)	Salinity (ppt)	KDP (mv)	Observations	
FW03-2B	ns	11.3-7	6-Sep-07	3,150	37.88	37.809	180	nd	na	na	3,440	34.899	nm	nm	nm	nm	nm	nm	Not enough water to sample	
FW03-2B	ns	11.3-7	7-Apr-08	3,150	37.88	37.809	180	nd	na	na	3,440	34.899	nm	nm	nm	nm	nm	nm	Not enough water to sample	
FW03-2B	ns	11.3-7	3-Sep-08	3,150	37.88	37.809	90	nd	na	na	2,819	34.990	3.2	7.52	14.2	428	nm	nm	Slow recharge	
FW03-2B	ns	11.3-7	28-Apr-09	3,150	37.88	37.809	90	nd	na	na	1,890	35.009	10.7	2.98	10.9	211	nm	nm	Clear	
FW03-2B	ns	11.3-7	27-Aug-09	3,147	37.88	37.809	90	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Clear	
FW03-2B	ns	11.3-7	14-Apr-10	3,150	37.88	37.809	90	nd	na	na	2,210	35.599	8.08	7.77	11.2	259	nm	nm	Clear	
FW03-2B	ns	11.3-7	15-Sep-10	3,150	37.88	37.809	10	nd	na	na	3,025	34.784	1.32	nm	nm	nm	nm	nm	No sample	
FW03-2B	ns	11.3-7	19-Apr-11	3,140	37.88	37.809	5	nd	na	na	1,446	36.363	7.86	7.22	10	254	nm	nm	Clear. Note: Did not shut down Air Squeeze System while sampling PW wells. Next time, shut down to reduce silty samples.	
FW03-2B	ns	11.3-7	22-May-11	3,136	37.88	37.809	90	nd	na	na	2,680	35.125	5.46	7.75	12.23	227	nm	nm	Clear	
FW03-2B	ns	11.3-7	10-May-12	3,140	37.88	37.809	5	nd	na	na	2,800	35.689	8.84	7.66	10.49	289	nm	nm	Clear	
FW03-2B	ns	11.3-7	13-Aug-12	3,130	37.88	37.809	55	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry. Not sampled	
FW03-2B	ns	11.3-7	9-Mar-16	3,140	37.88	37.809	70	nd	na	na	1,260	36.949	5.39	6.23	9.12	151	0.141	8.1	-41.9	Silty. Apr 3 collected BTEX and ambers, Apr 4 - Dry. Metals sample not collected
FW03-2B	ns	11.3-7	16-Sep-16	3,110	37.88	37.809	115	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-3	PW03-3	12.4-1	22-Apr-04	4,170	39.21	39.162	770	nd	na	na	2,500	36.642	nm	6.82	11.8	639	nm	nm	---	
FW03-3	PW03-3	12.4-1	15-Oct-04	4,136	39.21	39.162	200	nd	na	na	2,270	36.892	nm	7.02	15.4	1181	nm	nm	---	
FW03-3	PW03-3	12.4-1	15-Apr-05	4,200	39.21	39.162	170	nd	na	na	1,960	37.200	nm	6.74	11.2	592	nm	nm	---	
FW03-3	A2-PW03-3	12.4-1	13-Sep-05	4,200	39.21	39.162	nm	nd	na	na	3,500	36.642	nm	6.9	14.3	1210	nm	nm	Sample collected 13-Sep-05.	
FW03-3	PW03-3	12.4-1	23-Mar-06	4,200	39.21	39.162	100	nd	na	na	2,110	36.452	nm	6.58	11.1	208	nm	nm	---	
FW03-3	PW03-3	12.4-1	23-Aug-06	4,200	39.21	39.162	100	nd	na	na	3,490	35.672	2.07	6.94	14.8	815	nm	nm	---	
FW03-3	PW03-3	12.4-1	13-Apr-07	4,200	39.21	39.162	100	nd	na	na	3,360	36.802	0.16	6.29	10.8	405	nm	nm	---	
FW03-3	ns	11.3-11	6-Sep-07	4,200	39.21	39.162	100	nd	na	na	4,000	35.162	nm	nm	nm	nm	nm	nm	Not enough water to collect sample	
FW03-3	PW03-3	12.4-1	1-Apr-08	4,200	39.21	39.162	100	nd	na	na	2,160	37.002	0.22	6.14	10.3	242	nm	nm	DUP-4	
FW03-3	PW03-3	12.4-1	3-Sep-08	4,196	39.21	39.162	125	nd	na	na	3,743	36.419	0.6	6.56	12.9	896	nm	nm	---	
FW03-3	PW03-3	12.4-1	18-Apr-09	4,198	39.21	39.162	150	nd	na	na	2,082	36.100	nm	6.46	10.3	495	nm	nm	---	
FW03-3	PW03-3	12.4-1	27-Aug-09	4,184	39.21	39.162	75	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Clear	
FW03-3	PW03-3	12.4-1	14-Apr-10	4,180	39.21	39.162	15	nd	na	na	1,880	37.284	nm	6.89	12.4	128	nm	nm	---	
FW03-3	ns	11.3-10	15-Sep-10	4,188	39.21	39.162	15	nd	na	na	4,052	35.110	0.16	nm	nm	nm	nm	nm	Not enough water to collect sample	
FW03-3	PW03-3	12.4-1	18-Apr-11	4,136	39.21	39.162	65	nd	na	na	1,906	37.257	0.34	6.54	9.9	127	nm	nm	---	
FW03-3	PW03-3	12.4-1	10-May-12	4,140	39.21	39.162	15	nd	na	na	3,150	36.012	4.19	6.42	13.27	3	nm	nm	---	
FW03-3	PW03-3	12.4-1	10-May-12	4,165	39.21	39.162	15	nd	na	na	3,810	35.352	3.02	6.40	10.78	195	nm	nm	Unfertilized LE(PH)E/Ph	
FW03-3	ns	12.4-1	13-Jul-12	4,160	39.21	39.162	15	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry. Not sampled	
FW03-3	ns	12.4-1	9-Mar-16	4,140	39.21	39.162	15	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-3	ns	12.4-1	15-Aug-16	4,180	39.21	39.162	20	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-3	PW03-3	12.4-1	24-Apr-14	4,160	39.21	39.162	5	nd	na	na	2,310	36.052	0.17	6.06	9.58	0.072	24.9	nm	nm	Slightly silty (1 LE(PH)E only)
FW03-3	ns	12.4-1	12-Aug-14	4,170	39.21	39.162	49	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-3	ns	12.4-1	6-May-15	4,175	39.21	39.162	40	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry. Silt on the probe	
FW03-3	ns	12.4-1	24-Apr-16	4,180	39.21	39.162	15	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-3	PW03-3	12.4-1	9-Mar-16	4,180	39.21	39.162	55	nd	na	na	2,800	36.362	3.67	6.67	10.14	65	0.058	0.04	-79.7	Benitene on probe to
FW03-3	ns	12.4-1	16-Sep-16	4,120	39.21	39.162	75	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-4	PW03-4	18.4-0	22-Apr-04	3,900	37.17	37.028	485	nd	na	na	1,940	36.088	nm	7.05	10.8	410	nm	nm	---	
FW03-4	PW03-4	18.4-0	14-Oct-04	3,918	37.17	37.028	300	nd	na	na	1,338	36.690	nm	7.22	14.4	698	nm	nm	---	
FW03-4	PW03-4	18.4-0	14-Apr-05	3,920	37.17	37.028	190	nd	na	na	1,800	36.208	nm	6.89	10.3	560	nm	nm	---	
FW03-4	A2-PW03-4	18.4-0	13-Sep-05	3,925	37.17	37.028	nm	nd	na	na	2,230	34.798	nm	7.08	14.1	103	nm	nm	Sample collected 13-Sep-05.	
FW03-4	PW03-4	18.4-0	21-Mar-06	3,900	37.17	37.028	120	nd	na	na	1,295	37.131	3.11	6.85	10.4	474	nm	nm	---	
FW03-4	PW03-4	18.4-0	23-Aug-06	3,920	37.17	37.028	110	nd	na	na	2,190	34.838	1.1	7.09	13.5	531	nm	nm	---	
FW03-4	ns	18.4-0	13-Apr-07	3,920	37.17	37.028	110	nd	na	na	1,910	36.718	nm	6.5	7.15	10.5	164	nm	nm	DUP-4
FW03-4	PW03-4	18.4-0	6-Sep-07	3,920	37.17	37.028	90	nd	na	na	2,190	34.838	0.23	7.15	13.6	518	nm	nm	DUP (DUP-4X)	
FW03-4	PW03-4	18.4-0	1-Apr-08	3,920	37.17	37.028	50	nd	na	na	1,195	35.833	0.91	6.94	9.5	444	nm	nm	---	
FW03-4	PW03-4	18.4-0	15-Sep-08	3,895	37.17	37.028	5	nd	na	na	1,872	35.156	1.7	6.94	14.4	14	nm	nm	---	
FW03-4	PW03-4	18.4-0	22-Apr-09	3,905	37.17	37.028	nd	nd	na	na	1,305	36.563	11.6	7.15	9.5	357	nm	nm	Sample cloudy	
FW03-4	PW03-4	18.4-0	27-Aug-09	3,900	37.17	37.028	nd	nd	na	na	2,263	34.675	0.3	7.82	13.7	406	nm	nm	Low turbidity, minor sediment	
FW03-4	PW03-4	18.4-0	14-Apr-10	3,920	37.17	37.028	5	nd	na	na	1,290	36.768	nm	7.26	10.2	295	nm	nm	---	
FW03-4	PW03-4	18.4-0	16-Sep-10	3,885	37.17	37.028	65	nd	na	na	1,990	36.078	8.87	7.69	14.1	699	nm	nm	Clear	
FW03-4	PW03-4	18.4-0	19-Apr-11	3,880	37.17	37.028	65	nd	na	na	1,085	36.085	nm	6.8	9.5	245	nm	nm	---	
FW03-4	PW03-4	18.4-0	19-Apr-11	3,880	37.17	37.028	5	nd	na	na	1,600	36.428	10.21	7.98	15.68	1	nm	nm	Slightly silty (1 LE(PH)E only)	
FW03-4	PW03-4	18.4-0	13-Sep-11	3,880	37.17	37.028	60	nd	na	na	1,775	36.253	9.99	7.67	13.88	220	nm	nm	Clear (PAH's only) (DUP-7)	
FW03-4	ns	10-May-12	3,900	37.17	37.028	10	nd	na	na	na	2,520	34.508	0.12	6.12	10.17	127	nm	nm	Dropped BTEX, well in work, low silty for ambers	
FW03-4	ns	18.4-0	13-Aug-12	3,860	37.17	37.028	10	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry. Not sampled	
FW03-4	ns	18.4-0	9-Apr-13	3,900	37.17	37.028	10	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-4	ns	18.4-0	15-Apr-13	3,890	37.17	37.028	10	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-4	PW03-4	18.4-0	29-Apr-14	3,890	37.17	37.028	55	nd	na	na	1,700	35.329	3.93	7.07	8.78	111	0.111	0.08	140.6	Slightly turbid
FW03-4	ns	18.4-0	12-Aug-14	3,870	37.17	37.028	90	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-4	ns	18.4-0	6-May-15	3,795	37.17	37.028	75	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry. Silt on probe	
FW03-4	ns	18.4-0	24-May-15	3,800	37.17	37.028	30	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-4	PW03-4	18.4-0	9-Mar-16	3,810	37.17	37.028	5	nd	na	na	2,560	34.438	6.17	7.29	9.69	182	0.127	24.9	Dry	
FW03-4	ns	18.4-0	16-Sep-16	3,800	37.17	37.028	100	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	Dry	
FW03-5	PW03-5	7.6-8.5	22-Apr-04	8,480	37.79	37.647	370	nd	na	na	2,050	36.597	nm	6.46	12.9	809	nm	nm	---	
FW03-5	PW03-5	7.6-8.5	14-Oct-04	8,599	37.79	37.647	170	nd	na	na	1,855	36.792	nm	6.68	14.7	962	nm	nm	---	
FW03-5	PW03-5	7.6-8.5	15-Apr-05	8,510	37.79	37.647	175	nd	na	na	1,500	36.051	nm	5.98	11.6	111	nm	nm	---	
FW03-5	A2-PW03-5	7.6-8.5	13-Sep-05	8,520	37.79	37.647	nm	nd	na	na	2,580	35.067	nm	6.82	14	1,099	nm	nm	Sample collected 13-Sep-05.	
FW03-5	P																			

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHRYSLER BURNHAM REFINERY

Well ID	Sample ID	Screened Interval (mbs)	Date Sampled	Total Depth of Well (m from TCC)	Ground Elevation (m TCC)	Top of Screen Elevation (m TCC)	Headspace Vapour Concentration (ppmv)	Depth to Product from TCC	Apparent Product Thickness (mm)	Depth to Water (m from TCC)	Groundwater Elevation (m TCC)	Observed Oxygen (mg/L)	Temperature (°C)	Resistivity Conductivity (µmhos/cm)	TDS (g/L)	Salinity (ppt)	DPH (mV)	Observations		
U9	U9	3.3-3.3	29-Apr-14	6.290	38.89	39.424	45	nd	nd	3.120	39.304	1.1	5.46	9.36	53	0.05	0.04	147.7	Clear	
U9	U9	3.3-3.3	12-Aug-14	6.290	38.89	39.424	45	nd	nd	3.120	39.304	1.1	5.46	9.36	53	0.05	0.04	147.7	Clear	
U9	U9	3.3-3.3	6-May-15	6.290	38.89	39.424	55	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
U9	U9	3.3-3.3	24-Sep-15	6.290	38.89	39.424	55	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
U9	U9	3.3-3.3	27-Mar-16	6.290	38.89	39.424	45	nd	nd	4.690	34.744	1.1	5.23	10.42	41	0.037	0.09	128.3	Clear	
U9	U9	3.3-3.3	16-Sep-16	6.290	38.89	39.424	110	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
MW02-02	MW02-02	1.2-4.3	7-May-04	5.200	41.24	42.258	100	nd	nd	3.510	38.768	7.84	10.9	206	mm	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	14-Oct-04	5.212	41.24	42.258	175	nd	nd	3.524	38.925	7.90	13.4	264	mm	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	24-Sep-05	5.200	41.24	42.258	80	nd	nd	3.506	38.965	8.26	14.9	336	mm	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	20-Sep-05	5.200	41.24	42.258	80	nd	nd	3.470	38.788	7.89	13.3	1196	mm	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	27-Mar-06	5.200	41.24	42.258	10	nd	nd	3.490	38.768	0.75	7.46	12.09	930	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	16-Apr-07	5.200	41.24	42.258	10	nd	nd	3.350	38.938	0.2	mm	12.7	415	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	4-Sep-07	5.200	41.24	42.258	20	nd	nd	3.440	38.818	0.11	7.8	11.7	750	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	8-Apr-08	5.117	41.24	42.258	25	nd	nd	3.285	38.973	0.31	6.95	8.7	401	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	8-Sep-08	5.213	41.24	42.258	25	nd	nd	3.365	38.273	0.2	7.43	14.1	596	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	30-Apr-09	5.213	41.24	42.258	10	nd	nd	3.389	38.915	0.6	1.69	13.2	205	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	8-Sep-09	5.213	41.24	42.258	nd	nd	nd	3.395	38.863	0.3	7.43	13.7	162	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	11-May-10	5.210	41.24	42.258	100	nd	nd	3.370	38.888	0.18	7.23	13.2	756	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	13-Sep-10	5.205	41.24	42.258	nd	nd	nd	3.235	39.093	0.17	7.82	14.9	848	mm	mm	mm	mm	mm
MW02-02	A2-MW02-02	1.2-4.3	11-Nov-11	5.210	41.24	42.258	40	nd	nd	3.233	39.025	0.24	7.53	10.2	790	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	13-Oct-11	5.215	41.24	42.258	10	nd	nd	3.450	38.838	3.62	8.96	12.46	545	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	23-May-12	5.220	41.24	42.258	10	nd	nd	3.500	37.758	0.86	7.33	9.93	767	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	13-Aug-12	5.210	41.24	42.258	nd	nd	nd	3.490	38.768	0.75	7.46	12.09	930	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	26-Mar-13	5.205	41.24	42.258	8	nd	nd	3.190	38.698	0.76	6.92	10.5	962	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	8-Aug-13	5.210	41.24	42.258	25	nd	nd	3.510	37.248	mm	mm	mm	mm	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	22-Sep-13	5.200	41.24	42.258	10	nd	nd	3.450	38.698	0.42	6.52	13.1	907	mm	mm	mm	mm	mm
MW02-02	ns	1.2-4.3	7-Aug-14	5.210	41.24	42.258	60	nd	nd	3.190	37.968	mm	mm	mm	mm	mm	mm	mm	mm	mm
MW02-02	MW02-02	1.2-4.3	11-May-15	5.200	41.24	42.258	25	nd	nd	3.470	37.388	7.8	6.82	12.07	881	0.78	0.59	40.2	Clear	
MW02-02	MW02-02	1.2-4.3	22-Sep-15	5.220	41.24	42.258	25	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
MW02-02	MW02-02	1.2-4.3	31-Mar-16	5.220	41.24	42.258	8	nd	nd	3.470	37.788	0.9	7.05	12.34	671	0.575	0.44	3.9	Clear	
MW02-02	ns	1.2-4.3	8-Sep-16	5.220	41.24	42.258	85	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
MW02-03	MW02-03	1.5-4.6	29-Apr-04	6.000	41.43	43.387	175	nd	nd	3.510	37.877	mm	6.55	11.2	62.8	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	13-Oct-04	6.084	41.43	43.387	5	nd	nd	3.480	37.907	mm	6.51	13.6	263	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	21-Apr-05	6.000	41.43	43.387	mm	nd	nd	3.335	38.053	mm	6.51	11.7	274	mm	mm	mm	mm	mm
A2-MW02-03	MW02-03	1.5-4.6	13-Sep-05	6.000	41.43	43.387	mm	nd	nd	3.360	38.441	mm	6.67	11.4	313	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	27-Mar-06	6.030	41.43	43.387	100	nd	nd	3.730	39.597	mm	6.56	11	169.7	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	29-Aug-06	6.040	41.43	43.387	mm	nd	nd	3.110	38.267	0.11	6.65	16.2	88.1	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	16-Apr-07	6.050	41.43	43.387	10	nd	nd	2.910	40.477	mm	6.53	12.8	210	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	4-Sep-07	6.050	41.43	43.387	90	nd	nd	3.015	38.377	0.15	6.5	12.9	204	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	8-Apr-08	6.018	41.43	43.387	50	nd	nd	2.730	38.657	0.22	8.38	8.9	251	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	8-Sep-08	6.043	41.43	43.387	80	nd	nd	2.955	38.432	0.4	7.03	12.3	239	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	30-Apr-09	6.025	41.43	43.387	20	nd	nd	2.917	38.470	0.6	6.55	10.4	60	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	2-Sep-09	6.030	41.43	43.387	nd	nd	nd	2.950	38.397	0.1	6.81	14.7	512	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	11-May-10	6.040	41.43	43.387	285	nd	nd	2.950	38.451	0.12	6.45	13.5	210	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	13-Sep-10	6.040	41.43	43.387	nd	nd	nd	2.660	38.727	0.14	6.45	13	222	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	13-May-11	6.045	41.43	43.387	0	nd	nd	2.605	37.782	0.1	6.54	11	227	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	1-Sep-11	6.025	41.43	43.387	30	nd	nd	3.480	36.507	3.79	6.33	12.86	210	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	23-May-12	6.040	41.43	43.387	mm	nd	nd	3.485	36.587	0.5	6.53	12.1	373	mm	mm	mm	mm	mm
MW02-03	ns	1.5-4.6	13-Aug-12	6.020	41.43	43.387	mm	nd	nd	3.650	36.361	mm	6.53	12.8	210	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	26-Mar-13	6.030	41.43	43.387	35	nd	nd	3.085	37.302	0.19	5.54	11.27	701	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	8-Aug-13	6.050	41.43	43.387	mm	nd	nd	3.670	36.431	mm	6.53	12.8	210	mm	mm	mm	mm	mm
MW02-03	MW02-03	1.5-4.6	8-Aug-13	6.050	41.43	43.387	mm	nd	nd	3.780	37.607	0.36	5.91	10.68	317	0.262	0.21	18.9	Clear	
MW02-03	MW02-03	1.5-4.6	7-Aug-14	6.040	41.43	43.387	110	nd	nd	3.470	37.017	0.72	5.83	12.79	157	0.132	0.10	4.2	Clear	
MW02-03	MW02-03	1.5-4.6	11-May-15	6.040	41.43	43.387	mm	nd	nd	3.075	36.312	mm	6.29	11.89	146	0.127	0.09	6.7	Clear	
MW02-03	ns	1.5-4.6	22-Sep-15	6.055	41.43	43.387	250	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
MW02-03	MW02-03	1.5-4.6	31-Mar-16	6.040	41.43	43.387	75	nd	nd	3.430	36.957	0.99	5.74	12.52	315	0.268	0.2	126.3	Clear	
MW02-03	ns	1.5-4.6	8-Sep-16	6.030	41.43	43.387	mm	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Clear	
MW02-04	MW02-04	1.5-4.6	29-Apr-04	5.980	41.71	44.685	100	nd	nd	3.190	38.695	mm	6.66	11.7	211	mm	mm	mm	mm	mm
MW02-04	MW02-04	1.5-4.6	13-Oct-04	5.955	41.71	44.685	175	nd	nd	3.162	38.923	mm	6.96	14.6	777	mm	mm	mm	mm	mm
MW02-04	MW02-04	1.5-4.6	21-Apr-05	5.680	41.71	44.685	mm	nd	nd	2.939	38.746	mm	6.61	12.9	1136	mm	mm	mm	mm	mm
A2-MW02-04	MW02-04	1.5-4.6	13-Sep-05	6.000	41.71	44.685	mm	nd	nd	3.670	39.065	mm	6.96	12.9	1054	mm	mm	mm	mm	mm
MW02-04	MW02-04	1.5-4.6	27-Mar-06	5.950	41.71	44.685	5	nd	nd	2.850	38.835	mm	6.76	11.1	258	mm	mm	mm	mm	mm
A2-MW02-04	MW02-04	1.5-4.6	29-Aug-06	6.010	41.71	44.685	mm	nd	nd	3.390	38.298	mm	6.53	12.19	140	mm	mm	mm	mm	mm
MW02-04	MW02-04	1.5-4.6	16-Apr-07	6.020	41.71	44.685	10	nd	nd	2.950	39.735	mm	6.53	12.8	210	mm	mm	mm	mm	mm
MW02-04	MW02-04	1.5-4.6	4-Sep-07	6.040	41.71	44.685	170	nd	nd	3.280	38.405	0.14	6.95	12.7	1495	mm	mm	mm	mm	mm
MW02-04	A2-MW02-04	1.5-4.6	8-Aug-08	6.038	41.71	44.685	mm	nd	nd	2.607	38.988	mm	6.23	11.5	313	mm	mm	mm	mm	mm
MW02-04	A2-MW02-04	1.5-4.6	8-Sep-08	6.039	41.71	44.685	130	nd	nd	3.298	38.387									

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNHAM REFINERY

Well ID	Sample ID	Screened Interval (mbs)	Date Sampled	Top of Well (m TWC)	Ground Elevation (m TWC)	Top of Screen (m TWC)	Depth of Screen (m TWC)	Headspace (m TWC)	Headspace Vapour Concentration (ppmv)	Depth of Product (m TWC)	Apparent Product Thickness (mm)	Depth to Water (m TWC)	Groundwater Elevation (m TWC)	Observed Oxygen (mg/L)	Temperature (°C)	Resistivity (ohm-cm)	TDS (g/L)	Salinity (ppt)	KDP (mv)	Observations
ANM09-08	ANM09-08	9.10-10.83	8-Apr-11	11.478	38.59	39.366	90	nd	na	2.145	37.224	0.7	6.47	10.2	336	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	8-Sep-11	11.568	38.59	39.366	90	nd	na	3.529	38.81	2.62	6.63	12.01	444	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	9-May-12	11.570	38.59	39.366	110	nd	na	8.310	31.056	7.12	6.83	11.38	353	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	12-May-12	11.570	38.59	39.366	110	nd	na	8.310	31.056	7.12	6.83	11.38	353	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	25-Mar-13	11.560	38.59	39.366	60	nd	na	7.130	32.236	0.34	6.07	10.44	195	nm	nm	nm	Clear	DUP-1
ANM09-08	ANM09-08	9.10-10.83	19-Aug-13	11.565	38.59	39.366	1430	nd	na	10.380	28.986	1.58	6.8	12.57	476	nm	nm	nm	Clear	Silvery odour. BTEX and metals on Aug 19, ambers on Aug 20.
ANM09-08	ANM09-08	9.10-10.83	20-Apr-14	11.560	38.59	39.366	90	nd	na	5.660	33.706	2.1	6.53	10.15	188	nm	nm	nm	Clear	DUP-12
ANM09-08	ANM09-08	9.10-10.83	12-Aug-14	11.580	38.59	39.366	35	nd	na	8.970	30.396	1.71	6.86	13.67	380	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	5-May-15	11.570	38.59	39.366	90	nd	na	8.950	30.386	1.62	6.86	11.54	240	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	24-Mar-16	11.570	38.59	39.366	90	nd	na	10.200	28.986	1.58	6.86	12.56	384	nm	nm	nm	Clear	DUP-4: Turbid, Purged & L
ANM09-08	ANM09-08	9.10-10.83	22-Mar-16	11.580	38.59	39.366	90	nd	na	6.775	32.593	0.17	6.44	11.06	168	nm	nm	nm	Clear	
ANM09-08	ANM09-08	9.10-10.83	25-Aug-16	11.580	38.59	39.366	75	nd	na	3.950	35.435	0.64	6.87	13.9	321	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	20-Apr-10	6.080	38.88	38.835	>11000	nd	na	4.010	34.875	0.2	6.29	10.3	878	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	14-Sep-10	6.060	38.88	38.835	300	nd	na	5.200	34.635	0.29	6.47	11.9	90	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	31-Mar-11	6.072	38.88	38.835	>11000	nd	na	3.284	36.551	0.45	6.32	11.4	769	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	14-May-12	6.070	38.88	38.835	1210	nd	na	4.600	35.035	1.14	6.24	10.23	458	nm	nm	nm	Clear	DUP-6
ANM09-10	ANM09-10	2.25-2.22	13-Aug-12	6.070	38.88	38.835	35	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Not sampled
ANM09-10	ANM09-10	2.25-2.22	25-Mar-13	6.070	38.88	38.835	300	nd	na	5.100	34.735	0.37	5.81	10.4	701	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	15-Aug-13	6.070	38.88	38.835	200	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-10	ANM09-10	2.25-2.22	30-Apr-14	6.070	38.88	38.835	400	nd	na	4.970	34.865	0.42	6.1	10.92	516	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	12-Aug-14	6.070	38.88	38.835	>11000	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-10	ANM09-10	2.25-2.22	6-May-15	6.070	38.88	38.835	40	nd	na	6.880	33.945	0.8	6.88	12.8	508	nm	nm	nm	Clear	Div. Pumped 150 mL. No recovery
ANM09-10	ANM09-10	2.25-2.22	25-Aug-15	6.070	38.88	38.835	75	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-10	ANM09-10	2.25-2.22	22-Mar-16	6.070	38.88	38.835	75	nd	na	5.280	34.535	0.6	6.88	12.8	78	nm	nm	nm	Clear	
ANM09-10	ANM09-10	2.25-2.22	9-Sep-16	6.080	38.88	38.835	100	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-11	ANM09-11	2.05-0.05	20-Apr-10	6.070	39.13	40.162	>11000	nd	na	2.120	38.042	0.06	5.01	10.5	1021	nm	nm	nm	Clear	Clear, not sampled
ANM09-11	ANM09-11	2.05-0.05	14-Sep-10	nm	39.13	40.162	9240	3500	490	3.990	36.212	nm	nm	nm	nm	nm	nm	Clear	NAPL not sampled	
ANM09-11	ANM09-11	2.05-0.05	31-Mar-11	nm	39.13	40.162	2070	1824	13	3.937	36.225	nm	nm	nm	nm	nm	nm	Clear	Product, Not sampled	
ANM09-11	ANM09-11	2.05-0.05	9-May-12	6.100	39.13	40.162	950	nd	na	2.810	37.055	0.17	6.84	10.36	630	nm	nm	nm	Clear	Div. Not sampled
ANM09-11	ANM09-11	2.05-0.05	13-Aug-12	5.170	39.13	40.162	4990	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Not sampled
ANM09-11	ANM09-11	2.05-0.05	25-Mar-13	6.080	39.13	40.162	1100	nd	na	2.830	37.232	0.04	6.04	10.44	484	nm	nm	nm	Clear	Div. Not sampled
ANM09-11	ANM09-11	2.05-0.05	15-Aug-13	6.060	39.13	40.162	1100	nd	na	6.010	34.152	nm	nm	nm	nm	nm	nm	Clear	Too shallow to sample	
ANM09-11	ANM09-11	2.05-0.05	30-Apr-14	6.060	39.13	40.162	900	nd	na	3.140	37.072	1.87	6.53	9.39	399	nm	nm	nm	Clear	Shoem. Clear
ANM09-11	ANM09-11	2.05-0.05	12-Aug-14	6.060	39.13	40.162	900	nd	na	4.960	35.112	0.55	6.11	11.26	62	nm	nm	nm	Clear	Div. Not sampled
ANM09-11	ANM09-11	2.05-0.05	6-May-15	6.060	39.13	40.162	870	nd	na	4.870	35.252	0.93	6.04	10.88	456	nm	nm	nm	Clear	Hydrocarbon odour. Sampled May 7
ANM09-11	ANM09-11	2.05-0.05	25-Aug-15	6.060	39.13	40.162	1320	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Not sampled
ANM09-11	ANM09-11	2.05-0.05	22-Mar-16	6.060	39.13	40.162	1320	nd	na	3.395	36.767	0.09	6.68	10.46	307	nm	nm	nm	Clear	Shoem in the sample, DUP-11
ANM09-11	ANM09-11	2.05-0.05	9-Sep-16	6.060	39.13	40.162	200	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-12	ANM09-12	2.145-1.4	20-Apr-10	6.080	39.62	40.561	200	nd	na	3.150	37.411	0.18	4.77	9.9	484	nm	nm	nm	Clear	
ANM09-12	ANM09-12	2.145-1.4	14-Sep-10	6.035	39.62	40.561	280	nd	na	4.960	35.601	0.3	5.99	12.4	500	nm	nm	nm	Clear	Clear, trace fine sediment, LEPAH/EPH one jar only
ANM09-12	ANM09-12	2.145-1.4	31-Mar-11	6.080	39.62	40.561	90	nd	na	2.420	38.135	4.55	6.15	11.1	4	nm	nm	nm	Clear	Turbid
ANM09-12	ANM09-12	2.145-1.4	8-Sep-11	6.067	39.62	40.561	45	nd	na	5.710	34.851	nm	nm	nm	nm	nm	nm	Clear	Purged div at 0.6 L. Insufficient water to collect sample	
ANM09-12	ANM09-12	2.145-1.4	9-May-12	6.060	39.62	40.561	3	nd	na	3.570	35.991	5.14	5.74	9.76	125	nm	nm	nm	Clear	Turbid
ANM09-12	ANM09-12	2.145-1.4	13-May-12	6.060	39.62	40.561	35	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Not sampled
ANM09-12	ANM09-12	2.145-1.4	25-Mar-13	6.060	39.62	40.561	>11000	nd	na	2.770	37.751	2.13	4.92	9.6	70	nm	nm	nm	Clear	
ANM09-12	ANM09-12	2.145-1.4	6-May-13	6.060	39.62	40.561	90	nd	na	2.990	37.513	1.96	5.54	9.39	74	nm	nm	nm	Clear	
ANM09-12	ANM09-12	2.145-1.4	30-Apr-14	6.060	39.62	40.561	25	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-12	ANM09-12	2.145-1.4	12-Aug-14	6.060	39.62	40.561	25	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-12	ANM09-12	2.145-1.4	6-May-15	6.060	39.62	40.561	5	nd	na	4.590	36.971	6.73	5.55	11.26	62	nm	nm	nm	Clear	Div. Not sampled
ANM09-12	ANM09-12	2.145-1.4	25-Aug-15	6.060	39.62	40.561	5	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Sediment on probe
ANM09-12	ANM09-12	2.145-1.4	22-Mar-16	6.060	39.62	40.561	90	nd	na	2.810	37.751	2.09	6.63	10.59	66	nm	nm	nm	Clear	Div. Not sampled
ANM09-12	ANM09-12	2.145-1.4	9-Sep-16	6.070	39.62	40.561	90	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-13	ANM09-13	2.025-0.02	20-Apr-10	6.150	41.54	42.575	45	nd	na	3.815	38.760	0.22	4.79	10.6	537	nm	nm	nm	Clear	Slight turbidity
ANM09-13	ANM09-13	2.025-0.02	14-Sep-10	6.040	41.54	42.575	45	nd	na	3.660	38.915	0.4	5.4	13.3	699	nm	nm	nm	Clear	
ANM09-13	ANM09-13	2.025-0.02	5-May-11	6.030	41.54	42.575	55	nd	na	3.085	39.490	0.23	5.02	11.8	189	nm	nm	nm	Clear	View utility MFG indicated should be sampled again tomorrow due too tall. Did not submit sample.
ANM09-13	ANM09-13	2.025-0.02	9-May-12	6.030	41.54	42.575	55	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. No sample
ANM09-13	ANM09-13	2.025-0.02	23-May-12	6.040	41.54	42.575	10	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-13	ANM09-13	2.025-0.02	13-May-13	6.040	41.54	42.575	10	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Not sampled
ANM09-13	ANM09-13	2.025-0.02	26-Mar-13	6.030	41.54	42.575	20	nd	na	3.335	39.260	6.34	4.92	9.44	51	nm	nm	nm	Clear	
ANM09-13	ANM09-13	2.025-0.02	8-Aug-13	6.010	41.54	42.575	5	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	
ANM09-13	ANM09-13	2.025-0.02	14-May-14	6.010	41.54	42.575	10	nd	na	2.630	39.465	0.62	5.33	11.41	636	nm	nm	nm	Clear	Div.
ANM09-13	ANM09-13	2.025-0.02	7-Aug-14	6.015	41.54	42.575	140	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div.
ANM09-13	ANM09-13	2.025-0.02	11-May-15	6.000	41.54	42.575	55	nd	na	4.000	38.575	2.32	5.44	10.58	74	nm	nm	nm	Clear	Div. Not sampled
ANM09-13	ANM09-13	2.025-0.02	25-Aug-15	6.010	41.54	42.575	5	nd	na	nd	nd	nd	nd	nd	nd	nm	nm	nm	Clear	Div. Sediment on probe
ANM09-13	ANM09-13	2.025-0.02	22-Mar-16	6.030	41.54	42.575	5	nd	na	2.835	39.740	0								

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNHAM REFINERY

Well ID	Sample ID	Screened Interval (mbs)	Date Sampled	Total Depth of Well (ft from TCC)	Ground Elevation (m)	Total Depth of Well (ft from TCC)	Top of Oil/Gas Elevation (m)	Headspace Vapour Concentration (mg/L)	Depth of Product from TCC (m)	Apparent Product Thickness (mm)	Depth to Water (ft from TCC)	Groundwater Elevation (m)	Observed Oxygen (mg/L)	Temperature (°C)	Resistivity Conductivity (µmhos/cm)	Turbidity (NTU)	Salinity (ppt)	DQP (mV)	Observations	
MW11-40	MW11-40	18.5-20	26-Aug-15	20,455	41.89	41.8	25	nd	na	na	7,990	33,810	0.14	5.55	12.56	871	0.742	0.57	180.7	Clear
MW11-40	MW11-40	18.5-20	22-Mar-16	20,420	41.90	41.9	25	nd	na	na	6,430	33,470	0.24	6.64	11.13	793	0.74	0.53	181.3	Clear, DUP-12
MW11-40	MW11-40	18.5-20	22-Aug-16	20,530	41.89	41.9	nd	nd	na	na	7,220	34,680	0.32	5.37	12.15	882	0.76	0.59	82.7	Clear
WS1	WS1	0.5-3.5	22-Apr-04	2,800	39.34	39.442	250	nd	na	na	2,280	37,162	nm	6.45	10.6	112.2	nm	nm	nm	Sampled Oct 19. Not enough water to measure parameters
WS1	WS-1	0.5-3.5	19-Oct-04	2,441	39.34	39.442	125	nd	na	na	2,168	37,274	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS-1	0.5-3.5	14-Apr-05	2,460	39.34	39.442	75	nd	na	na	1,110	36,352	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS-1	0.5-3.5	14-Sep-05	2,450	39.34	39.442	nd	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS-1	0.5-3.5	20-Mar-06	2,800	39.34	39.442	50	nd	na	na	1,360	36,077	8.86	6.53	8.4	801	nm	nm	nm	Clear
WS1	WS-1	0.5-3.5	21-Apr-06	2,800	39.34	39.442	50	nd	na	na	1,360	36,077	8.86	6.53	8.4	801	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	10-Apr-07	2,780	39.34	39.442	40	nd	na	na	1,670	37,772	4.28	6.57	9.1	126.5	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	20-Apr-07	2,780	39.34	39.442	75	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	1-Apr-08	2,795	39.34	39.442	30	nd	na	na	1,529	37,913	5.74	6.57	8.4	22.4	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	27-Aug-08	2,795	39.34	39.442	50	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	28-Apr-09	2,783	39.34	39.442	75	nd	na	na	1,796	37,646	9	6.39	9.8	243	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	26-Aug-09	2,790	39.34	39.442	0	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	12-Apr-10	2,800	39.34	39.442	35	nd	na	na	1,315	38,127	4.9	6.15	9.1	110.6	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	8-Sep-10	2,780	39.34	39.442	nd	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Purged 2 L. Dwg. Waited until well recovered and sampled. Low turbidity.
WS1	WS1	0.5-3.5	14-Apr-11	2,790	39.34	39.442	nd	nd	na	na	1,414	38,028	2.96	6.83	8.2	121	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	24-Mar-11	2,785	39.34	39.442	nd	nd	na	na	165	37.296	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	30-Mar-12	2,790	39.34	39.442	nd	nd	na	na	2,680	36,792	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	22-Aug-12	2,790	39.34	39.442	nd	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	24-Apr-13	2,790	39.34	39.442	80	nd	na	na	1,380	38,062	4.52	6.25	9.29	71	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	21-Aug-13	2,790	39.34	39.442	10	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	20-Mar-14	2,780	39.34	39.442	nd	nd	na	na	2,330	37,332	nm	nm	nm	nm	nm	nm	nm	Clear
WS1	WS1	0.5-3.5	22-Aug-14	2,790	39.34	39.442	10	nd	na	na	na	na	nm	nm	nm	nm	nm	nm	nm	Purged dry, slightly turbid
WS1-D	WS1-D	4.6-7.6	22-Apr-04	7,670	39.34	39.278	100	nd	na	na	5,760	33,518	nm	6.69	10.5	148	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	18-Oct-04	7,775	39.34	39.278	180	nd	na	na	5,869	33,409	nm	6.16	12.2	430	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	14-Apr-05	7,770	39.34	39.278	75	nd	na	na	5,520	34,726	nm	6.69	10.8	187	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	14-Sep-05	7,706	39.34	39.278	nd	nd	na	na	5,885	34,201	nm	6.84	11.6	406	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	20-Mar-06	7,700	39.34	39.278	90	nd	na	na	5,590	33,688	0.44	6.64	10.5	103	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	21-Apr-06	7,700	39.34	39.278	90	nd	na	na	5,590	33,688	0.44	6.64	10.5	103	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	10-Apr-07	7,700	39.34	39.278	130	nd	na	na	5,510	33,768	0.09	7.61	10.4	311	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	30-Apr-07	7,660	39.34	39.278	220	nd	na	na	4,460	34,816	0.25	7.84	10.8	316	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	1-Apr-08	7,678	39.34	39.278	20	nd	na	na	5,665	33,580	0.54	7.24	10	268	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	27-Aug-08	7,704	39.34	39.278	50	nd	na	na	6,112	33,166	0.1	7.53	11	352	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	28-Apr-09	7,656	39.34	39.278	nd	nd	na	na	5,851	33,376	0.2	6.68	10.8	472	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	26-Aug-09	7,670	39.34	39.278	100	nd	na	na	6,050	33,278	nm	6.17	13.1	443	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	12-Apr-10	7,680	39.34	39.278	nd	nd	na	na	5,505	33,773	0.09	6.51	10	159.5	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	8-Sep-10	7,680	39.34	39.278	nd	nd	na	na	6,060	33,278	nm	6.27	12.7	544	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	14-Apr-11	7,688	39.34	39.278	55	nd	na	na	5,420	33,858	0.93	6.26	9.4	144	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	21-Aug-11	7,650	39.34	39.278	90	nd	na	na	5,925	33,253	0.57	7.35	10.9	316	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	30-Mar-12	7,670	39.34	39.278	nd	nd	na	na	5,890	33,426	0.07	7.18	10.19	247	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	22-Aug-12	7,680	39.34	39.278	230	nd	na	na	5,910	33,368	0.43	6.97	11.31	349	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	24-Apr-13	7,670	39.34	39.278	65	nd	na	na	5,420	33,858	0.52	5.54	10.15	102	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	21-Aug-13	7,660	39.34	39.278	85	nd	na	na	5,870	33,388	nm	6.09	11.88	243	nm	nm	nm	Clear
WS1-D	WS1-D	4.6-7.6	20-Mar-14	7,665	39.34	39.278	90	nd	na	na	5,640	34,638	1.5	6.79	10.11	185	0.148	0.12	39.5	Clear
WS1-D	WS1-D	4.6-7.6	22-Aug-14	7,670	39.34	39.278	100	nd	na	na	5,890	33,288	1.25	6.04	12.57	427	0.12	0.07	73.3	Clear
WS1-D	WS1-D	4.6-7.6	17-Mar-15	7,670	39.34	39.278	140	nd	na	na	5,600	34,678	0.42	6.88	11.02	229	0.203	0.15	48.9	Clear
WS1-D	WS1-D	4.6-7.6	17-Aug-15	7,630	39.34	39.278	100	nd	na	na	5,880	33,388	0.33	7.40	11.98	355	0.307	0.23	13.9	Clear
WS1-D	WS1-D	4.6-7.6	8-Mar-16	7,640	39.34	39.278	60	nd	na	na	5,130	34,148	0.13	7.28	11.93	330	0.07	0.07	73.3	Clear
WS1-D	WS1-D	4.6-7.6	8-Aug-16	7,640	39.34	39.278	60	nd	na	na	5,650	33,458	1.16	7.04	11.47	345	0.303	0.23	32.4	Clear
WS1-D1	WS1-D1	13.7-15.2	20-Mar-06	15,000	39.75	39.619	20	nd	na	na	6,900	32,719	0.79	8.22	10.8	11.2	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	21-Aug-06	15,010	39.75	39.619	10	nd	na	na	7,265	32,354	1.16	9.29	12.5	225	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	10-Apr-07	15,000	39.75	39.619	0	nd	na	na	6,600	33,018	0.14	7.28	11.8	248	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	29-Aug-07	15,040	39.75	39.619	80	nd	na	na	8,640	30,979	0.16	8.72	14.8	312	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	1-Apr-08	15,035	39.75	39.619	10	nd	na	na	8,897	32,722	0.22	8.02	13.0	276	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	23-Oct-08	15,034	39.75	39.619	5	nd	na	na	8,341	32,478	0.2	8.54	13.3	241	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	28-Apr-09	15,013	39.75	39.619	50	nd	na	na	7,595	32,024	0.5	8.53	11.2	549	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	26-Aug-09	15,011	39.75	39.619	110	nd	na	na	7,265	32,491	0.27	8.15	11.4	244	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	12-Apr-10	15,035	39.75	39.619	nd	nd	na	na	6,305	33,914	0.11	8.62	10.5	263	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	9-Sep-10	15,000	39.75	39.619	nd	nd	na	na	7,750	31,899	0.08	8.37	11.8	305	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	15-Oct-10	15,018	39.75	39.619	5	nd	na	na	6,549	32,075	nm	8.29	11.9	268	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	25-Aug-11	15,015	39.75	39.619	nd	nd	na	na	7,200	32,419	6.39	8.18	11.02	150	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	30-Mar-12	15,010	39.75	39.619	nd	nd	na	na	6,980	32,426	nm	8.17	10.82	231	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	22-Aug-12	15,010	39.75	39.619	nd	nd	na	na	7,240	32,379	0.41	8.33	12.26	231	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	24-Apr-13	15,000	39.75	39.619	5	nd	na	na	6,540	33,079	0.51	9.33	11.52	199	nm	nm	nm	Clear
WS1-D1	WS1-D1	13.7-15.2	22-Aug-13	15,000	39.75	39.619	25	nd	na	na	7,320	32,295	nm	7.46	14.95	365	nm	nm	nm	Clear
WS1-D1																				

AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM

Well ID	Sample ID	Screened Interval	Date Sampled	East Corner of Well (ft on TOC)	Ground Elevation (ftMSL)	Top of Confined Elevations (ftMSL)	Headwater Elevation (ftMSL)	Headwater Pressure (psi)	Depth to Product (ft on TOC)	Depth to Water (ft on TOC)	Depth to Gas (ft on TOC)	Temperature (°C)	Electrical Conductivity (uS/cm)	TDS (g/L)	Salinity (ppt)	Cap (mV)	Observations		
WS2-03	WS2-03	12.2-13.7	10-Mar-16	12,350	40.56	40.475	15	na	na	4.500	35.975	0.3	7.29	10.31	185	0.168	0.12	195.8	Clear
WS2-03	WS2-03	12.2-13.7	8-Aug-16	12,225	40.56	40.475	15	na	na	7.070	33.405	0.62	7.2	13.08	251	0.211	0.16	-77.8	Clear
WS2-04	A2WS2-04	13.7-15.2	14-Sep-05	15,085	40.33	40.277	na	na	7.785	32.962	na	8.26	11.2	424	na	na	na	na	na
WS2-04	WS2-04	13.7-15.2	21-Aug-06	15,080	40.33	40.277	20	na	na	5.880	34.957	1.28	8.12	12.1	304	na	na	na	na
WS2-04	WS2-04	13.7-15.2	15-Sep-09	15,100	40.33	40.277	20	na	na	7.340	32.997	1.28	8.12	12.1	304	na	na	na	na
WS2-04	WS2-04	13.7-15.2	10-Apr-07	15,300	40.33	40.277	100	na	na	6.710	34.087	0.14	7.59	10.9	456	na	na	na	na
WS2-04	WS2-04	13.7-15.2	10-Sep-09	15,350	40.33	40.277	na	na	na	9.240	32.977	na	8.71	18	na	na	na	na	na
WS2-04	WS2-04	13.7-15.2	1-Lar-08	15,188	40.33	40.277	25	na	na	6.824	34.413	0.13	8.29	9.7	311	na	na	na	na
WS2-04	WS2-04	13.7-15.2	23-Mar-12	15,350	40.33	40.277	na	na	na	9.240	32.977	na	8.71	18	na	na	na	na	na
WS2-04	WS2-04	13.7-15.2	25-Aug-09	15,108	40.33	40.277	25	na	na	8.865	31.413	0.4	7.65	11.4	709	na	na	na	Clear
WS2-04	WS2-04	13.7-15.2	26-Aug-09	15,120	40.33	40.277	20	na	na	7.500	32.777	0.6	7.18	11.5	361	na	na	na	Clear
WS2-04	WS2-04	13.7-15.2	10-Sep-10	15,110	40.33	40.277	na	na	na	5.425	34.852	0.3	7.67	10.2	101	na	na	na	Clear
WS2-04	WS2-04	13.7-15.2	8-Sep-10	15,090	40.33	40.277	15	na	na	9.140	31.137	0.19	7.46	11.8	341	na	na	na	Clear
WS2-04	WS2-04	13.7-15.2	12-Apr-11	15,015	40.33	40.277	na	na	na	6.765	33.574	0.73	7.14	11.5	417	na	na	na	na
WS2-04	WS2-04	13.7-15.2	8-Aug-11	15,000	40.33	40.277	na	na	na	7.692	32.677	1.33	7.35	10.5	417	na	na	na	na
WS2-04	WS2-04	13.7-15.2	28-Mar-12	15,110	40.33	40.277	25	na	na	7.070	33.207	0.83	7.27	10.93	325	na	na	na	na
WS2-04	WS2-04	13.7-15.2	10-Sep-12	15,100	40.33	40.277	na	na	na	7.010	32.100	1.48	6.49	12.11	445	na	na	na	na
WS2-04	WS2-04	13.7-15.2	13-Aug-13	15,080	40.33	40.277	25	na	na	5.830	34.447	0.85	7.49	11.37	238	na	na	na	Clear
WS2-04	WS2-04	13.7-15.2	20-Aug-13	15,100	40.33	40.277	15	na	na	7.630	32.647	0.5	7.18	11.7	247	na	na	na	na
WS2-04	WS2-04	13.7-15.2	23-Mar-14	15,098	40.33	40.277	na	na	na	6.490	32.767	0.98	7.07	10.39	178	na	na	na	Clear
WS2-04	WS2-04	13.7-15.2	22-Apr-14	15,100	40.33	40.277	30	na	na	7.840	32.497	1.47	7.28	11.05	263	0.213	0.16	-87.7	Clear
WS2-04	WS2-04	13.7-15.2	10-Sep-14	15,100	40.33	40.277	40	na	na	6.490	32.767	na	7.20	11.21	236	0.225	0.18	-54.6	Clear
WS2-04	WS2-04	13.7-15.2	17-Aug-15	15,080	40.33	40.277	100	na	na	7.590	33.087	0.60	7.70	11.89	311	0.27	0.20	-77.1	Clear
WS2-04	WS2-04	13.7-15.2	10-Mar-16	15,150	40.33	40.277	5	na	na	4.840	35.437	0.27	7.57	10.71	254	0.228	0.17	-65.3	DUP-4
WS2-04	WS2-04	13.7-15.2	9-Aug-16	15,033	40.33	40.277	5	na	na	33.170	0.933	7.56	31.52	389	0.253	0.19	-78.2	Clear; DUP-2	
WS2-05	WS2-05	22.6-25.6	20-Mar-06	24,200	40.65	40.579	30	na	na	7.020	32.975	1.56	6.87	10.8	180	na	na	na	na
WS2-05	WS2-05	22.6-25.6	21-Aug-06	24,150	40.65	40.579	20	na	na	6.880	31.899	1.81	8.44	12.1	263	na	na	na	na
WS2-05	WS2-05	22.6-25.6	10-Apr-07	24,200	40.65	40.579	125	na	na	7.470	33.109	0.25	9.17	10.8	263	na	na	na	DUP (WS2-DX)
WS2-05	WS2-05	22.6-25.6	21-Aug-07	24,600	40.65	40.579	100	na	na	9.540	31.990	0.1	8.44	15.7	193	na	na	na	na
WS2-05	WS2-05	22.6-25.6	1-Lar-08	24,442	40.65	40.579	20	na	na	7.834	32.745	0.13	8.99	9.5	238	na	na	na	na
WS2-05	WS2-05	22.6-25.6	27-Jun-08	24,172	40.65	40.579	75	na	na	8.820	30.765	na	9.42	11.4	292	na	na	na	na
WS2-05	WS2-05	22.6-25.6	22-Sep-08	24,360	40.65	40.579	75	na	na	8.664	31.529	0.2	9.21	11.4	318	na	na	na	Silty
WS2-05	WS2-05	22.6-25.6	26-Aug-09	24,720	40.65	40.579	50	na	na	8.420	32.099	0.3	9.09	11.7	288	na	na	na	Cloudy
WS2-05	WS2-05	22.6-25.6	22-Aug-10	24,440	40.65	40.579	10	na	na	7.090	33.440	0.13	8.79	10.3	150	na	na	na	Transparent (milky white); DUP WS2-DX
WS2-05	WS2-05	22.6-25.6	9-Sep-10	24,350	40.65	40.579	15	na	na	9.240	31.339	0.07	8.82	12.4	318	na	na	na	Purged dry. Samples slightly turbid
WS2-05	WS2-05	22.6-25.6	14-Apr-11	24,415	40.65	40.579	na	na	na	7.533	32.065	na	8.75	10.6	268	na	na	na	Slightly turbid
WS2-05	WS2-05	22.6-25.6	18-Aug-11	24,460	40.65	40.579	100	na	na	8.740	31.819	0.13	7.81	11.89	277	na	na	na	1.889 (DUP-5)
WS2-05	WS2-05	22.6-25.6	28-Mar-12	24,450	40.65	40.579	5	na	na	8.810	32.289	2.88	9.49	11.19	247	na	na	na	Too silty to sample; lagoon pump
WS2-05	WS2-05	22.6-25.6	10-Sep-12	24,460	40.65	40.579	na	na	na	6.625	31.860	0.65	8.67	10.31	231	na	na	na	Purged almost dry at 80.1; too silty to sample same day
WS2-05	WS2-05	22.6-25.6	25-Aug-13	24,500	40.65	40.579	na	na	na	7.910	32.789	0.2	8.99	11.34	212	na	na	na	Purged Dry at 55.1 on Apr 24. Sampled Apr 25
WS2-05	WS2-05	22.6-25.6	21-Aug-13	24,530	40.65	40.579	15	na	na	8.850	31.729	0.47	9.43	12.23	211	na	na	na	Turbid
WS2-05	WS2-05	22.6-25.6	21-Aug-13	24,580	40.65	40.579	na	na	na	8.010	31.860	0.13	8.79	11.2	222	0.389	0.14	-100.5	Clear
WS2-05	WS2-05	22.6-25.6	25-Aug-14	24,700	40.65	40.579	na	na	na	8.820	31.769	0.35	8.05	10.69	249	0.191	0.14	-30.6	Purged dry at 38.1
WS2-05	WS2-05	22.6-25.6	18-Sep-15	25,038	40.65	40.579	na	na	na	7.720	32.618	0.64	8.54	11.25	207	0.187	0.14	-146.7	Purged dry at 60.1. Sampled same day. Turbid
WS2-05	WS2-05	22.6-25.6	17-Aug-16	25,060	40.65	40.579	110	na	na	7.400	33.809	0.15	9.01	11.51	193	0.13	177.6	Clear. Purged dry at 47.1. Sampled 8/18 on Aug 17 at 13.11. Sampled LPH-EHPH on Aug 18 at 9.32. DUP-2	
WS2-05	WS2-05	22.6-25.6	8-Mar-16	25,100	40.65	40.579	5	na	na	7.270	33.309	4.81	9.04	10.23	186	0.179	0.13	-151.2	Purged dry at 80.1. Sampled on Mar 9
WS2-05	WS2-05	22.6-25.6	10-Aug-16	25,030	40.65	40.579	20	na	na	8.450	32.129	5.11	8.96	12.51	236	0.201	0.15	-98.1	Clear. Dry at 50.1
WS3	WS3	0.6-2.9	19-Oct-04	2,660	40.13	40.168	100	na	na	2,540	37.628	na	na	na	na	na	na	na	na
WS3	WS3	0.6-2.9	19-Oct-04	2,660	40.13	40.168	125	na	na	na	na	na	na	na	na	na	na	na	na
WS3	WS3	0.6-2.9	14-Apr-05	2,685	40.13	40.168	100	na	na	1,530	38.838	na	5.88	10.2	91	na	na	na	na
WS3	WS3	0.6-2.9	15-Mar-06	2,685	40.13	40.168	110	na	na	1,990	38.178	1.12	7.21	11.5	141	na	na	na	na
WS3	WS3	0.6-2.9	21-Aug-06	2,690	40.13	40.168	80	na	na	na	na	na	na	na	na	na	na	na	na
WS3	WS3	0.6-2.9	10-Apr-07	2,700	40.13	40.168	100	na	na	2,550	37.838	5.36	7.22	9.8	80.9	na	na	na	na
WS3	WS3	0.6-2.9	21-Aug-07	2,685	40.13	40.168	115	na	na	2,645	37.529	na	na	na	na	na	na	na	DUP (WS3-DX)
WS3	WS3	0.6-2.9	1-Lar-08	2,695	40.13	40.168	30	na	na	2,180	37.978	8.38	7.26	8.2	96.6	na	na	na	na
WS3	WS3	0.6-2.9	21-Aug-08	2,685	40.13	40.168	75	na	na	2,650	37.529	na	na	na	na	na	na	na	na
WS3	WS3	0.6-2.9	26-Aug-09	2,682	40.13	40.168	75	na	na	2,508	37.660	0.1	5.64	10.9	227	na	na	na	Div (rounded) returned instead at end of dist. Silty Div
WS3	WS3	0.6-2.9	26-Aug-09	2,694	40.13	40.168	50	na	na	na	na	na	na	na	na	na	na	na	Div
WS3	WS3	0.6-2.9	22-Aug-10	2,700	40.13	40.168	na	na	na	1,672	38.496	4.55	5.64	10.7	88.8	na	na	na	Div at 1. Trace amounts in sample
WS3	WS3	0.6-2.9	7-Sep-10	2,650	40.13	40.168	5	na	na	na	na	na	na	na	na	na	na	na	Div; no Samples
WS3	WS3	0.6-2.9	21-Aug-11	2,695	40.13	40.168	na	na	na	1,670	38.496	4.55	5.64	10.7	88.8	na	na	na	Div at 1. Trace amounts in sample
WS3	WS3	0.6-2.9	25-Aug-11	2,695	40.13	40.168	na	na	na	2,650	37.518	na	na	na	na	na	na	na	Div; No Samples
WS3	WS3	0.6-2.9	30-Mar-12	2,690	40.13	40.168	na	na	na	2,650	37.518	na	na	na	na	na	na	na	Too dry
WS3	WS3	0.6-2.9	20-Aug-12	2,680	40.13	40.168	10	na	na	2,650	37.518	na	na	na	na	na	na	na	Div; No Samples
WS3	WS3	0.6-2.9	24-Apr-13	2,685	40.13	40.168	10	na	na	1,780	38.389	9.41	5.27	10.36	42	na	na	na	Purged dry at 1.1. collected parameters on Apr 29. Silty. DUP-29
WS3	WS3	0.6-2.9	20-Aug-14	2,685	40.13	40.168	10	na	na	na	na	na	na	na	na	na	na	na	Div
WS3	WS3	0.6-2.9	28-Mar-14	2,680	40.13	40.168	5	na	na	2,640	37.528	na	na	na	na	na	na	na	Div
WS3	WS3	0.6-2.9	22-Aug-14	2,680	40.13	40.168	20	na	na	2,650	37.518	na	na	na	na	na	na	na	Div

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY

[illegible]

TABLE B-1
AREA 2 GROUNDWATER MONITORING DATA
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY

Well ID	Sample ID	Screened Interval (mbs)	Date Sampled	Total Depth of Well (m from TOC) Ground Elevation (mASL) Top of Casing Elevation (TOC, mASL) ¹ Headspace Vapour Concentration (ppmv) Depth to Product (m from TOC) Apparent Product Thickness (mm) Depth to Water (DTW, m from TOC) Groundwater Elevation (mASL) ¹ Dissolved Oxygen (mg/L) pH Temperature (°C) Electrical Conductivity (µS/cm) TDS (g/L) Salinity (ppt) Dep (m)	Observations
Notes:					
TOC	Top of casing				
BC	Ballot confirmed				
mASL	Metres above sea level				
mbs	Metres below ground surface				
mg/L	Milligrams per litre				
g/L	Grams per litre				
µS/cm	Microsiemens per centimetre				
mm	Millimetres				
m	Metres				
ppmv	Parts per million by volume				
ppt	Parts per thousand				
-	No comments				
mV	Millivolts				
ORP	Oxidation reduction potential				
TDS	Total dissolved solids				
HSVC	Headspace Vapour Concentration				
DUP	Duplicate				
nd	Not detected				
nm	Not monitored				
ns	Not sampled				
na	Not available				

¹ Elevations are in Chevron Datum - Geodetic Datum + 27.895 metres.

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPH _W ⁵	HEPH _W ⁵	EPH _W (C10-C19) ^{2,5}	EPH _W (C19-C32) ²	VH _W (C6-C10)	VPH _W	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴					(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards				500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	
CSR - Stage 9	No Specified Water Use Standards ⁵				NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards				500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10	No Specified Water Use Standards ⁵				NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date												
G2-3B	G2-3B	10.1-13.1		28-Apr-04	<300	<1000.	<300	<1000.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		15-Oct-04	<300	<1000.	<300	<1000.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		12-Apr-05	<300	<1000.	<300	<1000.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		13-Sep-05	<300	<1000.	<300	<1000.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		23-Mar-06	<250	<250.	<250	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	Dup4	10.1-13.1		23-Mar-06	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
QA/QC RPD					23-Mar-06	---	---	---	---	---	---	---	---	---	---	
G2-3B	G2-3B	10.1-13.1		24-Aug-06	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	DUP5	10.1-13.1		24-Aug-06	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
QA/QC RPD					24-Aug-06	---	---	---	---	---	---	---	---	---	---	
G2-3B	G2-3B	10.1-13.1		12-Apr-07	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		10-Sep-07	270.	<250.	270.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		1-Apr-08	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		2-Sep-08	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		28-Apr-09	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		1-Sep-09	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		14-Apr-10	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		9-Sep-10	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<0.71	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		18-Apr-11	<250.	<250.	<250.	<250.	<100	<100	<0.5	<1	<0.5	<0.71	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		9-Aug-11	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		18-May-12	<250.	<250.	<250.	<250.	<100	<100	<0.5	1.46	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1		22-Aug-12	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1299117-2	8-May-13	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1367083-1	23-Sep-13	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1461112-1	27-May-14	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1508365-3	26-Aug-14	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1583423-1	3-Mar-15	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	11.7	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1674072-3	16-Sep-15	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1743509-2	9-Mar-16	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	15.8	AW-/NU-
G2-3B	G2-3B	10.1-13.1	L1812426-5	11-Aug-16	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	19.	AW-/NU-
QA/QC RPD					11-Aug-16	---	---	---	---	---	---	---	---	---	---	
G2-3C	G2-3C	18.3-22.9		28-Apr-04	<300.	<1000.	<300	<1000.	140.	<100	91.1	<1	0.72	1.1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		15-Oct-04	<300.	<1000.	<300	<1000.	130.	<100	84.7	<1	<0.5	1.6	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		12-Apr-05	300.	<1000.	300.	<1000.	150.	<100	96.6	1.7	0.82	2.7	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		13-Sep-05	<300.	<1000.	<300	<1000.	200.	<100	141.	1.3	<0.5	2	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		23-Mar-06	---	---	<250.	<250.	160	<100	129	1.1	<0.5	2	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		22-Aug-06	---	---	<250.	<250.	100	<100	82.8	<1	<0.5	1.1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		12-Apr-07	---	---	<250.	<250.	<100	<100	46.6	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		10-Sep-07	---	---	<250.	<250.	<100	<100	29.9	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		1-Apr-08	---	---	<250.	<250.	<100	<100	21.7	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		2-Sep-08	---	---	250.	<250.	<100	<100	16.1	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		28-Apr-09	---	---	<250.	<250.	<100	<100	8.91	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		1-Sep-09	---	---	<250.	<250.	<100	<100	7.73	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		14-Apr-10	---	---	<250.	<250.	<100	<100	4.77	<1	<0.5	<1	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		9-Sep-10	---	---	<250.	<250.	<100	<100	<0.5	<1	<0.5	<0.71	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		18-Apr-11	---	---	<250.	<250.	<100	<100	<0.5	<1	<0.5	<0.71	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		9-Aug-11	---	---	<250.	<250.	<100	<100	0.51	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	DUP-3	18.3-22.9		9-Aug-11	---	---	<250.	<250.	<100	<100	0.53	<0.5	<0.5	<0.75	---	AW-/NU-
QA/QC RPD					9-Aug-11	---	---	---	---	---	---	---	---	---	---	
G2-3C	G2-3C	18.3-22.9		18-May-12	---	---	<250.	280.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9		22-Aug-12	---	---	<250.	<250.	<100	<100	0.59	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1299117-3	8-May-13	---	---	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1367083-2	23-Sep-13	---	---	<250.	<250.	<100	<100	1.17	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1461112-2	27-May-14	---	---	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1508365-4	26-Aug-14	---	---	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	DUP-17	18.3-22.9	L1508365-5	26-Aug-14	---	---	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
QA/QC RPD					26-Aug-14	---	---	---	---	---	---	---	---	---	---	
G2-3C	G2-3C	18.3-22.9	L1583423-2	3-Mar-15	<250.	<250.	<250.	<250.	<100	<100	0.69	<0.5	<0.5	<0.75	22.2	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1675019-2	17-Sep-15	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1743509-1	9-Mar-16	<250.	<250.	<250.	<250.	<100	<100	<0.5	<0.5	<0.5	<0.75	21.4	AW-/NU-
G2-3C	G2-3C	18.3-22.9	L1812426-6	11-Aug-16	<250.	<250.	<250.	<								

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPHw ⁵	HEPHw ⁵	EPH _{hw} (C10-C19) ^{2,5}	EPH _{hw} (C19-C32) ⁵	VHw (C6-C10)	VPH _{hw}	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴					(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	No Specified Water Use Standards ⁵	(AW)	(NU)	500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	No Specified Water Use Standards ⁵	(AW)	(NU)	500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	No Specified Water Use Standards ⁵	(AW)	(NU)	500.	NS	NS	NS	NS	15000.	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	No Specified Water Use Standards ⁵	(AW)	(NU)	500.	NS	NS	NS	NS	15000.	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date												
G2-9B	G2-9B	18.9-21.9		28-Apr-09	---	---	<250	<250	<100	<100	1.48	<1	<0.5	<1	---	
G2-9B	G2-9B	18.9-21.9		27-Aug-09	---	---	<250	<250	<100	<100	3.71	<1	<0.5	<1	---	
G2-9B	G2-9B	18.9-21.9		14-Apr-10	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
G2-9B	G2-9B	18.9-21.9		9-Sep-10	---	---	<250	<250	<100	<100	2.67	<1	<0.5	<0.71	---	
G2-9B	G2-9B	18.9-21.9		19-Apr-11	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<0.71	---	
G2-9B	G2-9B	18.9-21.9		9-Aug-11	---	---	<250	<250	<100	<100	0.75	<0.5	<0.5	<0.75	---	
G2-9B	G2-9B	18.9-21.9		18-May-12	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-9B	G2-9B	18.9-21.9		20-Aug-12	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-9B	DUP-11	18.9-21.9		20-Aug-12	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
QA/QC RPD					20-Aug-12	---	---	---	---	---	---	---	---	---	---	
G2-9B	G2-9B	18.9-21.9	L1299117-1	8-May-13	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-9B	G2-9B	18.9-21.9	L1367083-4	23-Sep-13	---	---	<250	<250	<100	<100	0.86	<0.5	<0.5	<0.75	---	
G2-9B	G2-9B	18.9-21.9	L1460380-2	26-May-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-9B	DUP-25	18.9-21.9	L1460380-3	26-May-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
QA/QC RPD					26-May-14	---	---	---	---	---	---	---	---	---	---	
G2-9B	G2-9B	18.9-21.9	L1508365-2	26-Aug-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-9B	G2-9B	18.9-21.9	L1583423-6	3-Mar-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	0.68	
G2-9B	DUP-1	18.9-21.9	L1583423-5	3-Mar-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	0.64	
QA/QC RPD					3-Mar-15	---	---	---	---	---	---	---	---	---	---	
G2-9B	G2-9B	18.9-21.9	L1675019-1	17-Sep-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-9B	G2-9B	18.9-21.9	L1743813-9	10-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	1.03	
G2-9B	G2-9B	18.9-21.9	L1812426-4	11-Aug-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	<0.5	
G2-10	G2-10	4.9-6.4		26-Apr-04	---	---	<300	<1000	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		18-Oct-04	---	---	<300	<1000	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		12-Apr-05	---	---	<300	<1000	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		13-Sep-05	---	---	<300	<1000	<100	<100	0.53	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		21-Mar-06	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		23-Apr-07	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		1-Apr-08	---	---	<250	270	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		2-Sep-08	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10X	4.9-6.4		2-Sep-08	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
QA/QC RPD					2-Sep-08	---	---	---	---	---	---	---	---	---	---	
G2-10	G2-10	4.9-6.4		28-Apr-09	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		14-Apr-10	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<1	---	
G2-10	G2-10	4.9-6.4		9-Sep-10	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<0.71	---	
G2-10	G2-10	4.9-6.4		20-Apr-11	---	---	<250	<250	<100	<100	<0.5	<1	<0.5	<0.71	---	
G2-10	G2-10	4.9-6.4		13-Sep-11	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4		28-May-12	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4		20-Aug-12	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4	L1292853-1	22-Apr-13	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4	L1352072-1	22-Aug-13	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4	L1456248-1	15-May-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	<0.5	
G2-10	G2-10	4.9-6.4	L1505541-1	20-Aug-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4	L1583423-4	3-Mar-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	<0.5	
G2-10	G2-10	4.9-6.4	L1674072-1	16-Sep-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	
G2-10	G2-10	4.9-6.4	L1742176-1	7-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	<0.5	
G2-10	G2-10	4.9-6.4	L1811986-4	10-Aug-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	<0.5	
G2-11A	G2-11A	4.6-6.1		29-Apr-04	460	<1000	460	<1000	<100	<100	0.7	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		12-Oct-04	480	<1000	480	<1000	<100	<100	1.03	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		11-Apr-05	460	<1000	460	<1000	<100	<100	1.37	<1	<0.5	<1	---	
G2-11A	A2-G2-11A	4.6-6.1		20-Sep-05	530.	<1000	530	<1000	<100	<100	0.94	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		28-Mar-06	380.	<250	380	<250	<100	<100	1.3	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		17-Apr-07	340.	<250	340	<250	<100	<100	1.19	<1	<0.5	<1	---	
G2-11A	G2-11AX	4.6-6.1		17-Apr-07	320.	<250	320	<250	<100	<100	1.2	<1	<0.5	<1	---	
QA/QC RPD					17-Apr-07	---	---	---	---	---	---	---	---	---	---	
G2-11A	G2-11A	4.6-6.1		5-Sep-07	400	<250	400	<250	<100	<100	2.71	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		8-Apr-08	330	<250	330	<250	<100	<100	1.59	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		8-Sep-08	320	<250	320	<250	<100	<100	1.67	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		21-Apr-10	380.	<250	380	<250	<100	<100	1.47	<1	<0.5	<1	---	
G2-11A	G2-11A	4.6-6.1		15-Sep-10	460	<250	460	<250	<100	<100	1.86	<1	<0.5	<0.71	---	
G2-11A	G2-11A	4.6-6.1		5-May-11	410.	<250	410	<250	<100	<100	1.67	<1	<0.5	<0.71	---	
G2-11A	G2-11A	4.6-6.1		8-Sep-11	360.	<250	360	<250	<100	<100	1.39	<0.5	<0.5	<0.75	---	
G2-11A	G2-11A	4.6-6.1		24-May-12	740.	<250	760	<250	<100	<100	1.34	<0.5	0.77	2.38	---	
G2-11A	G2-11A	4.6-6.1		29-Aug-12	460.	<250	460	<250	<100	<100	1.58	<0.5	<0.5	<0.75	---	
G2-11A	G2-11A	4.6-6.1	L1290904-1	17-Apr-13	420.	<250	420	<250	<100	<100	1.76	&				

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

				LEPHw ⁵	HEPHw ⁵	EPHw ⁵ (C10-C19) ^{2,5}	EPHw ⁵ (C19-C32) ⁵	VHw (C6-C10)	VPHw	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴															
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	(AW)	500.	NS	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	Groundwater Classification
CSR - Stage 9	No Specified Water Use Standards ⁵	(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	(AW)	500.	NS	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10	No Specified Water Use Standards ⁵	(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)				3000		5000		15000	15000	21000	7700	3200	3300	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date											
QA/QC RPD					21-Sep-10	---	---	---	---	---	---	---	---	---	
G2-11B	G2-11B	7.0-8.5		5-May-11	---	---	360.	<250.	<100.	<100.	1.36	<1.	<0.5	<0.71	AW-/NU-
G2-11B	DUP-28	7.0-8.5		5-May-11	---	---	360.	<250.	<100.	<100.	1.37	<1.	<0.5	<0.71	AW-/NU-
QA/QC RPD					5-May-11	---	---	---	---	---	---	---	---	---	
G2-11B	G2-11B	7.0-8.5		8-Sep-11	---	---	310.	<250.	<100.	<100.	1.21	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5		24-May-12	---	---	390.	<250.	<100.	<100.	0.93	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	DUP-15	7.0-8.6		24-May-12	---	---	400.	<250.	<100.	<100.	0.9	<0.5	<0.5	<0.75	AW-/NU-
QA/QC RPD					24-May-12	---	---	---	---	---	---	---	---	---	
G2-11B	G2-11B	7.0-8.5		29-Aug-12	---	---	270.	<250.	<100.	<100.	1.15	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1290904-2	17-Apr-13	---	---	<250.	<250.	<100.	<100.	1.13	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1350566-2	20-Aug-13	---	---	<250.	<250.	<100.	<100.	1.08	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1454047-2	12-May-14	---	---	<250.	<250.	<100.	<100.	1.01	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	DUP-19	7.0-8.5	L1454047-3	12-May-14	<250.	<250.	<250.	<250.	<100.	<100.	1.	<0.5	<0.5	<0.75	AW-/NU-
QA/QC RPD					12-May-14	---	---	---	---	---	---	---	---	---	
G2-11B	G2-11B	7.0-8.5	L1503989-2	18-Aug-14	---	---	<250.	<250.	<100.	<100.	1.	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1610763-2	11-May-15	<250.	<250.	<250.	<250.	<100.	<100.	1.11	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1674072-5	16-Sep-15	<250.	<250.	<250.	<250.	<100.	<100.	1.03	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1752248-2	4-Apr-16	<250.	<250.	<250.	<250.	<100.	<100.	1.01	<0.5	<0.5	<0.75	AW-/NU-
G2-11B	G2-11B	7.0-8.5	L1822946-3	1-Sep-16	<250.	<250.	<250.	<250.	<100.	<100.	1.06	<0.5	<0.5	<0.75	AW-/NU-
PW03-1A	PW03-1A	2.4-4.0		22-Apr-04	4870.	<1000.	5140.	<1000.	2480.	1800.	6.51	<1.	344.	326.	AW+/NU+
PW03-1A	PW03-1A (sg)	2.4-4.0		22-Apr-04	---	---	1770.	<1000.	---	---	---	---	---	---	AW+/NU+
PW03-1A	PW03-1A	2.4-4.0		15-Oct-04	4950.	<1000.	5230.	<1000.	2660.	1950.	2.4	<2.	391.	320.	AW+/NU+
PW03-1A	DUP6	2.4-4.0		15-Oct-04	---	---	---	---	250.	180.	2.4	<2.	383.	335.	AW+/NU+
QA/QC RPD					15-Oct-04	---	---	---	4.6%	6.9%	---	---	2.1%	4.6%	
PW03-1A	PW03-1A	2.4-4.0		15-Apr-05	5590.	<1000.	5980.	<1000.	2320.	1630.	2.4	5.8	354.	329.	AW+/NU+
PW03-1A	Dup 102	2.4-4.0		15-Apr-05	5700.	<1000.	6050.	<1000.	2270.	1610.	2.4	3.	328.	329.	AW+/NU+
QA/QC RPD					15-Apr-05	2.1%	1.2%	---	2.2%	1.2%	---	63.6%	7.6%	0.0%	
PW03-1A	PW03-1A	2.4-4.0		13-Sep-05	4020.	<1000.	4240.	<1000.	2130.	1700.	1.66	<1.	267.	164.	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		23-Mar-06	3910.	410.	4250.	410.	2300.	1630.	<2.5	<5.	376.	292.	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		23-Aug-06	3870.	540.	4030.	540.	1230.	1000.	<1.	<1.	188.	41.5	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		13-Apr-07	5130.	430.	5510.	430.	1900.	1400.	<5.	<10.	387.	93.	AW+/NU+
PW03-1A	PW03-1A	2.4-4.0		6-Sep-07	4760.	540.	4980.	540.	2060.	1740.	<4.	<6.	309.	15.4	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		14-Nov-07	5610.	470.	5800.	470.	1890.	1580.	<2.5	<5.	296.	21.6	AW+/NU+
PW03-1A	PW03-1A	2.4-4.0		1-Apr-08	<250.	<250.	8250.	<250.	1690.	1450	<2.5	<5.	231.	12.5	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		4-Sep-08	8130.	610.	8130.	610.	680.	360.	<2.	<3.	274.	51.5	AW+/NU+
PW03-1A	PW03-1A	2.4-4.0		4-May-09	3610.	470.	3610.	470.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		14-Apr-10	7940.	1420.	7940.	1420.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW+/NU+
PW03-1A	PW03-1A	2.4-4.0		15-Sep-10	7010.	1390.	7010.	1390.	<100.	<100.	<0.5	<1.	<0.5	<0.71	AW+/NU+
PW03-1A	PW03-1A	2.4-4.0		19-Apr-11	3280.	700.	3280.	700.	<100.	<100.	<0.5	<1.	<0.5	<0.71	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0		22-Aug-11	2670.	590.	2670.	590.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW+/NU-
PW03-1A	PW03-1A	2.4-4.0	L1448683-1	29-Apr-14	420.	340.	420.	340.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
PW03-1A	PW03-1A	2.4-4.0	L1743508-2	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		22-Apr-04	<300.	<1000.	<300.	<1000.	<100.	<100.	3.01	<1.	1.16	<1.	AW-/NU-
PW03-1B	PW03-1BX	1.1-3.7		22-Apr-04	<300.	<1000.	<300.	<1000.	<100.	<100.	3.33	<1.	1.22	<1.	AW-/NU-
QA/QC RPD					22-Apr-04	---	---	---	---	---	10.1%	---	---	---	
PW03-1B	PW03-1B	1.1-3.7		15-Oct-04	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		15-Apr-05	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1.	3.23	<0.2	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		21-Mar-06	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		13-Apr-07	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		1-Apr-08	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		3-Sep-08	1710.	440.	1710.	440.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW+/NU-
PW03-1B	PW03-1BX	1.1-3.7		3-Sep-08	1760.	410.	1760.	410.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW+/NU-
QA/QC RPD					3-Sep-08	2.9%	2.9%	---	---	---	---	---	---	---	
PW03-1B	PW03-1B	1.1-3.7		4-May-09	570.	<250.	570.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW+/NU-
PW03-1B	PW03-1B	1.1-3.7		14-Apr-10	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		15-Sep-10	340.	380.	340.	380.	<100.	<100.	<0.5	<1.	<0.5	<0.71	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		19-Apr-11	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<0.71	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7		10-May-12	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
PW03-1B	DUP-7	1.1-3.7		10-May-12	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
QA/QC RPD					10-May-12	---	---	---	---	---	---	---	---	---	
PW03-1B	PW03-1B	1.1-3.7	L1285748-1	3-Apr-13	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7	L1448683-2	29-Apr-14	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
PW03-1B	PW03-1B	1.1-3.7	L1743508-1	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
PW03-2A	PW03-2A	1.8-4.6		22-Apr-04	3320.	<1000	3340.	<1000.	690.	500.	112.	54.8	6.64	12.3	AW+/NU-
PW03-2A	PW03-2A (sg)	1.8-4.6		22-Apr-04	---	---	780.	<1000.	---	---	---	---	---	---	AW+/NU-
PW03-2A	PW03-2A	1.8-4.6		14-Oct-04	4050.	<1000	4120.	<1000.	740.	690.	32.8	6.4	6.41	1.7	AW+/NU-
PW03-2A	PW03-2A	1.8-4.6		15-Apr-05	2050.	<1000	2080.	<1000.	400.	380.	5.44	4.2			

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPH _w ³	HEPH _w ⁵	EPH _w (C10-C19) ^{2,5}	EPH _w (C19-C32) ³	VH _w (C6-C10)	VPH _w	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴					500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	(AW)			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
CSR - Stage 9	No Specified Water Use Standards ⁵	(NU)			NS	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	(AW)			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
CSR - Stage 10	No Specified Water Use Standards ⁵	(NU)			NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.		
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date													
PW03-2B	PW03-2B	1.1-3.7		19-Apr-11	<250.	280.	<250.	280.	<100.	<100.	<0.5	<1.	<0.5	<0.71	---	AW-/NU-	
PW03-2B	PW03-2B	1.1-3.7		22-Aug-11	360.	280.	360.	280.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-2B	PW03-2B	1.1-3.7		10-May-12	330.	370.	330.	370.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-2B	PW03-2B	1.1-3.7	L1285748-2	3-Apr-13	<250.	270.	<250.	270.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-2B	PW03-2B	1.1-3.7	L1448683-4	29-Apr-14	<250.	300.	<250.	300.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-2B	PW03-2B	1.1-3.7	L1743508-7	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		22-Apr-04	1050.	<1000.	1150.	<1000.	5070.	3400.	1110.	313.	75.2	168.	---	AW+/NU-	
PW03-3	PW03-3 (sq)	1.2-4.1		22-Apr-04	---	---	450.	<1000.	---	---	---	---	---	---	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		14-Oct-04	800.	<1000.	830.	<1000.	2420.	1670.	561.	73.2	38.6	71.	---	AW+/NU-	
PW03-3	PW03-3	1.2-4.1		15-Apr-05	680.	<1000.	720.	<1000.	2300.	1230.	716.	183.	39.4	134.	---	AW+/NU-	
PW03-3	PW03-3	1.2-4.1		13-Sep-05	480.	<1000.	480.	<1000.	1110.	780.	280.	7.8	23.5	23.5	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		23-Mar-06	<250.	<250.	<250.	<250.	150.	100.	41.5	3.9	3.2	3.3	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		23-Aug-06	800.	<250.	820.	<250.	1600.	<1000.	862.	110.	64.	75.	---	AW+/NU-	
PW03-3	PW03-3	1.2-4.1		13-Apr-07	<250.	<250.	<250.	<250.	190.	<100.	85.9	5.	2.27	5.3	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		14-Nov-07	<250.	<250.	<250.	<250.	<100.	<100.	0.54	<1.	<0.5	<1.	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		1-Apr-08	<250.	<250.	<250.	<250.	<100.	<100.	0.75	<1.	<0.5	<1.	---	AW-/NU-	
PW03-3	Dup 4	1.2-4.1		1-Apr-08	<250.	<250.	<250.	<250.	<100.	<100.	0.96	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					1-Apr-08	---	---	---	---	---	---	---	---	---	---		
PW03-3	PW03-3	1.2-4.1		3-Sep-08	<250.	<250.	<250.	<250.	220.	<100.	146.	<2.	3.02	<1.5	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		22-Apr-09	<250.	<250.	<250.	<250.	110.	<100.	18.9	4.3	4.22	4.4	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		14-Apr-10	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		19-Apr-11	<250.	<250.	<250.	<250.	<100.	<100.	0.74	<1.	<0.5	<0.71	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		22-Aug-11	480.	<250.	500.	<250.	450.	148.	12.6	39.8	10.7	10.7	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1		10-May-12	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1	L1448682-1	29-Apr-14	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-3	PW03-3	1.2-4.1	L1743508-3	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		22-Apr-04	<300.	<1000.	<300.	<1000.	<100.	<100.	2.77	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		14-Oct-04	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	DUP5	1.8-4.0		14-Oct-04	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					14-Oct-04	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		15-Apr-05	<300.	<1000.	<300.	<1000.	<100.	<100.	1.51	1.3	<0.5	<1.	---	AW-/NU-	
PW03-4	Dup 103	1.8-4.0		15-Apr-05	<300.	<1000.	<300.	<1000.	<100.	<100.	0.65	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					15-Apr-05	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		13-Sep-05	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	DUP2	1.8-4.0		13-Sep-05	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					13-Sep-05	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		21-Mar-06	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		23-Aug-06	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	DUP4	1.8-4.0		23-Aug-06	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					23-Aug-06	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		13-Apr-07	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4X	1.8-4.0		13-Apr-07	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					13-Apr-07	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		6-Sep-07	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		1-Apr-08	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		3-Sep-08	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		22-Apr-09	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		27-Aug-09	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4X	1.8-4.0		27-Aug-09	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
QA/QC RPD					27-Aug-09	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		14-Apr-10	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		15-Sep-10	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<0.71	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		19-Apr-11	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<0.71	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0		13-Sep-11	<250.	<250.	<250.	<250.							---	AW-/NU-	
PW03-4	DUP-7	1.8-4.0		13-Sep-11	<250.	<250.	<250.	<250.							---	AW-/NU-	
QA/QC RPD					13-Sep-11	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		22-Aug-11					<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-4	DUP-7	1.8-4.0		22-Aug-11					<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					22-Aug-11	---	---	---	---	---	---	---	---	---	---		
PW03-4	PW03-4	1.8-4.0		10-May-12					<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0	L1448682-2	29-Apr-14	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-4	PW03-4	1.8-4.0	L1743508-9	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
PW03-5	PW03-5	7.6-8.5		22-Apr-04	340.	<1000.	340.	<1000.	<100.	<100.	27.8	<1.	<0.5	<1.	---	AW-/NU-	
PW03-5	PW03-5	7.6-8.5		14-Oct-04	<300.	<1000.	<300.	<1000.	<100.	<100.	55.6	<1.	<0.5	<1.			

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPHw ⁵	HEPHw ⁵	EPHw ⁵ (C10-C19) ^{2,5}	EPHw ⁵ (C19-C32) ²	VHw ⁵ (C6-C10)	VPHw ⁵	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴																
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards		(AW)	500.	NS	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	Groundwater Classification
CSR - Stage 9	No Specified Water Use Standards ⁶		(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards		(AW)	500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10	No Specified Water Use Standards ⁶		(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date												
PW03-6	PW03-6	1.1-3.0	L1743508-5	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU
U8	U8	3.22-6.22		12-Jul-05	1480.	<1000	1480.	<1000	<100	<100	7.2	<1	<0.5	1.3	---	AW+/NU
U8	U8	3.22-6.22		14-Sep-05	1180.	<1000	1190.	<1000	190	170	12	<1	<0.5	<1	---	AW+/NU
U8	DUP101	3.22-6.22		14-Sep-05	1180.	<1000	1180.	<1000	180	170	12.2	<1	<0.5	<1	---	AW+/NU
QA/QC RPD					14-Sep-05	---	---	---	---	---	1.7%	---	---	---	---	---
U8	U8	3.22-6.22		23-Mar-06	1410.	560	1420.	560	570	540	24	<1	7.6	4.6	---	AW+/NU
U8	Dup5	3.22-6.22		23-Mar-06	1470.	620	1470.	620	580	550	23.1	<1	7.8	4.6	---	AW+/NU
QA/QC RPD					23-Mar-06	4%	---	3.5%	---	1.7%	1.8%	3.8%	---	2.6%	0.0%	---
U8	U8	3.22-6.22		23-Aug-06	1230.	430	1230.	430	360	330	24.5	<1	1.77	<1	---	AW+/NU
U8	U8	3.22-6.22		13-Apr-07	940.	400	940.	400	430	380	25.2	<1	15.2	7.6	---	AW+/NU
U8	U8X	3.22-6.22		13-Apr-07	1040.	440	1040.	440	390	350	22.1	<1	13.7	6.8	---	AW+/NU
QA/QC RPD					13-Apr-07	---	---	---	---	---	13.1%	---	10.4%	11.1%	---	---
U8	U8	3.22-6.22		6-Sep-07	980.	370	980.	370	130	120	11	<1	2.34	<1	---	AW+/NU
U8	A2-SENTRY-DUP2	3.22-6.22		6-Sep-07	950.	340	950.	340	130	120	8.31	<1	0.84	<1	---	AW+/NU
QA/QC RPD					6-Sep-07	---	---	---	---	---	27.9%	---	---	---	---	---
U8	U8	3.22-6.22		2-Apr-08	480.	600	480.	600	<100	<100	<0.5	<1	<0.5	<1	---	AW-/NU
U8	U8	3.22-6.22		4-Sep-08	1020.	290	1020.	290	140	130	3.81	<1	<0.5	<1	---	AW+/NU
U8	U8	3.22-6.22		22-Apr-09	900.	850	900.	850	<100	<100	0.92	<1	1.44	<1	---	AW+/NU
U8	U8X	3.22-6.22		22-Apr-09	900.	740	900.	740	<100	<100	1	<1	1.53	<1	---	AW+/NU
QA/QC RPD					22-Apr-09	---	---	---	---	---	---	---	---	---	---	---
U8	U8	3.22-6.22		31-Aug-09	900.	380	900.	380	<100	<100	2.4	<1	<0.5	<1	---	AW+/NU
U8	U8	3.22-6.22		21-Apr-10	470.	560	470.	560	<100.	<100.	<0.5	<1	<0.5	<1	---	AW-/NU
U8	U8	3.22-6.22		14-Sep-10	880.	600	880.	600	<100	<100	1.24	<1	<0.5	<0.71	---	AW+/NU
U8	U8	3.22-6.22		5-Apr-11	<250.	270	<250.	270	<100	<100	<0.5	<1	<0.5	<0.71	---	AW+/NU
U8	U8	3.22-6.22		1-Sep-11	530.	<250	530.	<250	<100	<100	3.87	<0.5	<0.5	<0.75	---	AW+/NU
U8	DUP-18	3.22-6.22		1-Sep-11	280.	<250	280.	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU
QA/QC RPD					1-Sep-11	---	---	---	---	---	---	---	---	---	---	---
U8	U8	3.22-6.22		9-May-12	370.	520.	370.	520.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU
U8	U8	3.22-6.22	L1282462-1	25-Mar-13	<250.	380.	<250.	380.	<100.	<100.	<0.5	1.17	<0.5	1.7	---	AW-/NU
U8	U8	3.22-6.22	L1448682-4	29-Apr-14	<250.	370.	<250.	370.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU
U8	U8	3.22-6.22	L1747964-1	22-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU
U9	U9	3.3-6.3		12-Jul-05	1170.	<1000	1180.	<1000	220	210	7.25	<1	2.16	1.2	---	AW+/NU
U9	DUP 1	3.3-6.3		12-Jul-05	1200.	<1000	1200.	<1000	210	200	6.39	<1	1.71	<1	---	AW+/NU
QA/QC RPD					12-Jul-05	---	---	---	---	---	12.6%	---	---	---	---	---
U9	U9	3.3-6.3		14-Sep-05	1240.	<1000	1240.	<1000	500	490	13.5	<1	2.14	<1	---	AW+/NU
U9	U9	3.3-6.3		23-Mar-06	1220.	270	1230.	270	730	700	9.2	<1	17.5	4.3	---	AW+/NU
U9	U9	3.3-6.3		23-Aug-06	1150.	350	1160.	350	460	440	14.6	1.2	3.25	<1	---	AW+/NU
U9	U9	3.3-6.3		13-Apr-07	1440.	<250	1450.	<250	810	790	10.6	<1	13.2	2.8	---	AW+/NU
U9	U9	3.3-6.3		6-Sep-07	1190.	420	1190.	420	610	590	15.8	<1	1.31	<1	---	AW+/NU
U9	U9	3.3-6.3		2-Apr-08	1610.	300	1610.	300	500	490	3.93	<1	5.98	<1	---	AW+/NU
U9	U9	3.3-6.3		4-Sep-08	1070.	310	1070.	310	<100	<100	<0.5	<1	<0.5	<1	---	AW+/NU
U9	U9	3.3-6.3		22-Apr-09	1310.	360	1320.	360	470	430	24.5	1.1	6.09	<1	---	AW+/NU
U9	U9	3.3-6.3		31-Aug-09	1150.	340	1150.	340	2000	<1000	967	502	43.6	178	---	AW+/NU
U9	U9X	3.3-6.3		31-Aug-09	1150.	350	1160.	350	2260	560	954	518	44.1	190	---	AW+/NU
QA/QC RPD					31-Aug-09	---	---	---	3.2%	---	1.4%	3.1%	1.1%	6.5%	---	---
U9	U9	3.3-6.3		21-Apr-10	1270.	<250	1280.	<250	360	260	56.4	27.7	4.74	8.8	---	AW+/NU
U9	U9	3.3-6.3		14-Sep-10	1290.	550	1290.	550	<1000	3800	3610	284	159	184	---	AW+/NU
U9	DUP-13	3.3-6.3		14-Sep-10	1350.	540	1350.	540	<1000	2900	3560	270	175	191	---	AW+/NU
QA/QC RPD					14-Sep-10	5%	---	4.5%	---	26.9%	1.4%	5.1%	9.6%	3.7%	---	---
U9	U9	3.3-6.3		31-Mar-11	630.	<250	630.	<250	<100	<100	2.67	<1	1.1	1.69	---	AW+/NU
U9	DUP-8	3.3-6.3		31-Mar-11	650.	<250	650.	<250	<100	<100	2.25	<1	1.39	2.03	---	AW+/NU
QA/QC RPD					31-Mar-11	---	---	---	---	---	---	---	---	---	---	---
U9	U9	3.3-6.3		1-Sep-11	670.	<250	680.	<250	890	<500	793	<8	2.8	5.7	---	AW+/NU
U9	U9	3.3-6.3		9-May-12	380.	<250	390.	<250	550	210	64	106	39.9	128.	---	AW-/NU
U9	U9	3.3-6.3	L1282462-2	25-Mar-13	260.	<250.	260.	<250.	<100.	<100.	0.94	0.75	4.34	3.77	---	AW-/NU
U9	U9	3.3-6.3	L1448682-5	29-Apr-14	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	0.81	<0.75	---	AW-/NU
U9	U9	3.3-6.3	L1747964-2	22-Mar-16	<250.	<250.	<250.	<250.	110.	110.	<0.5	<0.5	0.98	1.34	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		7-May-04	470.	<1000.	470.	<1000.	<100.	<100.	<0.5	<1	<0.5	<1	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		14-Oct-04	490.	<1000.	500.	<1000.	<100.	<100.	0.72	<1	<0.5	<1	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		21-Apr-05	<300.	<1000.	<300.	<1000.	<100.	<100.	<0.5	<1	<0.5	<1	---	AW-/NU
MW02-02	A2-MW02-02	1.2-4.3		20-Sep-05	500.	<1000.	500.	<1000.	<100.	<100.	6.53	<1	<0.5	<1	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		28-Mar-06	<250.	<250.	<250.	<250.	270.	250.	17	<1	0.65	<1	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		29-Aug-06	330.	<250.	330.	<250.	150.	140.	5.81	<1	<0.5	<1	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		17-Apr-07	<250.	<250.	<250.	<250.	110	110	4.44	<1	<0.5	<1	---	AW-/NU
MW02-02	MW02-02	1.2-4.3		5-Sep-07	370.	<250.	370.	<250.	110.	<100.	16.6	<1	<0.5	<1	---	AW-/NU

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPHw ³	HEPHw ⁵	EPHw (C10-C19) ^{2,5}	EPHw (C19-C32) ⁵	VHw (C6-C10)	VPHw	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴					(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)		(NU)
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards				500.	NS	NS	5000	NS	15000.	1500.	1000.	3300.	2500.	NS	4400.	
CSR - Stage 9	No Specified Water Use Standards ⁵				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards				500.	NS	NS	5000	NS	15000.	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10	No Specified Water Use Standards ⁵				NS	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300	4400.		
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date													
QA/QC RPD					12-May-10	---	---	---	---	---	---	3.7%	---	---	---	---	
MW02-03	MW02-03	1.5-4.6		13-Sep-10	510.	<250	510	<250	<100.	<100.	1.65	<1	<0.5	<0.71	---	AW+/NU-	
MW02-03	MW02-03	1.5-4.6		7-Apr-11	350.	<250	350	<250	<100.	<100.	1.23	<1	<0.5	<0.71	---	AW-/NU-	
MW02-03	MW02-03	1.5-4.6		1-Sep-11	350.	<250	350	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-03	MW02-03	1.5-4.6		23-May-12	310.	<250	310	<250	1200.	220.	110.	207.	85.9	581.	---	AW-/NU-	
MW02-03	MW02-03	1.5-4.6		24-Sep-12	1640.	450.	1650.	460.	2420.	2330.	55.6	3.07	25.9	7.57	---	AW+/NU-	
MW02-03	MW02-03	1.5-4.6	L1283010-7	26-Mar-13	460.	<250	460.	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-03	MW02-03	1.5-4.6	L1345378-11	8-Aug-13	340.	<250	340.	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-03	DUP-5	1.5-4.6	L1345378-12	8-Aug-13	280.	<250	280.	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					8-Aug-13	---	---	---	---	---	---	---	---	---	---		
MW02-03	MW02-03	1.5-4.6	L1449879-9	1-May-14	<250	<250	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-03	DUP-13	1.5-4.6	L1449879-2	1-May-14	<250	<250	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					1-May-14	---	---	---	---	---	---	---	---	---	---		
MW02-03	MW02-03	1.5-4.6	L1498928-2	7-Aug-14	340.	<250	340	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-03	DUP-4	1.5-4.6	L1498928-1	7-Aug-14	310.	<250	310	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					7-Aug-14	---	---	---	---	---	---	---	---	---	---		
MW02-03	MW02-03	1.5-4.6	L1610017-5	11-May-15	<250	<250	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-03	DUP-13	1.5-4.6	L1610017-6	11-May-15	<250	<250	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					11-May-15	---	---	---	---	---	---	---	---	---	---		
MW02-03	MW02-03	1.5-4.6	L1751053-2	31-Mar-16	<250	<250	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					8-Sep-08	---	---	---	---	---	---	---	---	---	---		
MW02-04	MW02-04	1.5-4.6		28-Apr-04	1030.	<1000	1030	<1000	250.	250.	2.21	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		13-Oct-04	600.	<1000	600	<1000	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		21-Apr-05	870.	<1000	870	<1000	<100.	<100.	0.51	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	A2-MW02-04	1.5-4.6		20-Sep-05	690.	<1000	690	<1000	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		28-Mar-06	700.	<250	700	<250	110.	110.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		29-Aug-06	580.	<250	580.	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		17-Apr-07	630.	<250	630	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		5-Sep-07	590.	<250	590	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6		8-Apr-08	420.	<250	420.	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6		8-Sep-08	550.	<250	550.	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW02-04	MW02-04X	1.5-4.6		8-Sep-08	530.	<250	530.	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
QA/QC RPD					8-Sep-08	---	---	---	---	---	---	---	---	---	---		
MW02-04	MW02-04	1.5-4.6		30-Apr-09	410.	<250	410	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6		8-Sep-09	480.	<250	480	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6		12-May-10	470.	<250	470	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6		13-Sep-10	500.	<250	500	<250	<100.	<100.	<0.5	<1	<0.5	<0.71	---	AW-/NU-	
MW02-04	DUP-10	1.5-4.6		13-Sep-10	550.	<250	550.	<250	<100.	<100.	<0.5	<1	<0.5	<0.71	---	AW+/NU-	
QA/QC RPD					13-Sep-10	---	---	---	---	---	---	---	---	---	---		
MW02-04	MW02-04	1.5-4.6		7-Apr-11	340.	<250	340	<250	<100.	<100.	<0.5	<1	<0.5	<0.71	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6	L1283010-8	26-Mar-13	400.	<250	400.	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6	L1345378-9	8-Aug-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6	L1449879-1	1-May-14	340.	<250	340.	<250	150.	150.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW02-04	MW02-04	1.5-4.6	L1498928-3	7-Aug-14	650.	<250	650.	<250	170.	170.	<0.5	<0.5	<0.5	<0.75	---	AW+/NU-	
MW02-04	MW02-04	1.5-4.6	L1751053-3	31-Mar-16	<250	<250	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					31-Mar-16	---	---	---	---	---	---	---	---	---	---		
MW03-02	MW03-02	3.7-7.6		28-Apr-04	510.	<1000	510	<1000	<100.	<100.	1.5	<1	<0.5	<1.	---	AW+/NU-	
MW03-02	MW03-02	3.7-7.6		13-Oct-04	550.	<1000	550	<1000	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW+/NU-	
MW03-02	MW03-02	3.7-7.6		12-Apr-05	390.	<1000	390	<1000	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		14-Sep-05	460.	<1000	460	<1000	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		23-Mar-06	330.	<250	330	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		29-Aug-06	430.	<250	430	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		17-Apr-07	340.	<250	340	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		5-Sep-07	650.	280.	650	280.	<100.	<100.	31.7	<1	<0.5	<1.	---	AW+/NU-	
MW03-02	MW03-02	3.7-7.6		2-Apr-08	360.	<250	360	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		8-Sep-08	470.	280.	470	280.	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		30-Apr-09	---	---	480.	260.	<100.	<100.	25.	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		31-Aug-09	---	---	420.	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		22-Apr-10	---	---	<250	<250	<100.	<100.	<0.5	<1	<0.5	<1.	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		14-Sep-10	---	---	420	320	<100.	<100.	0.53	<1	<0.5	<0.71	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		31-Mar-11	---	---	<250	<250	<100.	<100.	0.61	<1	<0.5	<0.71	---	AW-/NU-	
MW03-02	DUP-7	3.7-7.6		31-Mar-11	---	---	<250	<250	<100.	<100.	<0.5	<1	<0.5	<0.71	---	AW-/NU-	
QA/QC RPD					31-Mar-11	---	---	---	---	---	---	---	---	---	---		
MW03-02	MW03-02	3.7-7.6		1-Sep-11	---	---	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6		9-May-12	---	---	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6	L1283010-5	26-Mar-13	---	---	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW03-02	DUP-3	3.7-7.6	L1283010-4	26-Mar-13	---	---	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					26-Mar-13	---	---	---	---	---	---	---	---	---	---		
MW03-02	MW03-02	3.7-7.6	L1350199-1	19-Aug-13	---	---	<250	<250	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW03-02	MW03-02	3.7-7.6	L1449337-6	30-Apr-14	---	---	<250	<250									

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

Generic Numerical Water Standards ⁴					LEPAH ⁵	HEPAH ⁵	EPH ₁₆ (C10-C19) ^{2,3}	EPH ₁₆ (C19-C32) ⁵	VHw (C6-Cl0)	VPH ₁₆	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	(AW)	500.	NS	NS	NS	NS	1500.	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9	No Specified Water Use Standards ⁵	(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS		
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	(AW)	500.	NS	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10	No Specified Water Use Standards ⁵	(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS		
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbs)	ALS Laboratory Report #	Sample Date												
A2MW09-05i	DUP-6	9.18-10.68		13-Aug-12	500.	<250.	510.	<250.	2120.	730.	881.	56.3	116.	335.	---	AW+/NU-
QA/QC RPD					---	---	---	---	6.4%	11.6%	2.5%	4.3%	5.0%	6.4%	---	
A2MW09-05i	MW09-05i	9.18-10.68	L1282461-1	25-Mar-13	<1800.	320.	<1800.	320.	550.	430.	66.9	3.2	33.7	7.97	---	AW+/NU-
A2MW09-05i	DUP-2	9.18-10.68	L1282461-5	25-Mar-13	800.	290.	810.	290.	630.	540.	53.8	2.45	27.7	6.37	---	AW+/NU-
QA/QC RPD					---	---	---	---	13.6%	---	21.7%	---	19.5%	22.3%	---	
A2MW09-05i	MW09-05i	9.18-10.68	L1382363-1	23-Oct-13	870.	<250.	870.	<250.	2250.	810.	1110.	7.3	182.	142.	---	AW+/NU-
A2MW09-05i	MW09-05i	9.18-10.68	L1449337-1	30-Apr-14	830.	<250.	840.	<250.	1160.	900.	174.	2.3	51.9	27.6	---	AW+/NU-
A2MW09-05i	MW09-05i	9.18-10.68	L1501099-1	12-Aug-14	2580.	1840.	2600	1840.	3700.	1700.	1300.	19.6	217.	495.	---	AW+/NU-
A2MW09-05i	DUP-6	9.18-10.68	L1501099-3	12-Aug-14	2510.	1780.	2530.	1780.	3700.	1500.	1400.	19.2	223.	504.	---	AW+/NU-
QA/QC RPD					2.8%	3.3%	2.7%	3.3%	0.0%	12.5%	7.4%	2.1%	2.7%	1.8%	---	
A2MW09-05i	MW09-05i	9.18-10.68	L1608929-1	7-May-15	480.	<250.	490.	<250.	1010.	840.	106.	1.3	25.	36.8	---	AW-/NU-
A2MW09-05i	DUP-12	9.18-10.68	L1608929-2	7-May-15	440.	<250.	450.	<250.	910.	750.	101.	1.25	23.9	35.2	---	AW-/NU-
QA/QC RPD					---	---	---	---	10.4%	11.3%	4.8%	---	4.5%	4.4%	---	
A2MW09-05i	A2MW09-05i	9.18-10.68	L1662936-1	25-Aug-16	680.	<250.	690.	<250.	3400.	2000.	1050.	11.2	126.	250.	---	AW+/NU-
A2MW09-05i	A2MW09-05i	9.18-10.68	L1747969-4	22-Mar-16	450.	<250.	450.	<250.	490.	460.	22.7	<0.5	2.47	<0.75	---	AW-/NU-
A2MW09-05i	MW09-05i	9.18-10.68	L1819742-1	25-Aug-16	1090.	350	1120.	350.	5220.	2480.	2010.	16.6	274.	446.	<5.	AW+/NU-
QA/QC RPD					---	---	---	---	---	---	---	---	---	---	---	
A2MW09-06i	MW09-06i	9.33-10.83		21-Apr-10	620.	<250	620.	<250.	680.	<500.	381.	<5.	6.2	<5.	---	AW+/NU-
A2MW09-06i	MW09-06i	9.33-10.83		14-Sep-10	460.	<250	460.	<250.	<110.	560.	479.	1.	1.47	1.3	---	AW-/NU-
A2MW09-06i	A2MW09-06i	9.33-10.83		6-Apr-11	930.	<250	940.	<250.	870.	730.	99.1	7.4	14.6	17.2	---	AW+/NU-
A2MW09-06i	MW09-06i	9.33-10.83		1-Sep-11	440.	<250	450.	<250.	5020.	<840.	1780	1530.	170.	782.	---	AW+/NU-
A2MW09-06i	MW09-06i	9.33-10.83		9-May-12	1210.	<250	1260.	<250.	4280.	1780	996.	379.	251.	872.	---	AW+/NU-
A2MW09-06i	MW09-06i	9.33-10.83		13-Aug-12	390.	<250	400.	<250.	1130.	480.	372.	75.8	40.9	154.	---	AW-/NU-
A2MW09-06i	MW09-06i	9.33-10.83	L1282461-2	25-Mar-13	940.	<250	990.	<250.	1210.	1480	109.	3.1	14.7	30.1	---	AW+/NU-
A2MW09-06i	DUP-1	9.33-10.83	L1282461-4	25-Mar-13	990.	400	1030.	400.	2210.	1530	191.	37.9	146.	301.	---	AW+/NU-
QA/QC RPD					---	---	---	---	1.8%	3.3%	4.1%	1.0%	0.7%	0.0%	---	
A2MW09-06i	MW09-06i	9.33-10.83	L1350199-2	19-Aug-13	---	---	---	---	1080.	550.	491.	1.5	14.2	16.8	---	AW-/NU-
A2MW09-06i	MW09-06i	9.33-10.83	L1350563-2	20-Aug-13	950.	270.	950.	270.	---	---	---	---	---	---	---	AW+/NU-
A2MW09-06i	MW09-06i	9.33-10.83	L1449337-3	30-Apr-14	1010.	<250.	1050.	<250.	1880.	1350.	95.8	14.	187.	230.	---	AW+/NU-
A2MW09-06i	DUP-12	9.33-10.83	L1449337-5	30-Apr-14	1060.	<250.	1100.	<250.	1770.	1240.	87.1	12.9	191.	234.	---	AW+/NU-
QA/QC RPD					---	---	---	---	6.0%	8.5%	9.5%	8.2%	2.1%	1.7%	---	
A2MW09-06i	MW09-06i	9.33-10.83	L1501099-2	12-Aug-14	690.	960.	700.	960.	1560.	800.	601.	3.	57.8	103.	---	AW+/NU-
A2MW09-06i	MW09-06i	9.33-10.83	L1608318-1	6-May-15	500.	<250.	500.	<250.	370.	300.	38.3	0.64	17.1	15.4	---	AW-/NU-
A2MW09-06i	MW09-06i	9.33-10.83	L1662936-2	25-Aug-16	350.	<250.	350.	<250.	800.	470.	315.	1.4	4.6	10.	---	AW-/NU-
A2MW09-06i	DUP-4	9.33-10.83	L1662936-4	25-Aug-15	490.	<250.	490.	<250.	880.	580.	291.	1.2	4.2	9.1	---	AW-/NU-
QA/QC RPD					---	---	---	---	9.5%	---	7.9%	---	9.1%	9.4%	---	
A2MW09-06i	MW09-06i	9.33-10.83	L1747969-5	22-Mar-16	570.	<250.	570.	<250.	660.	570.	15.4	0.64	54.7	15.9	---	AW-/NU-
A2MW09-06i	MW09-06i	9.33-10.83	L1819742-2	25-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	24.2	<0.5	2.24	<0.75	2.71	AW-/NU-
QA/QC RPD					---	---	---	---	---	---	---	---	---	---	---	
A2MW09-06S	MW09-06S	2.44-5.44		21-Apr-10	530.	<250	540.	<250.	160.	150.	12.1	<1.	2.2	1.7	---	AW+/NU-
A2MW09-06S	MW09-06S	2.44-5.44		14-Sep-10	490.	<250	490.	<250.	<100.	430.	320.	12.5	1.2	5.92	---	AW-/NU-
A2MW09-06S	A2MW09-06S	2.44-5.44		6-Apr-11	<250.	<250.	<250.	<250.	910.	730.	138.	9.3	16.3	17.8	---	AW-/NU-
A2MW09-06S	MW09-06S	2.44-5.44		1-Sep-11	470.	<250.	490.	<250.	4000.	<1000.	1590	1210.	122.	442.	---	AW+/NU-
A2MW09-06S	DUP-17	2.44-5.44		1-Sep-11	460.	<250.	470.	<250.	5000.	1400.	1610	1290.	153.	529.	---	AW+/NU-
QA/QC RPD					---	---	---	---	22.2%	---	1.3%	6.4%	22.5%	17.9%	---	
A2MW09-06S	MW09-06S	2.44-5.44	L1449337-2	30-Apr-14	590.	<250.	600.	<250.	470.	300.	2.7	1.85	24.6	142.	---	AW+/NU-
QA/QC RPD					---	---	---	---	---	---	---	---	---	---	---	
A2MW09-10	MW09-10	2.22-5.22		21-Apr-10	1980.	310.	2010.	310	9900	<5000.	8280	917	190	1350	---	AW+/NU-
A2MW09-10	MW09-10	2.22-5.22		14-Sep-10	1530.	390.	1550.	390	1060	5090	3920	27	38	38	---	AW+/NU-
A2MW09-10	A2MW09-10	2.22-5.22		31-Mar-11	2010.	<250	2130.	<250	13500	3100	6770	524	725	2420	---	AW+/NU-
A2MW09-10	MW09-10	2.22-5.22		9-May-12	1800.	300.	1860.	300	16900	4600	7470	826	831	3150	---	AW+/NU+
A2MW09-10	DUP-6	2.22-5.22		9-May-12	3050.	780.	3150.	780	17600	4900	7390	950	893	3450	---	AW+/NU+
QA/QC RPD					9-May-12	52%	---	51.5%	---	4.1%	6.3%	1.1%	14.0%	7.2%	9.1%	---
A2MW09-10	MW09-10	2.22-5.22	L1282463-1	25-Mar-13	2630.	530.	2710.	530	9700	<1900.	7830	127	439	856	---	AW+/NU-
A2MW09-10	MW09-10	2.22-5.22	L1449336-1	30-Apr-14	2520.	480.	2620.	480	8700	<5000.	5250	113	672	968	---	AW+/NU-
A2MW09-10	MW09-10	2.22-5.22	L1747969-1	22-Mar-16	1090.	300.	1140.	300	5800	2500	2520	66.8	417	291	---	AW+/NU-
QA/QC RPD					---	---	---	---	---	---	---	---	---	---	---	
A2MW09-11	MW09-11	2.05-5.05		22-Apr-10	1730.	250.	1820.	250.	32000.	<10000.	9310	10900	1310.	6300.	---	AW+/NU+
A2MW09-11	MW09-11	2.05-5.05		9-May-12	2720.	1090.	2840.	1090	26300	<4300.	4150	9190	1700.	8940.	---	AW+/NU+
A2MW09-11	MW09-11	2.05-5.05	L1283007-1	26-Mar-13	2160.	<250.	2280.	<250.	26000	<10000.	5190	10400	1480.	8640.	---	AW+/NU+
A2MW09-11	MW09-11	2.05-5.05	L1449336-2	30-Apr-14	3090.	490.	3240.	490.	26400	<5000.	1950	7790	1940.	10200.	---	AW+/NU+
A2MW09-11	MW09-11	2.05-5.05	L1608929-3	7-May-15	1920.	<250.	2010.	<250.	17600	5600	1840	773.	1410.	7370.	---	AW+/NU-
A2MW09-11	MW09-11	2.05-5.05	L1747969-6	22-Mar-16	2150.	270.	2250.	270.	14100.	6000	648.	139.	1330.	5960.	---	AW+/NU-
A2MW09-11	DUP-11	2.05-5.05	L1747969-3	22-Mar-16	1980.	<250.	2070.	<250.	13800.	5600	624.	138.	1330.	6070.	---	AW+/NU-
QA/QC RPD					22-Mar-16	8%	---	8.3%	---	2.2%	6.9%	3.8%	0.7%	0.0%	1.8%	---
QA/QC RPD					---	---	---	---	---	---	---	---	---	---	---	
A2MW09-12	MW09-12	2.14-5.14		22-Apr-10	940.	<250.	1020.	<250.	3700.	1800	1730	<10.	53.2	116.	---	AW+/NU-
A2MW09-12	MW09-12X	2.14-5.14		22-Apr-10	910.	<250.	980.	<250.								

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPAH ³	HEPAH ⁵	EPH ₁₆ (C10-C19) ^{2,5}	EPH ₁₆ (C19-C32) ³	VHw (C6-C10)	VPH _w	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴																
CSR - Stage 9		Marine/Estuarine Aquatic Life Standards			(AW)	500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.
CSR - Stage 9		No Specified Water Use Standards ⁵			(NU)	NS	NS	NS	5000	NS	NS	NS	NS	NS	NS	NS
CSR - Stage 10		Marine/Estuarine Aquatic Life Standards			(AW)	500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.
CSR - Stage 10		No Specified Water Use Standards ⁵			(NU)	NS	NS	NS	5000	NS	NS	NS	NS	NS	NS	NS
Site-Specific Screening Levels (SSSLs)						3000		5000		15000	15000	21000	7700	3200	3300.	4400.
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date												
A2MW09-15	MW09-15	1.35-4.35	L1498925-2	7-Aug-14	760.	<250.	760.	<250.	430.	430.	<1.5	<0.5	<0.5	<0.75	12.4	AW+/NU-
A2MW09-15	MW09-15	1.35-4.35	L1610017-3	11-May-15	400.	<250.	400.	<250.	180.	180.	<0.6	<0.5	<0.5	<0.75	---	AW-/NU-
A2MW09-15	MW09-15	1.35-4.35	L1766653-1	10-May-16	540.	<250.	540.	<250.	300.	300.	<0.7	<0.5	<0.5	<0.75	---	AW+/NU-
A2MW09-15	MW09-15	1.35-4.35	L1822946-1	1-Sep-16	600.	<250.	600.	<250.	600.	600.	<1	<0.5	<0.5	<0.75	---	AW+/NU-
A2-9C	A2-9C	10.7-13.7		18-Sep-07	---	---	---	---	<2500.	<2500.	<0.5	<1.	<0.5	<1.	2580	AW+/NU-
A2-9C	A2-9C	10.7-13.7		1-Apr-08	---	---	<250.	<250.	<200.	<200.	<10.	<20.	<10.	<20	1320	AW-/NU-
A2-9C	A2-9C	10.7-13.7		29-Apr-09	---	---	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	54.2	AW-/NU-
A2-9C	A2-9C	10.7-13.7		27-Aug-09	---	---	<250.	<250.	<100.	<100.	<0.8	<1.6	<0.8	<1.6	711.	AW-/NU-
A2-9C	A2-9C	10.7-13.7		14-Apr-10	---	---	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	243.	AW-/NU-
A2-9C	A2-9C	10.7-13.7		9-Sep-10	---	---	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<0.71	<0.5	AW-/NU-
A2-9C	A2-9C	10.7-13.7		18-Apr-11	---	---	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<0.71	0.64	AW-/NU-
A2-9C	A2-9C	10.7-13.7		25-Aug-11	---	---	<250.	580.	<500.	<500.	<2.5	<2.5	<2.5	<3.5	352.	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1294033-1	25-Apr-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	110.	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1352074-1	22-Aug-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	530.	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1461849-1	28-May-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1507543-4	25-Aug-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	431.	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1585433-1	9-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	163.	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1660245-1	19-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	172.	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1743813-8	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	47.1	AW-/NU-
A2-9C	A2-9C	10.7-13.7	L1811986-7	10-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	230.	AW-/NU-
A2-9G	A2-9G	15.2-18.3		26-Apr-04	---	---	---	---	---	---	---	---	---	---	3210.	AW-/NU-
A2-9G	A2-9G	15.2-18.3		18-Oct-04	---	---	---	---	---	---	---	---	---	---	573.	AW-/NU-
A2-9G	DUP7	15.2-18.3		18-Oct-04	---	---	---	---	---	---	---	---	---	---	542	AW-/NU-
QA/QC RPD					18-Oct-04	---	---	---	---	---	---	---	---	---	5.6%	
A2-9G	A2-9G	15.2-18.3		12-Apr-05	---	---	---	---	---	---	---	---	---	---	1570	AW-/NU-
A2-9G	Dup 201	15.2-18.3		12-Apr-05	---	---	---	---	---	---	---	---	---	---	869.	AW-/NU-
QA/QC RPD					12-Apr-05	---	---	---	---	---	---	---	---	---	57.5%	
A2-9G	A2-9G	15.2-18.3		13-Sep-05	---	---	---	---	---	---	---	---	---	---	2420.	AW-/NU-
A2-9G	DUP 3	15.2-18.3		13-Sep-05	---	---	---	---	---	---	---	---	---	---	2590.	AW-/NU-
QA/QC RPD					13-Sep-05	---	---	---	---	---	---	---	---	---	6.8%	
A2-9G	A2-9G	15.2-18.3		21-Mar-06	---	---	---	---	---	---	---	---	---	---	3060.	AW-/NU-
A2-9G	A2-9G	15.2-18.3		29-Aug-06	---	---	---	---	---	---	---	---	---	---	3370.	AW-/NU-
A2-9G	DUP9	15.2-18.3		29-Aug-06	---	---	---	---	---	---	---	---	---	---	3500.	AW-/NU-
QA/QC RPD					29-Aug-06	---	---	---	---	---	---	---	---	---	3.8%	
A2-9G	A2-9G	15.2-18.3		12-Apr-07	---	---	---	---	---	---	---	---	---	---	2200.	AW-/NU-
A2-9G	A2-9GX	15.2-18.3		12-Apr-07	---	---	---	---	---	---	---	---	---	---	2180	AW-/NU-
QA/QC RPD					12-Apr-07	---	---	---	---	---	---	---	---	---	0.9%	
A2-9G	A2-9G	15.2-18.3		10-Sep-07	---	---	---	---	---	---	---	---	---	---	2330	AW-/NU-
A2-9G	A2-9G	15.2-18.3		1-Apr-08	---	---	---	---	---	---	---	---	---	---	1480.	AW-/NU-
A2-9G	Dup 1	15.2-18.3		1-Apr-08	---	---	---	---	---	---	---	---	---	---	1510.	AW-/NU-
QA/QC RPD					1-Apr-08	---	---	---	---	---	---	---	---	---	2.0%	
A2-9G	A2-9G	15.2-18.3		28-Aug-08	---	<250.	<250.	<200.	<200.	<1.	<2.	<1.	<2.	1410.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L757627-12	29-Apr-09	---	---	---	<200.	<200.	<1	<2	<1	<1	<1.4	996.	AW-/NU-
A2-9G	A2-9G	15.2-18.3	L811605-10	27-Aug-09	---	---	---	<500.	<500.	<2	<4.	<2	<2.8	1470.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L877703-5	14-Apr-10	---	---	---	<100.	<100.	<0.5	<1	<0.5	<0.75	992.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L930002-9	9-Sep-10	---	---	---	<1000.	<1000.	<5	<10.	<5	<7.1	1070.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L995566-5	14-Apr-11	---	---	---	<200.	<200.	<1	<2	<1	<1.4	826.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L1050404-1	25-Aug-11	---	---	---	<200.	<200.	<1	<1	<1	<1.4	771.	AW-/NU-	
A2-9G	DUP-12	15.2-18.3	L1050404-4	25-Aug-11	---	---	---	<200.	<200.	<1	<1	<1	<1.4	894.	AW-/NU-	
QA/QC RPD					25-Aug-11	---	---	---	---	---	---	---	---	---	14.8%	
A2-9G	A2-9G	15.2-18.3	L1292848-9	23-Apr-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	726.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L1352074-2	22-Aug-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	697.	AW-/NU-	
A2-9G	DUP-13	15.2-18.3	L1352074-3	22-Aug-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	703.	AW-/NU-	
QA/QC RPD					22-Aug-13	---	---	---	---	---	---	---	---	---	0.9%	
A2-9G	A2-9G	15.2-18.3	L1461111-1	27-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	598.	AW-/NU-	
A2-9G	DUP-27	15.2-18.3	L1461111-2	27-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	625.	AW-/NU-	
QA/QC RPD					27-May-14	---	---	---	---	---	---	---	---	---	4.4%	
A2-9G	A2-9G	15.2-18.3	L1507543-5	25-Aug-14	---	---	---	<100.	<100.	<1	<1	<1	<1.4	493.	AW-/NU-	
A2-9G	A2-9G	15.2-18.3	L1585433-2	9-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	557.	AW-/NU-
A2-9G	DUP-2	15.2-18.3	L1585433-3	9-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	527.	AW-/NU-
QA/QC RPD					9-Mar-15	---	---	---	---	---	---	---	---	---	5.5%	
A2-9G	A2-9G	15.2-18.3	L1659479-7	18-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	1.8	5.66	0.88	5.04	502.	AW-/NU-
A2-9G	A2-9G	15.2-18.3	L1742377-4	8-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	333.	AW-/NU-
A2-9G	DUP-2	15.2-18.3	L1742377-6	8-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
QA/QC RPD					8-Mar-16	---	---	---	---	---	---	---	---	---	---	
A2-9G	A2-9G	15.2-18.3	L1811986-1	10-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	409.	AW-/NU-
G2-4D	G2-4D	15.3-18.3		21-Mar-06	---	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	213.	AW-/NU-	
G2-4D	Dup1	15.3-18.3		21-Mar-06	---	<250.	<250.	<100.	<100.	<0.5	<1.	<0.5	<1.	180.	AW-/NU-	
QA/QC RPD					21-Mar-06	---	---	---	---	---	---	---	---	---	16.8%	
G2-4D	G2-4D	15.3-18.3		29-Aug-06	---	<250.	<250.	<100.								

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

				LEPH _w ³	HEPH _w ⁵	EPH _w (C10-C19) ^{2,5}	EPH _w (C19-C32) ¹	VH _w (C6-C10)	VPH _w	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴				(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)		(NU)
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards			500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9	No Specified Water Use Standards ⁵			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards			500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10	No Specified Water Use Standards ⁵			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
Site-Specific Screening Levels (SSSLs)				3000		5000		15000	15000	21000	7700	3200	3300.	4400.		
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date												
WS1-D	WS-1D	4.6-7.6		14-Apr-05	---	---	---	---	---	---	---	---	---	1290.	AW-	
WS1-D	A2-WS-1D	4.6-7.6		14-Sep-05	---	---	---	---	---	---	---	---	---	12600.	AW+	
WS1-D	DUP6	4.6-7.6		14-Sep-05	---	---	---	---	---	---	---	---	---	12800.	AW+	
QA/QC RPD				14-Sep-05	---	---	---	---	---	---	---	---	---	1.6%		
WS1-D	WS-1D	4.6-7.6		21-Mar-06	---	---	---	---	---	---	---	---	---	256.	AW-	
WS1-D	WS-1D	4.6-7.6		23-Aug-06	---	---	---	---	---	---	---	---	---	6500.	AW+	
WS1-D	DUP3	4.6-7.6		23-Aug-06	---	---	---	---	---	---	---	---	---	6550.	AW+	
QA/QC RPD				23-Aug-06	---	---	---	---	---	---	---	---	---	0.8%		
WS1-D	WS-1D	4.6-7.6		10-Apr-07	---	---	---	---	---	---	---	---	---	3030.	AW-	
WS1-D	WS-1D	4.6-7.6		30-Aug-07	---	---	---	---	---	---	---	---	---	2310.	AW-	
WS1-D	WS-1D	4.6-7.6		1-Apr-08	---	---	---	---	---	---	---	---	---	1030.	AW-	
WS1-D	WS-1D	4.6-7.6		3-Sep-08	---	---	---	---	---	---	---	---	---	2360.	AW-	
WS1-D	WS-1D	4.6-7.6		29-Apr-09	---	---	---	---	---	---	---	---	---	268.	AW-	
WS1-D	WS-1D	4.6-7.6		27-Aug-09	---	---	---	---	---	---	---	---	---	2600.	AW-	
WS1-D	WS-1D	4.6-7.6		13-Apr-10	---	---	---	---	---	---	---	---	---	43.1	AW-	
WS1-D	WS-1D	4.6-7.6		8-Sep-10	---	---	---	---	---	---	---	---	---	2320.	AW-	
WS1-D	WS1-D	4.6-7.6		14-Apr-11	---	---	---	---	---	---	---	---	---	4.12	AW-	
WS1-D	WS1-D	4.6-7.6		24-Aug-11	---	---	---	---	---	---	---	---	---	1510.	AW-	
WS1-D	WS1-D	4.6-7.6		30-May-12	---	---	---	---	---	---	---	---	---	734.	AW-	
WS1-D	WS1-D	4.6-7.6		22-Aug-12	---	---	---	---	---	---	---	---	---	1380.	AW-	
WS1-D	DUP-15	4.6-7.6		22-Aug-12	---	---	---	---	---	---	---	---	---	1390.	AW-	
QA/QC RPD				22-Aug-12	---	---	---	---	---	---	---	---	---	0.7%		
WS1-D	WS1-D	4.6-7.6	L1293479-1	24-Apr-13	---	---	---	---	---	---	---	---	---	31.3	AW-	
WS1-D	WS1-D	4.6-7.6	L1351356-1	21-Aug-13	---	---	---	---	---	---	---	---	---	1080.	AW-	
WS1-D	WS1-D	4.6-7.6	L1457530-2	20-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	233.	AW-	
WS1-D	WS1-D	4.6-7.6	L1506853-1	22-Aug-14	---	---	---	<100.	<100.	<2.5	<2.5	<2.5	<3.5	1010.	AW-	
WS1-D	WS1-D	4.6-7.6	L1588784-1	17-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	330.	AW-/NU-	
WS1-D	WS1-D	4.6-7.6	L1658732-1	17-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	906.	AW-/NU-	
WS1-D	WS1-D	4.6-7.6	L1742377-1	8-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	<0.5	AW-/NU-	
WS1-D	WS1-D	4.6-7.6	L1809959-1	8-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	799.	AW-/NU-	
WS1-D1	WS1-D1	13.7-15.2		21-Mar-06	---	---	---	---	---	---	---	---	---	1270.	AW-	
WS1-D1	WS1-D1	13.7-15.2		23-Aug-06	---	---	---	---	---	---	---	---	---	3050.	AW-	
WS1-D1	WS1-D1	13.7-15.2		11-Apr-07	---	---	---	---	---	---	---	---	---	1930.	AW-	
WS1-D1	WS1-D1	13.7-15.2		30-Aug-07	---	---	---	---	---	---	---	---	---	2230.	AW-	
WS1-D1	WS1-D1X	13.7-15.2		30-Aug-07	---	---	---	---	---	---	---	---	---	2180.	AW-	
QA/QC RPD				30-Aug-07	---	---	---	---	---	---	---	---	---	2.3%		
WS1-D1	WS1-D1	13.7-15.2		1-Apr-08	---	---	---	---	---	---	---	---	---	1380.	AW-	
WS1-D1	Dup 2	13.7-15.2		1-Apr-08	---	---	---	---	---	---	---	---	---	1410.	AW-	
QA/QC RPD				1-Apr-08	---	---	---	---	---	---	---	---	---	2.2%		
WS1-D1	WS1-D1	13.7-15.2		28-Aug-08	---	---	---	---	---	---	---	---	---	1560.	AW-	
WS1-D1	WS1-D1	13.7-15.2		29-Apr-09	---	---	---	---	---	---	---	---	---	1010.	AW-	
WS1-D1	WS1-D1	13.7-15.2		27-Aug-09	---	---	---	---	---	---	---	---	---	1060.	AW-	
WS1-D1	WS1-D1	13.7-15.2		13-Apr-10	---	---	---	---	---	---	---	---	---	929.	AW-	
WS1-D1	WS1-D1	13.7-15.2		9-Sep-10	---	---	---	---	---	---	---	---	---	999.	AW-	
WS1-D1	WS1-D1	13.7-15.2		14-Apr-11	---	---	---	---	---	---	---	---	---	532.	AW-	
WS1-D1	WS1-D1	13.7-15.2		25-Aug-11	---	---	---	---	---	---	---	---	---	622.	AW-	
WS1-D1	WS1-D1	13.7-15.2		30-May-12	---	---	---	---	---	---	---	---	---	510.	AW-	
WS1-D1	WS1-D1	13.7-15.2		22-Aug-12	---	---	---	---	---	---	---	---	---	665.	AW-	
WS1-D1	WS1-D1	13.7-15.2	L1293478-4	24-Apr-13	---	---	---	---	---	---	---	---	---	639.	AW-	
WS1-D1	WS1-D1	13.7-15.2	L1352074-6	22-Aug-13	---	---	---	---	---	---	---	---	---	584.	AW-	
WS1-D1	WS1-D1	13.7-15.2	L1459120-9	22-May-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.4	491.	AW-/NU-	
WS1-D1	DUP-22	13.7-15.2	L1459120-8	22-May-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.4	533.	AW-/NU-	
QA/QC RPD				22-May-14	---	---	---	---	---	---	---	---	---	8.2%		
WS1-D1	WS1-D1	13.7-15.2	L1506853-7	22-Aug-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.4	570.	AW-/NU-	
WS1-D1	DUP-14	13.7-15.2	L1506853-8	22-Aug-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.4	572.	AW-/NU-	
QA/QC RPD				22-Aug-14	---	---	---	---	---	---	---	---	---	0.4%		
WS1-D1	WS1-D1	13.7-15.2	L1588784-4	17-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	590.	AW-/NU-
WS1-D1	WS1-D1	13.7-15.2	L1658732-4	17-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	502.	AW-/NU-	
WS1-D1	WS1-D1	13.7-15.2	L1659479-4	18-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	---	AW-/NU-	
WS1-D1	WS1-D1	13.7-15.2	L1744684-2	14-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	450.	AW-/NU-	
WS1-D1	WS1-D1	13.7-15.2	L1809959-2	8-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.75	320.	AW-/NU-	
WS2-D	WS2-D	4.6-7.6		21-Apr-04	---	---	---	---	---	---	---	---	---	49100.	AW+	
WS2-D	WS2-DX	4.6-7.6		21-Apr-04	---	---	---	---	---	---	---	---	---	49100.	AW+	
QA/QC RPD				21-Apr-04	---	---	---	---	---	---	---	---	---	0.0%		
WS2-D	WS-2D	4.6-7.6		18-Oct-04	---	---	---	---	---	---	---	---	---	15500.	AW+	
WS2-D	WS-2D	4.6-7.6		14-Apr-05	---	---	---	---	---	---	---	---	---	23500.	AW+	
WS2-D	A2-WS-2D	4.6-7.6		14-Sep-05	---	---	---	---	---	---	---	---	---	36300.	AW+	
WS2-D	WS2D	4.6-7.6		20-Mar-06	---	---	---	---	---	---	---	---	---	3130.	AW-	
WS2-D	WS2D	4.6-7.6		23-Aug-06	---	---	---	---	---	---	---	---	---	7200.	AW+	
WS2-D	WS2D	4.6-7.6		10-Apr-07	---	---	---	---	---	---	---	---	---	278.	AW-	
WS2-D	WS2D	4.6-7.6		1-Apr-08	---	---	---	---	---	---	---	---	---	893.	AW-	
WS2-D	WS2D	4.6-7.6		29-Apr-09	---	---	---	---	---	---	---	---	---	74.8	AW-	
WS2-D	WS2D	4.6-7.6		27-Aug-09	---	---	---	---	---	---	---	---	---	1090.	AW-	
WS2-D	WS2D	4.6-7.6		13-Apr-10	---	---	---	---	---	---	---	---	---	7.55	AW-	
WS2-D	WS2-D	4.6-7.6		12-Apr-11	---	---	---	---	---	---	---	---	---	2.	AW-	
WS2-D	DUP-13	4.6-7.6		12-Apr-11	---	---	---	---	---	---	---	---	---	2.03	AW-	
QA/QC RPD				12-Apr-11	---	---	---	---	---	---	---	---	---	---		
WS2-D	WS2-D	4.6-7.6		24-Aug-11	---	---	---	---	---	---	---	---	---	657.	AW-	
WS2-D	WS2D	4.6-7.6		29-May-12	---	---	---	---	---	---	---	---	---	20.1	AW-	
WS2-D	WS2-D	4.6-7.6		21-Aug-12	---	---	---	---	---	---	---	---	---	193.	AW-	
WS2-D	WS2-D	4.6-7.6	L1292848-2	23-Apr-13	---	---	---	---	---	---	---	---	---	0.63	AW-	
</																

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPHw ³	HEPHw ⁵	EPHw ₁ (C10-C19) ^{2,5}	EPHw ₂ (C19-C32) ¹	VHw (C6-C10)	VPHw	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴					500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9 Marine/Estuarine Aquatic Life Standards No Specified Water Use Standards ⁴					(AW) (NU)	NS	NS	5000	NS	NS	NS	NS	NS	NS	NS		NS
CSR - Stage 10 Marine/Estuarine Aquatic Life Standards No Specified Water Use Standards ⁴					(AW) (NU)	500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10 Site-Specific Screening Levels (SSSLs)						3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date													
QA/QC RPD					28-Aug-08	---	---	---	---	---	---	---	---	---	---	9.3%	
WS2-D2	WS2-D2	10.7-12.2		29-Apr-09	---	---	---	---	---	---	---	---	---	---	---	8240.	AW+
WS2-D2	WS2-D2	10.7-12.2		27-Aug-09	---	---	---	---	---	---	---	---	---	---	---	4070.	AW-
WS2-D2	WS2-D2	10.7-12.2		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	2000.	AW-
WS2-D2	WS2-D2	10.7-12.2		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	7160.	AW+
WS2-D2	WS2-D2	10.7-12.2		13-Apr-11	---	---	---	---	---	---	---	---	---	---	---	1590.	AW-
WS2-D2	WS2-D2	10.7-12.2		24-Aug-11	---	---	---	---	---	---	---	---	---	---	---	1560.	AW-
WS2-D2	WS2-D2	10.7-12.2		30-May-12	---	---	---	---	---	---	---	---	---	---	---	1160.	AW-
WS2-D2	WS2-D2	10.7-12.2		21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	1560.	AW-
WS2-D2	WS2-D2	10.7-12.2	L1292848-3	23-Apr-13	---	---	---	---	---	---	---	---	---	---	---	546.	AW-
WS2-D2	WS2-D2	10.7-12.2	L1351356-3	21-Aug-13	---	---	---	---	---	---	---	---	---	---	---	1230.	AW-/NU-
WS2-D2	WS2-D2	10.7-12.2	L1459120-1	22-May-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.	<1.4	616.	AW-/NU-	
WS2-D2	WS2-D2	10.7-12.2	L1506853-3	22-Aug-14	---	---	---	<100.	<100.	<2.5	<2.5	<2.5	<3.5	881.	AW-/NU-		
WS2-D2	WS2-D2	10.7-12.2	L1584769-4	5-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	402.	AW-/NU-	
WS2-D2	WS2-D2	10.7-12.2	L1658732-2	17-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	327.	AW-/NU-	
WS2-D2	WS2-D2	10.7-12.2	L1743813-2	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	146.	AW-/NU-	
WS2-D2	WS2-D2	10.7-12.2	L1809959-4	8-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	315.	AW-/NU-	
WS2-D3	WS2-D3	11.6-12.5		9-Sep-05	---	---	---	---	---	---	---	---	---	---	---	10600.	AW+
WS2-D3	WS2-D3	11.6-12.5		14-Sep-05	---	---	---	---	---	---	---	---	---	---	---	9720.	AW+
WS2-D3	WS2-D3	11.6-12.5		21-Mar-06	---	---	---	---	---	---	---	---	---	---	---	10100.	AW+
WS2-D3	WS2-D3	11.6-12.5		23-Aug-06	---	---	---	---	---	---	---	---	---	---	---	10000.	AW+
WS2-D3	WS2-D3	11.6-12.5		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	7700.	AW+
WS2-D3	WS2-D3	11.6-12.5		30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	12600.	AW+
WS2-D3	WS2-D3	11.6-12.5		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	8020.	AW+
WS2-D3	WS2-D3	11.6-12.5		28-Aug-08	---	---	---	---	---	---	---	---	---	---	---	8090.	AW+
WS2-D3	WS2-D3	11.6-12.5		29-Apr-09	---	---	---	---	---	---	---	---	---	---	---	6970.	AW+
WS2-D3	WS2-D3	11.6-12.5		27-Aug-09	---	---	---	---	---	---	---	---	---	---	---	4040.	AW-
WS2-D3	WS2-D3	11.6-12.5		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	4280.	AW-
WS2-D3	WS2-D3	11.6-12.5		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	6560.	AW+
WS2-D3	WS2-D3	11.6-12.5		13-Apr-11	---	---	---	---	---	---	---	---	---	---	---	2610.	AW-
WS2-D3	WS2-D3	11.6-12.5		24-Aug-11	---	---	---	---	---	---	---	---	---	---	---	3340.	AW-
WS2-D3	WS2-D3	11.6-12.5		29-May-12	---	---	---	---	---	---	---	---	---	---	---	2210.	AW-
WS2-D3	WS2-D3	11.6-12.5		21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	2340.	AW-
WS2-D3	WS2-D3	11.6-12.5	L1292848-5	23-Apr-13	---	---	---	---	---	---	---	---	---	---	---	1890.	AW-
WS2-D3	WS2-D3	11.6-12.5	L1351356-5	21-Aug-13	---	---	---	---	---	---	---	---	---	---	---	1030.	AW-
WS2-D3	DUP-11	11.6-12.5	L1351356-11	21-Aug-13	---	---	---	---	---	---	---	---	---	---	---	1010.	AW-
QA/QC RPD					21-Aug-13	---	---	---	---	---	---	---	---	---	---	2.0%	
WS2-D3	WS2-D3	11.6-12.5	L1459120-4	22-May-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.	<1.4	706.	AW-/NU-	
WS2-D3	DUP-21	11.6-12.5	L1459120-7	22-May-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.	<1.4	704.	AW-/NU-	
QA/QC RPD					22-May-14	---	---	---	---	---	---	---	---	---	---	0.3%	
WS2-D3	WS2-D3	11.6-12.5	L1506853-5	22-Aug-14	---	---	---	<100.	<100.	<2.5	<2.5	<2.5	<2.5	<3.5	898.	AW-/NU-	
WS2-D3	DUP-15	11.6-12.5	L1506853-9	22-Aug-14	---	---	---	<100.	<100.	<2.5	<2.5	<2.5	<2.5	<3.5	894.	AW-/NU-	
QA/QC RPD					22-Aug-14	---	---	---	---	---	---	---	---	---	---	0.4%	
WS2-D3	WS2-D3	11.6-12.5	L1584769-2	5-Mar-15	<250.	370.	<250.	370.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	557.	AW-/NU-	
WS2-D3	WS2-D3	11.6-12.5	L1655277-5	10-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	517.	AW-/NU-	
WS2-D3	WS2-D3	11.6-12.5	L1743813-3	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	211.	AW-/NU-	
WS2-D3	WS2-D3	11.6-12.5	L1809959-5	8-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	324.	AW-/NU-	
WS2-D4	WS2-D4	13.7-15.2		9-Sep-05	---	---	---	---	---	---	---	---	---	---	---	8830.	AW+
WS2-D4	WS2-D4	13.7-15.2		14-Sep-05	---	---	---	---	---	---	---	---	---	---	---	11100.	AW+
WS2-D4	WS2-D4	13.7-15.2		21-Mar-06	---	---	---	---	---	---	---	---	---	---	---	6380.	AW+
WS2-D4	WS2-D4	13.7-15.2		23-Aug-06	---	---	---	---	---	---	---	---	---	---	---	8050.	AW+
WS2-D4	WS2-D4	13.7-15.2		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	5030.	AW+
WS2-D4	WS2-D4	13.7-15.2		30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	3850.	AW-
WS2-D4	WS2-D4	13.7-15.2		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	3240.	AW-
WS2-D4	WS2-D4	13.7-15.2		28-Aug-08	---	---	---	---	---	---	---	---	---	---	---	2890.	AW-
WS2-D4	WS2-D4	13.7-15.2		29-Apr-09	---	---	---	---	---	---	---	---	---	---	---	2430.	AW-
WS2-D4	WS2-D4	13.7-15.2		27-Aug-09	---	---	---	---	---	---	---	---	---	---	---	2560.	AW-
WS2-D4	WS2-D4	13.7-15.2		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	1680.	AW-
WS2-D4	WS2-D4	13.7-15.2		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	1820.	AW-
WS2-D4	WS2-D4	13.7-15.2		12-Apr-11	---	---	---	---	---	---	---	---	---	---	---	1670.	AW-
WS2-D4	WS2-D4	13.7-15.2		24-Aug-11	---	---	---	---	---	---	---	---	---	---	---	1610.	AW-
WS2-D4	WS2-D4	13.7-15.2		29-May-12	---	---	---	---	---	---	---	---	---	---	---	1080.	AW-
WS2-D4	WS2-D4	13.7-15.2		21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	597.	AW-
WS2-D4	WS2-D4	13.7-15.2	L1292848-6	23-Apr-13	---	---	---	---	---	---	---	---	---	---	---	929.	AW-
WS2-D4	WS2-D4	13.7-15.2	L1351356-6	21-Aug-13	---	---	---	---	---	---	---	---	---	---	---	479.	AW-
WS2-D4	WS2-D4	13.7-15.2	L1459120-6	22-May-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.	<1.4	594.	AW-/NU-	
WS2-D4	WS2-D4	13.7-15.2	L1506853-6	22-Aug-14	---	---	---	<100.	<100.	<1.	<1.	<1.	<1.	<1.4	663.	AW-/NU-	
WS2-D4	WS2-D4	13.7-15.2	L1584769-5	5-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	451.	AW-/NU-	
WS2-D4	WS2-D4	13.7-15.2	L1658732-3	17-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	452.	AW-/NU-	
WS2-D4	WS2-D4	13.7-15.2	L1743813-5	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	311.	AW-/NU-	
WS2-D4	WS2-D4	13.7-15.2	L1743813-4	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	309.	AW-/NU-	

TABLE B-2

Generic Numerical Water Standards ¹					(AW)	500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	Groundwater
CSR - Stage 9		Marine/Estuarine Aquatic Life Standards			(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
CSR - Stage 9		No Specified Water Use Standards ¹			(AU)	500.	NS	NS	NS	NS	1500.	1000.	NS	2000.	NS	4400.	
CSR - Stage 10		Marine/Estuarine Aquatic Life Standards			(NW)	500.	NS	NS	NS	NS	1500.	1000.	NS	2000.	NS	4400.	
CSR - Stage 10		No Specified Water Use Standards ¹			(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS
Site-Specific Screening Levels (SSSLs)						3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbsg)	ALRS Laboratory Report #	Sample Date													
WS2-D5	WS2-D5	22.6-25.6	L1588414-1	16-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.5	<0.75	157.	AW-/NU-
WS2-D5	WS2-D5	22.6-25.6	L1658732-5	17-Aug-15	---	---	---	---	<100.	<100.	0.56	<0.5	<0.5	<0.5	<0.75	80.8	AW-/NU-
WS2-D5	DUP-2	22.6-25.6	L1658732-7	17-Aug-15	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.5	<0.75	77.4	AW-/NU-
QA/QC RPD				17-Aug-15	---	---	---	---	---	---	---	---	---	---	---	---	4.3%
WS2-D5	WS2-D5	22.6-25.6	L1659479-1	18-Apr-15	<250.	<250.	<250.	<250.	---	---	---	---	---	---	---	---	AW-/NU-
WS2-D5	DUP-2	22.6-25.6	L1659479-6	18-Aug-15	<250.	<250.	<250.	<250.	---	---	---	---	---	---	---	---	AW-/NU-
QA/QC RPD				18-Aug-15	---	---	---	---	---	---	---	---	---	---	---	---	---
WS2-D5	WS2-D5	22.6-25.6	L1743509-4	9-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	114.	AW-/NU-	
WS2-D5	WS2-D5	22.6-25.6	L1812426-1	11-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	112.	AW-/NU-	
WS3-D	WS3-D	4.6-7.6		21-Apr-04	---	---	---	---	---	---	---	---	---	---	---	40200.	AW+
WS3-D	WS-3D	4.6-7.6		18-Oct-04	---	---	---	---	---	---	---	---	---	---	---	15400.	AW+
WS3-D	DUP8	4.6-7.6		18-Oct-04	---	---	---	---	---	---	---	---	---	---	---	16000.	AW+
QA/QC RPD				18-Oct-04	---	---	---	---	---	---	---	---	---	---	---	---	3.8%
WS3-D	WS-3D	4.6-7.6		14-Apr-05	---	---	---	---	---	---	---	---	---	---	---	21200.	AW+
WS3-D	Dup 202	4.6-7.6		14-Apr-05	---	---	---	---	---	---	---	---	---	---	---	21200.	AW+
QA/QC RPD				14-Apr-05	---	---	---	---	---	---	---	---	---	---	---	---	0.0%
WS3-D	WS3-D	4.6-7.6		14-Sep-05	---	---	---	---	---	---	---	---	---	---	---	39900.	AW+
WS3-D	WS3D	4.6-7.6		20-Mar-06	---	---	---	---	---	---	---	---	---	---	---	18100.	AW+
WS3-D	WS3D	4.6-7.6		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	3140.	AW-
WS3-D	WS3D	4.6-7.6		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	955.	AW-
WS3-D	Dup 3	4.6-7.6		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	936.	AW-
QA/QC RPD				1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	---	2.0%
WS3-D	WS3D	4.6-7.6		29-Apr-09	---	---	---	---	---	---	---	---	---	---	---	135.	AW-
WS3-D	WS3D	4.6-7.6		14-Apr-10	---	---	---	---	---	---	---	---	---	---	---	<0.5	AW-
WS3-D	WS3D	4.6-7.6		14-Apr-11	---	---	---	---	---	---	---	---	---	---	---	13.6	AW-
WS3-D	WS3-D	4.6-7.6		25-Aug-11	---	---	---	---	---	---	---	---	---	---	---	109.	AW-
WS3-D	WS3-D	4.6-7.6		30-May-12	---	---	---	---	---	---	---	---	---	---	---	55.4	AW-
WS3-D	WS3-D	4.6-7.6		21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	55.4	AW-
WS3-D	WS3-D	4.6-7.6	L1292848-4	23-Apr-13	---	---	---	---	---	---	---	---	---	---	---	8.07	AW-
WS3-D	WS3-D	4.6-7.6	L1351356-4	21-Aug-13	---	---	---	---	---	---	---	---	---	---	---	7.87	AW-
WS3-D	WS3-D	4.6-7.6	L1460379-1	26-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	16.6	AW-/NU-	
WS3-D	WS3-D	4.6-7.6	L1506853-4	22-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-	
WS3-D	WS3-D	4.6-7.6	L1589209-1	18-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	18.1	AW-/NU-	
WS3-D	WS3-D	4.6-7.6	L1675013-1	17-Sep-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	0.92	AW-/NU-	
WS3-D	WS3-D	4.6-7.6	L1744684-4	14-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	41.4	AW-/NU-	
WS3-D	WS3-D	4.6-7.6	L1809959-6	8-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	28.1	AW-/NU-	
WS3-D2	WS3-D2	10.7-12.2		21-Apr-04	---	---	---	---	---	---	---	---	---	---	---	29400.	AW+
WS3-D2	WS-3D2	10.7-12.2		18-Oct-04	---	---	---	---	---	---	---	---	---	---	---	7300.	AW+
WS3-D2	WS-3D2	10.7-12.2		14-Apr-05	---	---	---	---	---	---	---	---	---	---	---	22700.	AW+
WS3-D2	WS-3D2	10.7-12.2		15-Sep-05	---	---	---	---	---	---	---	---	---	---	---	21300.	AW+
WS3-D2	WS3-D2	10.7-12.2		21-Mar-06	---	---	---	---	---	---	---	---	---	---	---	3750.	AW-
WS3-D2	WS3-D2	10.7-12.2		23-Aug-06	---	---	---	---	---	---	---	---	---	---	---	8560.	AW+
WS3-D2	WS3-D2	10.7-12.2		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	4130.	AW-
WS3-D2	WS3-D2	10.7-12.2		30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	4870.	AW+
WS3-D2	WS3-D2X	10.7-12.2		30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	4720.	AW+
QA/QC RPD				30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	---	3.1%
WS3-D2	WS3-D2	10.7-12.2		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	930.	AW-
WS3-D2	WS3-D2	10.7-12.2		28-Aug-08	---	---	---	---	---	---	---	---	---	---	---	2120.	AW-
WS3-D2	WS3-D2	10.7-12.2		29-Apr-09	---	---	---	---	---	---	---	---	---	---	---	1100.	AW-
WS3-D2	WS3-D2	10.7-12.2		27-Aug-09	---	---	---	---	---	---	---	---	---	---	---	1760.	AW-
WS3-D2	WS3-D2	10.7-12.2		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	510.	AW-
WS3-D2	WS3-D2	10.7-12.2		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	1070.	AW-
WS3-D2	DUP-7	10.7-12.2		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	1030.	AW-
QA/QC RPD				9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	---	3.8%
WS3-D2	WS3-D2	10.7-12.2		12-Apr-11	---	---	---	---	---	---	---	---	---	---	---	461.	AW-
WS3-D2	WS3-D2	10.7-12.2		24-Aug-11	---	---	---	---	---	---	---	---	---	---	---	562.	AW-
WS3-D2	WS3-D2	10.7-12.2		30-May-12	---	---	---	---	---	---	---	---	---	---	---	303.	AW-
WS3-D2	WS3-D2	10.7-12.2		21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	375.	AW-
WS3-D2	DUP-13	10.7-12.2		21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	377.	AW-
QA/QC RPD				21-Aug-12	---	---	---	---	---	---	---	---	---	---	---	---	0.5%
WS3-D2	WS3-D2	10.7-12.2	L1301577-2	14-May-13	---	---	---	---	---	---	---	---	---	---	---	311.	AW-
WS3-D2	WS3-D2	10.7-12.2	L1350565-1	20-Aug-13	---	---	---	---	---	---	---	---	---	---	---	257.	AW-
WS3-D2	WS3-D2	10.7-12.2	L1460379-2	26-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	172.	AW-/NU-	
WS3-D2	WS3-D2	10.7-12.2	L1507543-1	25-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	227.	AW-/NU-	
WS3-D2	WS3-D2	10.7-12.2	L1589209-2	18-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	150.	AW-/NU-	
WS3-D2	DUP-4	10.7-12.2	L1589209-3	18-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	147.	AW-/NU-	
QA/QC RPD				18-Mar-15	---	---	---	---	---	---	---	---	---	---	---	---	2.0%
WS3-D2	WS3-D2	10.7-12.2	L1655277-1	10-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	253.	AW-/NU-	
WS3-D2	DUP-1	10.7-12.2	L1655277-6	10-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	255.	AW-/NU-	
QA/QC RPD				10-Aug-15	---	---	---	---	---	---	---	---	---	---	---	---	0.8%
WS3-D2	WS3-D2	10.7-12.2	L1743813-7	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	136.	AW-/NU-	
WS3-D2	WS3-D2	10.7-12.2	L1810802-3	9-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	182.	AW-/NU-	
WS3-D3	WS3D3	12.2-13.7		9-Sep-05	---	---	---	---	---	---	---	---	---	---	---	3110.	AW-
WS3-D3	WS3D3	12.2-13.7		14-Sep-05	---	---	---	---	---	---	---	---	---	---	---	3550.	AW-
WS3-D3	WS3-D3	12.2-13.7		21-Mar-06	---	---	---	---	---	---	---	---	---	---	---	74.3	AW-
WS3-D3	WS3-D3	12.2-13.7		23-Aug-06	---	---	---	---	---	---	---	---	---	---	---	530.	AW-
WS3-D3	WS3-D3	12.2-13.7		10-Apr-07	---	---	---	---	---	---	---	---	---	---	---	566.	AW-
WS3-D3	WS3-D3	12.2-13.7		30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	525.	AW-
WS3-D3	WS3-D3X	12.2-13.7		30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	505.	AW-
QA/QC RPD				30-Aug-07	---	---	---	---	---	---	---	---	---	---	---	---	3.9%
WS3-D3	WS3-D3	12.2-13.7		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	720.	AW-
WS3-D3	WS3-D3	12.2-13.7		28-Aug-08	---	---	---	---	---	---	---	---	---	---	---	566.	AW-
WS3-D3	WS3-D3	12.2-13.7		29-Apr-09	---	---	---	---	---	---	---	---	---	---	---	524.	AW-
WS3-D3	WS3-D3	12.2-13.7		27-Aug-09	---	---	---	---	---	---	---	---	---	---	---	539.	AW-
WS3-D3	WS3-D3	12.2-13.7		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	537.	AW-
WS3-D3	WS3-D3	12.2-13.7		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	460.	AW-
WS3-D3	DUP-6	12.2-13.7		9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	452.	AW-
QA/QC RPD				9-Sep-10	---	---	---	---	---	---	---	---	---	---	---	---	1.8%
WS3-D3	WS3-D3	12.2-13.7		13-Apr-11	---	---	---	---	---	---	---	---	---	---	---	373.	AW-
WS3-D3																	

TABLE B-2

Generic Numerical Water Standards ¹				(AW)	500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	Groundwater
CSR - Stage 9		Marine/Estuarine Aquatic Life Standards		(AW)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
CSR - Stage 9		No Specified Water Use Standards ²		(NU)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
CSR - Stage 10		Marine/Estuarine Aquatic Life Standards		(AW)	500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10		No Specified Water Use Standards ²		(NU)	NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date												
WS3-D3	WS3-D3	12.2-13.7	L1507543-2	25-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	266.	AW-/NU-
WS3-D3	WS3-D3	12.2-13.7	L1588784-2	17-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	207.	AW-/NU-
WS3-D3	WS3-D3	12.2-13.7	L1655277-2	10-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	207.	AW-/NU-
WS3-D3	WS3-D3	12.2-13.7	L1742377-3	8-Apr-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	192.	AW-/NU-
WS3-D3	WS3-D3	12.2-13.7	L1810802-4	9-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	210.	AW-/NU-
WS3-D3	WS3-D3	12.2-13.7	L1810802-9	9-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	177.	AW-/NU-
QA/QC RPD				9-Aug-16	---	---	---	---	---	---	---	---	---	---	17.1%	
WS3-D4	WS3-D4	14.2-16.0		9-Sep-05	---	---	---	---	---	---	---	---	---	---	11800.	AW+
WS3-D4	DUP1	14.2-16.0		9-Sep-05	---	---	---	---	---	---	---	---	---	---	12400.	AW+
QA/QC RPD				9-Sep-05	---	---	---	---	---	---	---	---	---	---	5.0%	
WS3-D4	WS3-D4	14.2-16.0		14-Sep-05	---	---	---	---	---	---	---	---	---	---	7010.	AW+
WS3-D4	WS3-D4	14.2-16.0		21-Mar-06	---	---	---	---	---	---	---	---	---	---	44.7	AW
WS3-D4	WS3-D4	14.2-16.0		23-Aug-06	---	---	---	---	---	---	---	---	---	---	2330.	AW
WS3-D4	WS3-D4	14.2-16.0		11-Apr-07	---	---	---	---	---	---	---	---	---	---	2290.	AW
WS3-D4	WS3-D4	14.2-16.0		30-Aug-07	---	---	---	---	---	---	---	---	---	---	1160.	AW
WS3-D4	WS3-D4	14.2-16.0		1-Apr-08	---	---	---	---	---	---	---	---	---	---	1160.	AW
WS3-D4	WS3-D4	14.2-16.0		28-Aug-08	---	---	---	---	---	---	---	---	---	---	1210.	AW
WS3-D4	WS3-D4	14.2-16.0		29-Apr-09	---	---	---	---	---	---	---	---	---	---	827.	AW
WS3-D4	WS3-D4X	14.2-16.0		29-Apr-09	---	---	---	---	---	---	---	---	---	---	845.	AW
QA/QC RPD				29-Apr-09	---	---	---	---	---	---	---	---	---	---	2.2%	
WS3-D4	WS3-D4	14.2-16.0		27-Aug-09	---	---	---	---	---	---	---	---	---	---	1090.	AW
WS3-D4	WS3-D4X	14.2-16.0		27-Aug-09	---	---	---	---	---	---	---	---	---	---	1130.	AW
QA/QC RPD				27-Aug-09	---	---	---	---	---	---	---	---	---	---	3.6%	
WS3-D4	WS3-D4	14.2-16.0		13-Apr-10	---	---	---	---	---	---	---	---	---	---	856.	AW
WS3-D4	WS3-D4X	14.2-16.0		13-Apr-10	---	---	---	---	---	---	---	---	---	---	834.	AW
WS3-D4	WS3-D4	14.2-16.0		9-Sep-10	---	---	---	---	---	---	---	---	---	---	675.	AW
WS3-D4	WS3-D4	14.2-16.0		13-Apr-11	---	---	---	---	---	---	---	---	---	---	487.	AW
WS3-D4	DUP-14	14.2-16.0		13-Apr-11	---	---	---	---	---	---	---	---	---	---	456.	AW
QA/QC RPD				13-Apr-11	---	---	---	---	---	---	---	---	---	---	6.8%	
WS3-D4	WS3-D4	14.2-16.0		24-Aug-11	---	---	---	---	---	---	---	---	---	---	464.	AW
WS3-D4	WS3-D4	14.2-16.0		29-May-12	---	---	---	---	---	---	---	---	---	---	334.	AW
WS3-D4	DUP-17	14.2-16.0		29-May-12	---	---	---	---	---	---	---	---	---	---	332.	AW
QA/QC RPD				29-May-12	---	---	---	---	---	---	---	---	---	---	0.6%	
WS3-D4	WS3-D4	14.2-16.0		21-Aug-12	---	---	---	---	---	---	---	---	---	---	356.	AW
WS3-D4	WS3-D4	14.2-16.0	L1301577-1	13-May-13	---	---	---	---	---	---	---	---	---	---	290.	AW
WS3-D4	WS3-D4	14.2-16.0	L1351356-8	21-Aug-13	---	---	---	---	---	---	---	---	---	---	349.	AW
WS3-D4	WS3-D4	14.2-16.0	L1460379-4	26-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	185.	AW-/NU-
WS3-D4	WS3-D4	14.2-16.0	L1507543-3	25-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	196.	AW-/NU-
WS3-D4	WS3-D4	14.2-16.0	L1588784-3	17-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	163.	AW-/NU-
WS3-D4	WS3-D4	14.2-16.0	L1655277-3	10-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	265.	AW-/NU-
WS3-D4	WS3-D4	14.2-16.0	L1744684-1	14-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	159.	AW-/NU-
WS3-D4	WS3-D4	14.2-16.0	L1811986-5	10-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	220.	AW-/NU-
WS3-D5	WS3D5	19.8-21.3		21-Mar-06	---	---	---	---	---	---	---	---	---	---	3500.	AW
WS3-D5	WS3D5	19.8-21.3		23-Aug-06	---	---	---	---	---	---	---	---	---	---	1430.	AW
WS3-D5	WS3D5	19.8-21.3		11-Apr-07	---	---	---	---	---	---	---	---	---	---	838.	AW
WS3-D5	WS3D5	19.8-21.3		30-Aug-07	---	---	---	---	---	---	---	---	---	---	610.	AW
WS3-D5	WS3-D5X	19.8-21.3		30-Aug-07	---	---	---	---	---	---	---	---	---	---	648.	AW
QA/QC RPD				30-Aug-07	---	---	---	---	---	---	---	---	---	---	6.0%	
WS3-D5	WS3D5	19.8-21.3		1-Apr-08	---	---	---	---	---	---	---	---	---	---	509.	AW
WS3-D5	WS3D5	19.8-21.3		28-Aug-08	---	---	---	---	---	---	---	---	---	---	446.	AW
WS3-D5	WS3D5	19.8-21.3		29-Apr-09	---	---	---	---	---	---	---	---	---	---	468.	AW
WS3-D5	WS3-D5	19.8-21.3		27-Aug-09	---	---	---	---	---	---	---	---	---	---	452.	AW
WS3-D5	WS3-D5	19.8-21.3		13-Apr-10	---	---	---	---	---	---	---	---	---	---	443.	AW
WS3-D5	WS3-D5	19.8-21.3		9-Sep-10	---	---	---	---	---	---	---	---	---	---	470.	AW
WS3-D5	WS3-D5	19.8-21.3		14-Apr-11	---	---	---	---	---	---	---	---	---	---	383.	AW
WS3-D5	WS3-D5	19.8-21.3		25-Aug-11	---	---	---	---	---	---	---	---	---	---	318.	AW
WS3-D5	WS3-D5	19.8-21.3		29-May-12	---	---	---	---	---	---	---	---	---	---	390.	AW
WS3-D5	DUP-18	19.8-21.3		29-May-12	---	---	---	---	---	---	---	---	---	---	391.	AW
QA/QC RPD				29-May-12	---	---	---	---	---	---	---	---	---	---	0.3%	
WS3-D5	WS3-D5	19.8-21.3		21-Aug-12	---	---	---	---	---	---	---	---	---	---	450.	AW
WS3-D5	DUP-14	19.8-21.3		21-Aug-12	---	---	---	---	---	---	---	---	---	---	474.	AW
QA/QC RPD				21-Aug-12	---	---	---	---	---	---	---	---	---	---	5.2%	
WS3-D5	WS3-D5	19.8-21.3	L1301576-2	14-Mar-13	---	---	---	---	---	---	---	---	---	---	430.	AW
WS3-D5	WS3-D5	19.8-21.3	L1351356-10	21-Aug-13	---	---	---	---	---	---	---	---	---	---	281.	AW
WS3-D5	DUP-12	19.8-21.3	L1351356-12	21-Aug-13	---	---	---	---	---	---	---	---	---	---	280.	AW
QA/QC RPD				21-Aug-13	---	---	---	---	---	---	---	---	---	---	0.4%	
WS3-D5	WS3-D5	19.8-21.3	L1460379-5	26-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	279.	AW-/NU-
WS3-D5	DUP-26	19.8-21.3	L1460379-6	26-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	293.	AW-/NU-
QA/QC RPD				26-May-14	---	---	---	---	---	---	---	---	---	---	4.9%	
WS3-D5	WS3-D5	19.8-21.3	L1506853-10	22-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	267.	AW-/NU-
WS3-D5	WS3-D5	19.8-21.3	L1588414-2	16-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	409.	AW-/NU-
WS3-D5	WS3-D5	19.8-21.3	L1655277-4	10-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	184.	AW-/NU-
WS3-D5	WS3-D5	19.8-21.3	L1743813-6	10-Mar-16	---	---	---	---	210.	210.	<0.5	<0.5	<0.5	<0.75	435.	AW-/NU-
WS3-D5	WS3-D5	19.8-21.3	L1744684-3	14-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	400.	AW-/NU-
WS3-D5	WS3-D5	19.8-21.3	L1811986-6	10-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	400.	AW-/NU-
WS4-D1	WS4-D1	13.7-15.5		21-Mar-06	---	---	---	---	---	---	---	---	---	---	351.	AW
WS4-D1	WS4-D1	13.7-15.5		23-Aug-06	---	---	---	---	---	---	---	---	---	---	262.	AW
WS4-D1	DUP2	13.7-15.5		23-Aug-06	---	---	---	---	---	---	---	---	---	---	255.	AW
QA/QC RPD				23-Aug-06	---	---	---	---	---	---	---	---	---	---	2.7%	
WS4-D1	WS4-D1	13.7-15.5		10-Apr-07	---	---	---	---	---	---	---	---	---	---	23.8	AW
WS4-D1	WS4-D1	13.7-15.5		18-Sep-07	---	---	---	---	---	---	---	---	---	---	224.	AW
WS4-D1	WS4-D1	13.7-15.5		1-Apr-08	---	---	---	---	---	---	---	---	---	---	163.	AW
WS4-D1	WS4-D1	13.7-15.5		28-Aug-08	---	---	---	---	---	---	---	---	---	---	245.	AW
WS4-D1	WS4-D1	13.7-15.5		29-Apr-09	---	---	---	---	---	---	---	---	---	---	161.	AW
WS4-D1	WS4-D1X	13.7-15.5		29-Apr-09	---	---	---	---	---	---	---	---	---	---	159.	AW
QA/QC RPD				29-Apr-09	---	---	---	---	---	---	---	---	---	---	1.3%	
WS4-D1	WS4-D1	13.7-15.5		27-Aug-09	---	---	---	---	---	---	---	---	---	---	187.	AW
WS4-D1	WS4-D1	13.7-15.5		13-Apr-10	---	---	---	---	---	---	---	---	---	---	161.	AW
WS4-D1	WS4-D1	13.7-15.5		9-Sep-10	---	---	---	---	---	---	---	---	---	---	141.	AW
WS4-D1	WS4-D1	13.7-15.5		14-Apr-11	---	---	---	---	---	---	---	---	---	---	2.34	AW
WS4-D1	DUP-15	13.7-15.5		14-Apr-11	---	---	---	---	---	---	---	---	---	---	2.44	AW
QA/QC RPD				14-Apr-11	---	---	---	---	---	---	---	---	---	---		
WS4-D1	WS4-D1	13.7-15.5		24-Aug-11	---	---	---	---	---	---	---	---	---	---	123.	AW
WS4-D1	DUP-11	13.7-15.5		24-Aug-11	---	---	---	---								

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPH _W ⁵	HEPH _W ⁵	EPH _W (C10-C19) ^{2,5}	EPH _W (C19-C32) ²	VH _W (C6-C10)	VPH _W	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴					(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)		(NU)
CSR - Stage 9		Marine/Estuarine Aquatic Life Standards			500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9		No Specified Water Use Standards ⁵			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		NS
CSR - Stage 10		Marine/Estuarine Aquatic Life Standards			500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10		No Specified Water Use Standards ⁵			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.		
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date													
QA/QC RPD																	
WS4-D1	WS4-D1	13.7-15.5	L1350567-2	24-Apr-13	---	---	---	---	---	---	---	---	---	---	---	1.4%	
WS4-D1	DUP-9	13.7-15.5	L1350567-1	20-Aug-13	---	---	---	---	---	---	---	---	---	---	---	88.6	
WS4-D1	DUP-9	13.7-15.5	L1350567-1	20-Aug-13	---	---	---	---	---	---	---	---	---	---	---	92.7	
QA/QC RPD																	
WS4-D1	WS4-D1	13.7-15.5	L1458370-2	21-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	83.2	AW-/NU-	
WS4-D1	DUP-20	13.7-15.5	L1458370-4	21-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	82.8	AW-/NU-	
QA/QC RPD																	
WS4-D1	WS4-D1	13.7-15.5	L1507541-2	25-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	77.	AW-/NU-	
WS4-D1	WS4-D1	13.7-15.5	L1588385-1	16-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	71.9	AW-/NU-	
WS4-D1	DUP-3	13.7-15.5	L1588385-2	16-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	71.3	AW-/NU-	
QA/QC RPD																	
WS4-D1	WS4-D1	13.7-15.5	L1659479-3	18-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	55.8	AW-/NU-	
WS4-D1	WS4-D1	13.7-15.5	L1742377-5	8-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	58.	AW-/NU-	
WS4-D1	WS4-D1	13.7-15.5	L1810802-2	9-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	55.1	AW-/NU-	
WS-5	WS5	1.3-3.6		21-Apr-04	---	---	---	---	---	---	---	---	---	---	---	143.	
WS-5	WS5	1.3-3.6		20-Mar-06	---	---	---	---	---	---	---	---	---	---	---	<1.	
WS-5	WS5	1.3-3.6		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	<1.	
WS-5	WS5	1.3-3.6		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	<1.	
WS-5	WS5	1.3-3.6		28-Apr-09	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-5	WS5	1.3-3.6		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-5	WS5	1.3-3.6		18-Apr-11	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-5	WS5	1.3-3.6	L1293480-1	24-Apr-13	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-5	WS5	1.3-3.6	L1459121-1	24-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	8.3	AW-/NU-	
WS-5	WS5	1.3-3.6	L1588795-1	17-Mar-15	<500.	<500.	<500.	<500.	<100.	<100.	<0.5	1.51	<0.5	<0.75	<0.5	AW-/NU-	
WS-5	WS5	1.3-3.6	L1742176-2	7-Mar-16	<500.	<500.	<500.	<500.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-	
WS-6	WS6	0.1-2.4		22-Apr-04	---	---	---	---	---	---	---	---	---	---	---	20.7	
WS-6	WS-6	0.1-2.4		19-Oct-04	---	---	---	---	---	---	---	---	---	---	---	1.2	
WS-6	WS-6	0.1-2.4		14-Apr-05	---	---	---	---	---	---	---	---	---	---	---	181.	
WS-6	WS-6	0.1-2.4		14-Sep-05	---	---	---	---	---	---	---	---	---	---	---	1.2	
WS-6	WS-6	0.1-2.4		21-Mar-06	---	---	---	---	---	---	---	---	---	---	---	31.8	
WS-6	WS-6	0.1-2.4		23-Aug-06	---	---	---	---	---	---	---	---	---	---	---	5.6	
WS-6	WS-6	0.1-2.4		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	40.	
WS-6	WS-6	0.1-2.4		10-Sep-07	---	---	---	---	---	---	---	---	---	---	---	1.2	
WS-6	WS-6	0.1-2.4		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	6.9	
WS-6	WS-6	0.1-2.4		3-Sep-08	---	---	---	---	---	---	---	---	---	---	---	3.	
WS-6	WS-6	0.1-2.4		28-Apr-09	---	---	---	---	---	---	---	---	---	---	---	8.14	
WS-6	WS-6	0.1-2.4		27-Aug-09	---	---	---	---	---	---	---	---	---	---	---	91.	
WS-6	WS-6	0.1-2.4		15-Sep-10	---	---	---	---	---	---	---	---	---	---	---	5.93	
WS-6	WS-6	0.1-2.4		18-Apr-11	---	---	---	---	---	---	---	---	---	---	---	240.	
WS-6	WS-6	0.1-2.4		3-Oct-11	---	---	---	---	---	---	---	---	---	---	---	3.15	
WS-6	WS6	0.1-2.4		31-May-12	---	---	---	---	---	---	---	---	---	---	---	6.54	
WS-6	DUP-21	0.1-2.4		31-May-12	---	---	---	---	---	---	---	---	---	---	---	6.33	
QA/QC RPD																	
WS-6	WS6	0.1-2.4		31-May-12	---	---	---	---	---	---	---	---	---	---	---	3.3%	
WS-6	WS6	0.1-2.4		22-Aug-12	---	---	---	---	---	---	---	---	---	---	---	12.2	
WS-6	WS6	0.1-2.4	L1293480-5	24-Apr-13	---	---	---	---	---	---	---	---	---	---	---	58.7	
WS-6	WS6	0.1-2.4	L1352073-2	22-Aug-13	---	---	---	---	---	---	---	---	---	---	---	10.2	
WS-6	WS6	0.1-2.4	L1457531-1	20-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	15.	AW-/NU-	
WS-6	WS6	0.1-2.4	L1506851-1	22-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	8.61	AW-/NU-	
WS-6	DUP-16	0.1-2.4	L1506851-2	22-Aug-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	8.3	AW-/NU-	
QA/QC RPD																	
WS-6	WS6	0.1-2.4	L1588795-2	17-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	1.71	AW-/NU-	
WS-6	WS6	0.1-2.4	L1658732-6	17-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	9.78	AW-/NU-	
WS-6	WS6	0.1-2.4	L1659479-2	18-Aug-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	0.71	AW-/NU-	
WS-6	WS6	0.1-2.4	L1742176-3	7-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	0.71	AW-/NU-	
WS-6	DUP-1	0.1-2.4	L1742176-5	7-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	0.71	AW-/NU-	
QA/QC RPD																	
WS-6	WS6	0.1-2.4	L1810802-5	9-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	10.3	AW-/NU-	
WS-7	WS7	0.9-3.9		22-Apr-04	---	---	---	---	---	---	---	---	---	---	---	41.4	
WS-7	WS-7	0.9-3.9		19-Oct-04	---	---	---	---	---	---	---	---	---	---	---	135.	
WS-7	WS-7	0.9-3.9		14-Apr-05	---	---	---	---	---	---	---	---	---	---	---	221.	
WS-7	WS-7	0.9-3.9		21-Mar-06	---	---	---	---	---	---	---	---	---	---	---	112.	
WS-7	WS-7	0.9-3.9		11-Apr-07	---	---	---	---	---	---	---	---	---	---	---	9.3	
WS-7	WS-7	0.9-3.9		1-Apr-08	---	---	---	---	---	---	---	---	---	---	---	1.4	
WS-7	WS-7	0.9-3.9		28-Apr-09	---	---	---	---	---	---	---	---	---	---	---	3.37	
WS-7	WS-7	0.9-3.9		13-Apr-10	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-7	WS-7	0.9-3.9		18-Apr-11	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-7	WS7	0.9-3.9		31-May-12	---	---	---	---	---	---	---	---	---	---	---	0.67	
WS-7	WS7	0.9-3.9	L1293480-6	24-Apr-13	---	---	---	---	---	---	---	---	---	---	---	<0.5	
WS-7	WS7	0.9-3.9	L1352073-1	22-Aug-13	---	---	---	---	---	---	---	---	---	---	---	8.84	
WS-7	WS7	0.9-3.9	L1457531-2	20-May-14	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-	
WS-7	WS7	0.9-3.9	L1588795-3	17-Mar-15	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-	
WS-7	WS7	0.9-3.9	L1742176-4	7-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00		21-Jul-11	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00		22-May-12	---	---	280.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00		14-Aug-12	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00	L1289006-5	11-Apr-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00	L1344198-2	7-Aug-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00	L1452404-3	7-May-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3S	MW11-3S	5.00-8.00	L1501930-1	13-Aug-14	---	---	<250.	&									

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPHw ³	HEPHw ⁵	EPHw ⁶ (C10-C19) ^{2,5}	EPHw ⁶ (C19-C32) ³	VHw (C6-C10)	VPHw	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴					(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)	(NU)	(AW)		(NU)
CSR - Stage 9 Marine/Estuarine Aquatic Life Standards					500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9 No Specified Water Use Standards ⁴					NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
CSR - Stage 10 Marine/Estuarine Aquatic Life Standards					500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10 No Specified Water Use Standards ⁴					NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.		
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date													
MW11-3D	MW11-3D	18.5-20		14-Aug-12	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1289006-3	11-Apr-13	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1344198-4	7-Aug-13	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1452404-5	7-May-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1501930-3	13-Aug-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1610761-1	12-May-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1663797-3	26-Aug-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1747945-3	22-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-3D	MW11-3D	18.5-20	L1817088-3	22-Aug-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00		21-Jul-11	480.	<250	480	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00		22-May-12	---	---	330	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00		14-Aug-12	---	---	460	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1289006-6	11-Apr-13	---	---	330	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1344198-11	7-Aug-13	---	---	370	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	DUP-1	5.00-8.00	L1344198-9	7-Aug-13	---	---	320	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					7-Aug-13	---	---	---	---	---	---	---	---	---	---		
MW11-4S	MW11-4S	5.00-8.00	L1452404-6	7-May-14	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1501930-4	13-Aug-14	---	---	---	<100	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1610761-2	12-May-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1663797-4	26-Aug-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1747945-4	22-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4S	MW11-4S	5.00-8.00	L1817088-4	22-Aug-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	MW11-4I	11-12.5		21-Jul-11	400.	<250	400	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	MW11-4I	11-12.5		22-May-12	---	---	530	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW+/NU-	
MW11-4I	DUP-13	11-12.5		22-May-12	---	---	440	<250	<100	<100	0.52	28.	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					22-May-12	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5		14-Aug-12	---	---	460	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	DUP-8	11-12.5		14-Aug-12	---	---	450	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					14-Aug-12	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5	L1289006-7	11-Apr-13	---	---	430	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	DUP-20	11-12.5	L1289006-9	11-Apr-13	---	---	450	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					11-Apr-13	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5	L1344198-10	7-Aug-13	---	---	320	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	DUP-2	11-12.5	L1344198-8	7-Aug-13	---	---	350	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					7-Aug-13	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5	L1452404-7	7-May-14	---	---	280	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	DUP-16	11-12.5	L1452404-9	7-May-14	---	---	320	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					7-May-14	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5	L1501930-5	13-Aug-14	---	---	340	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	DUP-8	11-12.5	L1501930-7	13-Aug-14	---	---	370	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					13-Aug-14	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5	L1610761-3	12-May-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	MW11-4I	11-12.5	L1663797-5	26-Aug-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	DUP-6	11-12.5	L1663797-7	26-Aug-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					26-Aug-15	---	---	---	---	---	---	---	---	---	---		
MW11-4I	MW11-4I	11-12.5	L1747945-5	22-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4I	MW11-4I	11-12.5	L1817088-5	22-Aug-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20		21-Jul-11	390.	<250	390	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20		22-May-12	---	---	490	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20		14-Aug-12	---	---	430	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1289006-8	11-Apr-13	---	---	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1344198-5	7-Aug-13	---	---	300	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1452404-8	7-May-14	---	---	280	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1501930-6	13-Aug-14	---	---	310	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1610761-4	12-May-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1663797-6	26-Aug-15	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	MW11-4D	18.5-20	L1747945-6	22-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
MW11-4D	DUP-12	18.5-20	L1747945-7	22-Mar-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
QA/QC RPD					22-Mar-16	---	---	---	---	---	---	---	---	---	---		
MW11-4D	MW11-4D	18.5-20	L1817088-6	22-Aug-16	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	
Equipment Blank	EQUIPMENT BLANK			9-Aug-11	<250	<250	<250	<250	<100	<100	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-	

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

				LEPhw ⁵	HEPhw ⁵	EPH _{hw} (C10-C19) ^{2,5}	EPH _{hw} (C19-C32) ⁵	VPhw (C6-C10)	VPhw	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴															
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	(AW)		500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	
CSR - Stage 9	No Specified Water Use Standards ⁴	(NU)		NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	(AW)		500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10	No Specified Water Use Standards ⁴	(NU)		NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)				3000		5000		15000	15000	21000	7700	3200	3300	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date											
Equipment Blank	EQUIPMENT BLANK 10		L1291408-2	18-Apr-13	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 12		L1293479-3	24-Apr-13	---	---	---	---	---	---	---	---	---	<0.5	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 15		L1296128-6	1-May-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 16		L1297973-3	6-May-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 3		L1284697-6	1-Apr-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 4		L1285746-5	2-Apr-13	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 5		L1285748-4	3-Apr-13	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 8		L1286281-2	4-Apr-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 9		L1290904-4	17-Apr-13	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 11		L1292850-3	23-Apr-13	---	---	<250.	<250.	---	---	---	---	---	<0.5	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-1		L1351356-13	21-Aug-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 2		L1352069-1	22-Aug-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-9		L1368478-1	25-Sep-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 6		L1358623-13	5-Sep-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 7		L1365459-2	10-Sep-13	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 1		L1439677-9	3-Apr-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 2		L1440484-5	7-Apr-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK 4		L1506251-6	21-Aug-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK1		L1498278-5	6-Aug-14	<250.	<250.	<250.	<250.	<100.	<100.	1.58	9.3	0.81	4.38	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-2		L1501939-2	13-Aug-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-3		L1502987-7	14-Aug-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-4		L1503986-7	18-Aug-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-5		L1508365-6	28-Aug-14	---	---	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-1		L1743813-11	10-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-2		L1745070-3	15-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-3		L1745070-4	15-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-6		L1747945-8	22-Mar-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-6		L1811986-8	10-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Equipment Blank	EQUIPMENT BLANK-6		L1815737-7	17-Aug-16	<250.	<250.	<250.	<250.	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			8-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			9-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			10-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			11-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			25-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			29-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			30-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			31-Aug-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			1-Sep-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			6-Sep-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			7-Sep-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			13-Sep-11	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			7-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			8-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			9-May-12	---	---	---	---	<100.	<100.	<0.5	<0.9	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			10-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			17-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			18-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			23-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			25-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			24-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			25-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			28-May-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			29-May-12	---	---	---	---	---	---	---	---	---	<0.5	AW-/NU-
Trip Blank	TRIP BLANK			30-May-12	---	---	---	---	---	---	---	---	---	<0.5	AW-/NU-
Trip Blank	TRIP BLANK			31-May-12	---	---	---	---	---	---	---	---	---	<0.5	AW-/NU-
Trip Blank	TRIP BLANK			13-Jun-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			7-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			8-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK 1			14-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK 2			14-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			15-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			16-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			20-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			21-Aug-12	---	---	---	---	---	---	---	---	---	<0.5	AW-/NU-
Trip Blank	TRIP BLANK			22-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			27-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			28-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			29-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			30-Aug-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			17-Sep-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			24-Sep-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			27-Sep-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	TRIP BLANK			3-Oct-12	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1282463-2	25-Mar-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1283007-2	26-Mar-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRIP BLANK		L1283599-6	27-Mar-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1284107-9	28-Mar-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1284698-8	1-Apr-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1285746-6	2-Apr-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1285748-3	3-Apr-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1286281-3	4-Apr-13	---	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1289012-1	11-Apr-13	---	---	---	---							

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

				LEPH _w ⁵	HEPH _w ⁵	EPH _w (C10-C19) ^{2,5}	EPH _w (C19-C32) ⁵	VHw (C6-C10)	VPH _w	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification
Generic Numerical Water Standards ⁴															
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	(AW)		500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.	
CSR - Stage 9	No Specified Water Use Standards ⁴	(NU)		NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	(AW)		500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.	
CSR - Stage 10	No Specified Water Use Standards ⁴	(NU)		NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS	
Site-Specific Screening Levels (SSSLs)				3000		5000		15000	15000	21000	7700	3200	3300.	4400.	
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date											
Trip Blank	ALS TRAVEL BLANK		L1350563-1	20-Aug-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1351356-14	21-Aug-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1352073-4	22-Aug-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1358623-14	5-Sep-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1365459-1	10-Sep-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1362128-2	12-Sep-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 2		L1366320-7	20-Sep-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1367083-5	23-Sep-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1368488-3	24-Sep-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1372050-5	1-Oct-13	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1437195-6	27-Mar-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1438235-6	31-Mar-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1438632-8	1-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1439099-9	2-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1439677-10	3-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1440484-6	7-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1441127-6	8-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1441769-7	9-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1443637-6	15-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1445814-5	22-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1446488-5	23-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1448681-3	28-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 2		L144882-6	29-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 3		L144883-6	29-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1449337-7	30-Apr-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1450894-9	5-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1451661-6	6-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1454047-4	12-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1454737-3	13-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 2		L1456248-2	15-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1457531-3	20-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1458370-5	21-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1459121-2	22-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1460380-4	26-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1461112-4	27-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1462452-3	29-May-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1471459-5	16-Jun-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1472214-5	17-Jun-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 2		L1472214-10	17-Jun-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1473282-7	18-Jun-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1497251-9	5-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK		L1498293-4	6-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1498925-3	7-Aug-14	---	---	---	<100.	<100.	<0.5	0.75	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 2		L1498927-9	7-Aug-14	---	---	---	<100.	<100.	<0.5	0.76	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1500796-2	11-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1501939-3	13-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1502987-8	14-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1503986-8	18-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1504728-4	19-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1505541-2	20-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1506251-7	21-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1506851-3	22-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1507541-4	25-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1508365-7	26-Aug-14	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1583423-7	3-Mar-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1584040-5	4-Mar-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1584769-6	5-Mar-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1588385-3	16-Mar-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1588795-4	17-Mar-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1589209-4	18-Mar-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1608319-2	6-May-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1608929-6	7-May-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1610017-9	11-May-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1610761-5	12-May-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1655277-7	10-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	<0.5	AW-/NU-
Trip Blank	TRAVEL BLANK		L1658732-8	17-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1659479-9	18-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1660245-5	19-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1662936-6	25-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK		L1663797-8	26-Aug-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1674072-7	16-Sep-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK 1		L1675019-3	17-Sep-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1676220-7	21-Sep-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1681430-5	30-Sep-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	ALS TRAVEL BLANK 1		L1682106-4	1-Oct-15	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK-1		L1742176-6	7-Mar-16	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK-1		L1742377-7	8-Mar-16	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK-1		L1743509-5	9-Mar-16	---	---	---	<100.	<100.	<0.5	<0.5	<0.5	<0.75	---	AW-/NU-
Trip Blank	TRAVEL BLANK-1		L1743813-10	10-Mar-16	---	---	---	<100.	<100.	<0.5					

TABLE B-2
AREA 2 CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					LEPH _w ⁵	HEPH _w ⁵	EPH _w (C10-C19) ^{2,5}	EPH _w (C19-C32) ³	VH _w (C6-C10)	VPH _w	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Groundwater Classification	
Generic Numerical Water Standards ⁴																	
CSR - Stage 9	Marine/Estuarine Aquatic Life Standards	(AW)			500.	NS	NS	NS	NS	1500.	1000.	3300.	2500.	NS	4400.		
CSR - Stage 9	No Specified Water Use Standards ¹	(NU)			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
CSR - Stage 10	Marine/Estuarine Aquatic Life Standards	(AW)			500.	NS	NS	NS	NS	1500.	1000.	2000.	2500.	300.	4400.		
CSR - Stage 10	No Specified Water Use Standards ¹	(NU)			NS	NS	5000	NS	15000.	NS	NS	NS	NS	NS	NS		
Site-Specific Screening Levels (SSSLs)					3000		5000		15000	15000	21000	7700	3200	3300.	4400.		
Well ID	Sample ID	Screened Interval (mbgs)	ALS Laboratory Report #	Sample Date													

HEPH_w Heavy extractable petroleum hydrocarbons in water
 EPH_w Extractable petroleum hydrocarbons in water
 VH Volatile hydrocarbons
 VPH_w Volatile petroleum hydrocarbons in water
 BTEX Benzene, Toluene, Ethylbenzene and Xylenes
 MTBE Methyl tertiary-butyl ether

BOLD Sample concentration greater than CSR standard for aquatic life (AW).
SHADE Sample concentration greater than CSR standard for no specified water use (NU).
BOLD RED HIGHLIGHTED Exceeds Site Specific Screening Levels (SSSLs)

Notes:

- 1 CSR No Water Use Standards are applicable at all sites, irrespective of water use.
- 2 The BC MoE groundwater AW standard listed (500 µg/L) for LEPH corrected for PAHs.
- 3 EPH_w (C10-C19) is LEPH uncorrected for PAHs and therefore conservative.
- 4 Criterion concentration in µg/L.
- 5 Some LEPH/HEPH and EPH10-19/EPH19-32 results from ALS were affected by laboratory contamination. The former values are available upon request.

TABLE B-3
AREA 2 CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

				Acenaphthene	Acridine	Anthracene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Groundwater Classification	
Generic Numerical Water Standards																					
CSR - Stage 9																					
CSR - Stage 10																					
Site-Specific Screening Levels (SSSLs)				(AW) ¹	(AW) ¹																
				60	0.5	1	1	0.1	NS	NS	1	NS	2	120	NS	10	3	0.2	34		
				60	30	40	1	2.8			1		40	120		440	3	40	34		
Well ID	Sample ID	Screened Interval	ALS Laboratory Report #	Sample Date																	
PW03-1A	PW03-1A	2.4-4.0		22-Apr-04	<0.8	<0.08	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	1.69	<0.05	269.	0.904	<0.05	0.308	AW+	
PW03-1A	PW03-1A	2.4-4.0		15-Oct-04	1.08	<0.2	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	2.78	<0.05	273.	1.94	<0.05	<0.4	AW+	
PW03-1A	PW03-1A	2.4-4.0		15-Apr-05	1.08	0.101	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	2	<0.05	393.	1.44	<0.05	<0.3	AW+	
PW03-1A	Dup 102	2.4-4.0		15-Apr-05	1.19	<0.05	1.5	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	2.06	<0.05	345.	1.51	<0.05	<0.05	AW+	
PW03-1A	PW03-1A	2.4-4.0		13-Sep-05	0.846	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	1.19	<0.05	222.	0.951	<0.05	<0.05	AW+	
PW03-1A	PW03-1A	2.4-4.0		23-Mar-06	0.953	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	1.3	<0.05	335.	0.586	<0.05	<0.3	AW+	
PW03-1A	PW03-1A	2.4-4.0		23-Aug-06	0.929	<0.08	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	1.5	<0.05	149.	0.631	<0.05	<0.6	AW+
PW03-1A	PW03-1A	2.4-4.0		13-Apr-07	1.6	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	2.4	<0.05	375.	1.1	<0.05	<1	AW+	
PW03-1A	PW03-1A	2.4-4.0		6-Sep-07	1	<1	<1	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	1.5	<0.05	218.	<1	<0.05	<1	AW+	
PW03-1A	PW03-1A	2.4-4.0		14-Nov-07	1.1	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	2	<0.05	291.	<1	<0.05	<1	AW+	
PW03-1A	PW03-1A	2.4-4.0		1-Apr-08	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW	
PW03-1A	PW03-1A	2.4-4.0		4-Sep-08	<1	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	3.7	<1	0.072	<1	AW+	
PW03-1A	PW03-1A	2.4-4.0		4-May-09	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.5	1.06	<0.05	<0.05	AW	
PW03-1A	PW03-1A	2.4-4.0		14-Apr-10	<0.3	<0.1	<0.1	<0.1	<0.01	<0.1	<0.05	<0.1	<0.05	<0.2	<0.05	<2	<1.1	<0.1	<0.7	AW	
PW03-1A	PW03-1A	2.4-4.0		15-Sep-10	<0.1	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	1.04	<0.05	<0.05	<0.5	AW	
PW03-1A	PW03-1A	2.4-4.0		19-Apr-11	<0.18	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.22	AW	
PW03-1A	PW03-1A	2.4-4.0		22-Aug-11	<0.14	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.15	<0.05	<0.15	AW	
PW03-1A	PW03-1A	2.4-4.0	L1448683-1	29-Apr-14	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW	
PW03-1A	PW03-1A	2.4-4.0	L1743508-2	9-Mar-16	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW	
PW03-1B	PW03-1B	2.4-4.0		22-Apr-04	<0.8	<0.08	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	1.69	<0.05	269.	0.904	<0.05	<0.308	AW+
PW03-1B	PW03-1B	2.4-4.0		15-Oct-04	1.08	<0.2	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	2.78	<0.05	273.	1.94	<0.05	<0.4	AW+
PW03-1B	PW03-1B	2.4-4.0		15-Apr-05	1.08	0.101	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	2	<0.05	393.	1.44	<0.05	<0.3	AW+
PW03-1B	PW03-1B	2.4-4.0		13-Sep-05	0.846	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	1.19	<0.05	222.	0.951	<0.05	<0.05	AW+
PW03-1B	PW03-1B	2.4-4.0		23-Mar-06	0.953	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	1.3	<0.05	335.	0.586	<0.05	<0.3	AW+
PW03-1B	PW03-1B	2.4-4.0		23-Aug-06	0.929	<0.08	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	1.5	<0.05	149.	0.631	<0.05	<0.6	AW+
PW03-1B	PW03-1B	2.4-4.0		13-Apr-07	1.6	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	2.4	<0.05	375.	1.1	<0.05	<1	AW+
PW03-1B	PW03-1A	2.4-4.0		6-Sep-07	1	<1	<1	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	1.5	<0.05	218.	<1	<0.05	<1	AW+
PW03-1B	PW03-1A	2.4-4.0		14-Nov-07	1.1	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	2	<0.05	291.	<1	<0.05	<1	AW+
PW03-1B	PW03-1A	2.4-4.0		1-Apr-08	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW	
PW03-1B	PW03-1A	2.4-4.0		4-Sep-08	<1	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	3.7	<1	0.072	<1	AW+	
PW03-1B	PW03-1A	2.4-4.0		4-May-09	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.5	1.06	<0.05	<0.05	AW	
PW03-1B	PW03-1A	2.4-4.0		14-Apr-10	<0.3	<0.1	<0.1	<0.1	<0.01	<0.1	<0.05	<0.1	<0.05	<0.2	<0.05	<2	<1.1	<0.1	<0.7	AW	
PW03-1B	PW03-1A	2.4-4.0		15-Sep-10	<0.1	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.1	<0.05	1.04	<0.05	<0.05	<0.5	AW	
PW03-1B	PW03-1A	2.4-4.0		19-Apr-11	<0.18	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.22	AW	
PW03-1B	PW03-1A	2.4-4.0		22-Aug-11	<0.14	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.15	<0.15	<0.05	<0.15	AW	
PW03-1B	PW03-1A	2.4-4.0	L1448683-1	29-Apr-14	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW	
PW03-1B	PW03-1A	2.4-4.0	L1743508-2	9-Mar-16	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW	
PW03-1B	PW03-1B	2.4-4.0		22-Apr-04	<0.8	<0.08	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	1.69	<0.05	269.	0.904	<0.05	<0.308	AW+
PW03-1B	PW03-1B	2.4-4.0		15-Oct-04	1.08	<0.2	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	2.78	<0.05	273.	1.94	<0.05	<0.4	AW+
PW03-1B	PW03-1B	2.4-4.0		15-Apr-05	1.08	0.101	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	2	<0.05	393.	1.44	<0.05	<0.3	AW+
PW03-1B	PW03-1B	2.4-4.0		13-Sep-05	0.846	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	1.19	<0.05	222.	0.951	<0.05	<0.05	AW+
PW03-1B	PW03-1B	2.4-4.0		23-Mar-06	0.953	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	1.3	<0.05	335.	0.586	<0.05	<0.3	AW+
PW03-1B	PW03-1B	2.4-4.0		23-Aug-06	0.929	<0.08	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	1.5	<0.05	149.	0.631	<0.05	<0.6	AW+
PW03-1B	PW03-1B	2.4-4.0		13-Apr-07	1.6	<1	<1	<0.05	<0.01	<0.05	<0.05	<0.									

TABLE B-3
AREA 2 CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN GROUNDWATER
SEMI-ANNUAL PERIMETER MONITORING PROGRAM
CHEVRON BURNABY REFINERY
µg/L (ppb)

					Acenaphthene	Acridine	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Groundwater Classification
Generic Numerical Water Standards					(AW) ¹	(AW) ¹															
CSR - Stage 9 Aquatic Life Standards																					
CSR - Stage 10 Aquatic Life Standards																					
Site-Specific Screening Levels (SSSLs)					60	30	40	1	2.8			1		40	120		440	3	40	34	
ALS																					
Well ID	Sample ID	Screened Interval	Laboratory Report #	Sample Date																	
PW03-5	PW03-5	7.6-8.5		13-Apr-07	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		6-Sep-07	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.09	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		1-Apr-08	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		3-Sep-08	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	1.25	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		22-Apr-09	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		27-Aug-09	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		14-Apr-10	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.07	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		15-Sep-10	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.07	<0.05	<0.05	<0.05	AW-
PW03-5	DUP-16	7.6-8.5		15-Sep-10	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.063	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		19-Apr-11	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.085	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		22-Aug-11	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.09	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5		10-May-12	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5	L1286283-1	4-Apr-13	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5	L1448683-5	29-Apr-14	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-5	PW03-5	7.6-8.5	L1608317-1	6-May-15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.05	AW-
PW03-5	PW03-5	7.6-8.5	L1743508-4	9-Mar-16	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-5	DUP-3	7.6-8.5	L1743508-8	9-Mar-16	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		22-Apr-04	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.171	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		14-Oct-04	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.693	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		15-Apr-05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		21-Mar-06	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		13-Apr-07	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		1-Apr-08	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		22-Apr-09	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		14-Apr-10	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0		19-Apr-11	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0	L1448682-3	29-Apr-14	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
PW03-6	PW03-6	1.1-3.0	L1743508-5	9-Mar-16	<0.05	<0.05	<0.05	<0.05	<0.01	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	AW-
CSR	Contaminated Sites Regulation (including Stage 9 amendments, January 2014, Stage 10 amendments, October 2016).																				
NS	No standard established for indicated parameter.																				
NC	No criteria established for indicated parameter.																				
<	Sample concentration less than the reported detection limit indicated.																				
QA/QC	Quality Assurance/Quality Control																				
RPD	Relative Percent Difference																				
---	Sample not analyzed for indicated parameter.																				
µg/L	Micrograms per litre																				
n/b	Parts per billion																				
ns	Not Sampled																				

CSR Contaminated Sites Regulation (including Stage 9 amendments, January 2014, Stage 10 amendments, October 2016).

NS No standard established for indicated parameter.

NC No criteria established for indicated parameter.

< Sample concentration less than the reported detection limit indicated.

QA/QC Quality Assurance/Quality Control

RPD Relative Percent Difference

— Sample not analyzed for indicated parameter.

µg/L Micrograms per litre

ppb Parts per billion

ns Not Sampled

BOLD Sample concentration greater than CSR standard for aquatic life (AW).

BOLD RED HIGHLIGHTED Exceeds Site Specific Screening Levels (SSSLs)

Notes:

1 CSR AW standards apply to both freshwater and marine receiving environments.

2 Criterion concentration in µg/L

APPENDIX C

PERIMETER EXTRACTION SYSTEM OPERATIONS AND PERFORMANCE

APPENDIX C – PERIMETER EXTRACTION SYSTEM OPERATION AND MAINTENANCE

1 OPERATION

The Perimeter Extraction System (PES) operates by drawing down the water table, in a line of closely spaced extraction wells, in order to create a groundwater depression along the northern fence line of the refinery to intercept and preclude the off-site migration of non-aqueous phase liquid (NAPL) and dissolved phase PHCs (above CSR AW and NU standards) in groundwater that originate from the Area 2 NAPL plume. The pumps in the PES wells are air-powered, float-activated and top loading. The pumps fill with fluid and once the fluid reaches the top of the pump, trip the float which opens the pressurized air-line. The air pressure then pushes the fluid up the discharge line to the surface and the header discharge line. Once the fluid is evacuated from the pump, the float resets and the process restarts. Each discharge cycle is recorded by a cycle counter.

The system was checked twice a month in 2015 and 2016 to ensure water levels in the extraction wells are at the pump intake.

In 2014, some PES wells in the East Section did not adequately draw down the water in the extraction wells to the elevation of the pump intake due to inadvertent blockages in the discharge pipes. As discussed in the 2014 PMP and PES report, the groundwater velocity in the area between the PES and the Refinery property boundary is estimated to be 30.5 m/yr, indicating that it would take an estimated six months for contaminated groundwater to travel from the PES to the Refinery property boundary under non-pumping conditions. Downgradient well monitoring and data collection in 2014 at Lower Bench wells and Foreshore wells had not exhibited changes (visual or analytical) indicative of increased off-site migration of impacted groundwater and/or NAPL. As such, the overall impact of the reduced drawdown effectiveness in the East Section of the PES in 2014 is considered to be minimal to negligible. Further, this issue was addressed by CCL in March 2015 via installation of a temporary bypass and then with the construction of system enhancements in the East Section of the PES in October 2015.

Effective levels of drawdown were maintained in all PES areas in 2015 and 2016.

2 QUARTERLY GROUNDWATER MONITORING

Groundwater levels in the extraction wells and the nearby monitoring wells are monitored quarterly to evaluate the effects of the PES on the groundwater system. Specifically, the water level measurements are used to evaluate whether the extraction well pumping is effective in lowering the groundwater levels along the northern perimeter. The quarterly monitoring events were completed in April, May, August, and November 2015 and March, May, August, and November 2016.

In 2015, groundwater elevations along the Upper and Lower Benches remained generally drawn down in the Central and West Sections indicating good hydraulic connection between the extraction wells and the surrounding subsurface. When compared to the static groundwater elevations measured in January 2012 groundwater drawdown in 2015 ranged from 5.1 m to 6.1 m along the Upper Bench and 1.2 m to 3.7 m along the Lower Bench. In 2016, groundwater elevations along the Upper and Lower Benches remained generally drawn down in all Sections indicating good hydraulic connection between the extraction wells and the surrounding subsurface. When compared to the static groundwater elevations measured in January 2012 groundwater drawdown in 2016 ranged from 4.9 m to 5.6 m along the Upper Bench and 1.1 m to 3.6 m along the Lower Bench.

Figures C1 through C8 display 2015 and 2016 groundwater elevations and contours associated with the extraction wells along the Upper Bench for April, May, August, and November 2015 and March, May, August, and November 2016. Figures C9 through C16 display the same quarterly groundwater elevations, and include pump rates, in east-west cross-sections. Groundwater drawdowns are calculated and summarized in Table C-2.

3 TOTAL FLUID AND EFFLUENT EXTRACTION RATES

Extraction rates pumped from each well location are determined by multiplying the number of cycles that occurred over a period of time by the volume of fluid pumped during each cycle. The volume of each cycle is calculated by completing a quarterly measuring test where each pump discharges into an empty 208 litre (L) drum. In 2015, the PES extracted 43,919 cubic metres (m^3) of fluid and in 2016, extracted 33,823 m^3 of fluid.

Each quarter, drum tests are used to measure the amount of NAPL extracted as a percentage of the effluent. This percentage is then extrapolated to estimate the amount of NAPL extracted over the previous quarter. In 2015, NAPL was not observed; however, sheens were observed on the surfaces of the effluent discharged into the drums located at three extraction wells. When a sheen was observed, it was assumed that the NAPL percentage is 0.01%, though in practice, this number is likely lower. Note that prior to November 22, 2012, NAPL sheens were estimated at 0.1%. A summary of the total fluids and NAPL removed each year is listed in the Table C-3 below:

Table C-3 Summary of Total Fluids and NAPL Removed by the PES

Year	Total fluids extracted	NAPL extracted
2016	33,823 m^3	~ 200 L
2015	43,919 m^3	~ 240 L
2014	55,000 m^3	~ 500 L
2013	49,000 m^3	~ 300 L

2012	48,700 m ³	~ 500 L
2011	12,900 m ³	~ 21,700 L

Of the 240 litres of NAPL observed in 2015, approximately 95% was from one well, UEIB-45. Of the 200 litres of NAPL observed in 2016, approximately 81% was from one well, UEIB-45. These results suggest the amount of recoverable NAPL has reached an asymptote, and that future NAPL recovery rates will be similar, and only slightly lower than this level.

Table C-1 provides flow and NAPL extraction rates for all wells since they were first commissioned.

4 MAINTENANCE

The need to complete pump maintenance is determined through monitoring and assessments of the pumps. The system operation was checked twice a month to confirm the pumps were operating properly. Pump maintenance was conducted annually to clean the downhole components of the pumps and replace worn parts as needed to maintain efficient pump operation.

Extraction wells were redeveloped annually using a firehose and vacuum truck to remove sediment and sludge that may accumulate in the well intake area during pumping and to maintain good hydraulic communication between the extraction well and surrounding subsurface.

In September 2015, pumps were removed from the wells, disassembled, and cleaned. While disassembled, an inspection of the pump parts and components were conducted to identify visible signs of wear, corrosion, discoloration, evidence of rubbing, damage, clogging, presence of foreign objects/debris, and missing parts. Despite applying a downhole power washer and use of a hoist and tripod, two pumps in the East Section remain stuck downhole: UEIB-20 and UEIB-31. From December 14 to 17, 2015, minor maintenance was conducted on UEIB-15, UEIB-16, UEIB-19, UEIB-21, UEIB-24, and UEIB-30 to replace worn parts and to clean the build-up of biofouling, discussed further below. The AP-4 short body pump from UEIB-14 was removed on December 14, 2015 and relocated to UEIB-10 on December 17, 2015.

In August and September 2016, the pumps were removed from the wells, disassembled, and cleaned. While disassembled, an inspection of all pump parts and components was completed to identify visible signs of wear, corrosion, discoloration, evidence of rubbing, damage, clogging, presence of foreign objects/debris, and missing parts. The tubing for eight pumps (UEIB-15, UEIB-16, UEIB-17, UEIB-21, UEIB-22, UEIB-24, UEIB-27, and UEIB-29) was replaced during this August and September service. In October 2016, the check valve of UEIB-45 was repaired. In December 2016, additional minor maintenance was conducted on 18 pumps (UEIB-15, UEIB-18, UEIB-19, UEIB-22, UEIB-24 to UEIB-27, UEIB-29, UEIB-34, UEIB-36, UEIB-38 to UEIB-43, and UEIB-45) to replace worn parts and to clean the build-up biofouling and the tubing for UEIB-19 was replaced with larger diameter tubing.

Operational Issues

The pumps are designed to keep the water levels in the extraction wells at the level of the pump intake. In 2015, several extraction wells, on multiple occasions, had water levels greater than 0.5 m above their pump intake. The header pipe throughout the system is 1.5-inches in diameter. This size of pipe may be causing friction losses which, in turn, affect pump performance and prevent a complete drawdown of the water table. Some areas of pipe were totally blocked by the biofouling in East Section. In March 2015, CCL installed a temporary bypass to address this blockage. In October 2015, CCL installed and commissioned a larger-diameter header pipe for the East Section. The performance of the PES in the East Section improved in 2016, with water levels generally lower in the extraction wells. But there continued to be challenges in keeping the groundwater level in the extraction wells at the pump intake in some of the wells, likely due to the presence of biofouling. Biofouling is discussed in the following paragraph.

Throughout 2015 and 2016, biofouling was continuously observed in all extraction wells along the Central and Eastern sections with the exception of UEIB-14 to UEIB-16, UEIB-45, and UEIB-46. Occasionally, UEIB-17 to UEIB-19, UEIB-21 to UEIB-24, and UEIB-26 to UEIB-28 would malfunction due to biofouling or sediment build up. Fortunately, the biofouling did not appear to impact the operation of the other pumps located in these sections. CCL is in the process of completing further upgrades to the system including a chemical dosing system that is planned to be commissioned in July 2017 which should reduce the amount of biofouling in the system.

Other minor maintenance issues that were dealt with in 2015 and 2016 included malfunctioning check valves, regular wear on parts and stuck pumps. The details of these issues are noted below:

- 1) UEIB-15 worked intermittently in 2016. A new wye assembly was installed in December 2016 after which the pump operated efficiently.
- 2) UEIB-16 worked intermittently in 2015. The pump was taken apart, cleaned and re-assembled in March 2015, continued to work intermittently. The air poppet system and lever system were replaced during the September 2015 annual maintenance after which the pump operated effectively.
- 3) UEIB-18 vented air in February 2015. The pump was taken apart, cleaned, re-assembled and re-started on March 25, 2015 and operated effectively for the remainder of 2015. In December 2016, the bottom of the inlet casting plate was machined and a new wye assembly was installed. The pump operated effectively after this repair.
- 4) UEIB-19 worked intermittently in the first quarter of 2015. The pump was taken apart, cleaned, re-assembled and re-started on March 25, 2015 after which it operated more effectively. In the second half of 2016, the pump started to operate less effectively. In December 2016, larger diameter 1.25-inch tubing was installed. The pump operated effectively after the tubing replacement.
- 5) UEIB-21 did not work for the first half of 2016. During the August and September 2016 maintenance, a new pump was installed in which operated effectively for the remainder of 2016.

- 6) UEIB-22 was non-operational from January to March 2015 due to sediment build-up. UEIB-22 was redeveloped in 2015 to remove sediment and the pump was replaced by a refurbished pump. The refurbished pump worked well for the remainder of 2015. In July 2016 the pump did not work. During the August and September 2016 maintenance, a new pump was installed which operated effectively for the remainder of 2016.
- 7) The piston check valve for UEIB-24 and swing check valve for UEIB-20, located in the Eastern Section, became stuck in an open or closed position; likely due to sediment build-up. This issue was resolved all check valves were replaced with new swing check valves in October 2015. This pump had additional performance issues in March 2016. The Y” assembly was replaced in March 2016, after which the pump operated effectively.
- 8) UEIB-27 had a leak at the top loading Y-assembly unit which caused poor performance for this pump. The pump was replaced with a refurbished pump and restarted on March 25, 2015 after which it operated effectively until March 2016. The pump was disassembled, cleaned and adjusted after which it operated effectively, but was not able to maintain water at the pump intake.
- 9) UEIB 29 was not able to maintain water at the pump intake for the first half of 2016. In July 2016, the float guide rod and spring in the pump, and the tubing were replaced. The pump operated effectively after this repair.
- 10) Three pumps could not be removed from their respective wells in 2015: UEIB-20, UEIB-30, and UEIB-31. A down-hole power washer was used during the September 2015 annual maintenance, and UEIB-30 was successfully removed. UEIB-20 and UEIB-31 were still stuck; however, they did operate more consistently in 2015 after power washing the inside of the well casing above the pump. Unfortunately, these two pumps do not effectively keep the water level in the extraction well close to the pump intakes. UEIB-31 stopped working in March 2016 and UEIB-20 stopped working in November 2016. In 2017, these two pumps will be addressed by either removing them, pushing them to the bottom of the extraction well, or installing a new replacement extraction wells adjacent the current extraction wells UEIB-21 and UEIB-30 and installing new pumps in these new wells.
- 11) UEIB-34 cycled but did not extract water from April to July 2016. The pump was serviced in August 2016 after which the pump functioned effectively until the end of 2016.
- 12) UEIB-36 did not cycle from March to July 2016. The pump was removed, dismantled, clean and re-installed in August 2016. The pump cycled, but did not operate very effectively. The pump was refurbished in December 2016 after which it operated efficiently.
- 13) UEIB-39 did not cycle from August to December, 2016. The pump was refurbished in December 2016 after which, it operated efficiently.
- 14) UEIB-43 did not operate effectively from May to December 2016. The pump was replaced with a refurbished pump in December 2016 after which the pump operated effectively.

As noted in the next section, despite the above issues, capture was maintained along the length of the PES for 2015 and 2016 and off-site migration of NAPL and dissolved phase hydrocarbons was precluded based on a capture assessment. Furthermore, downgradient well monitoring and data collection in 2015 and 2016 at Lower Bench wells have not exhibited changes (visual or analytical) indicative of increased off-site migration of impacted groundwater and/or NAPL.

5 PERFORMANCE ASSESSMENT

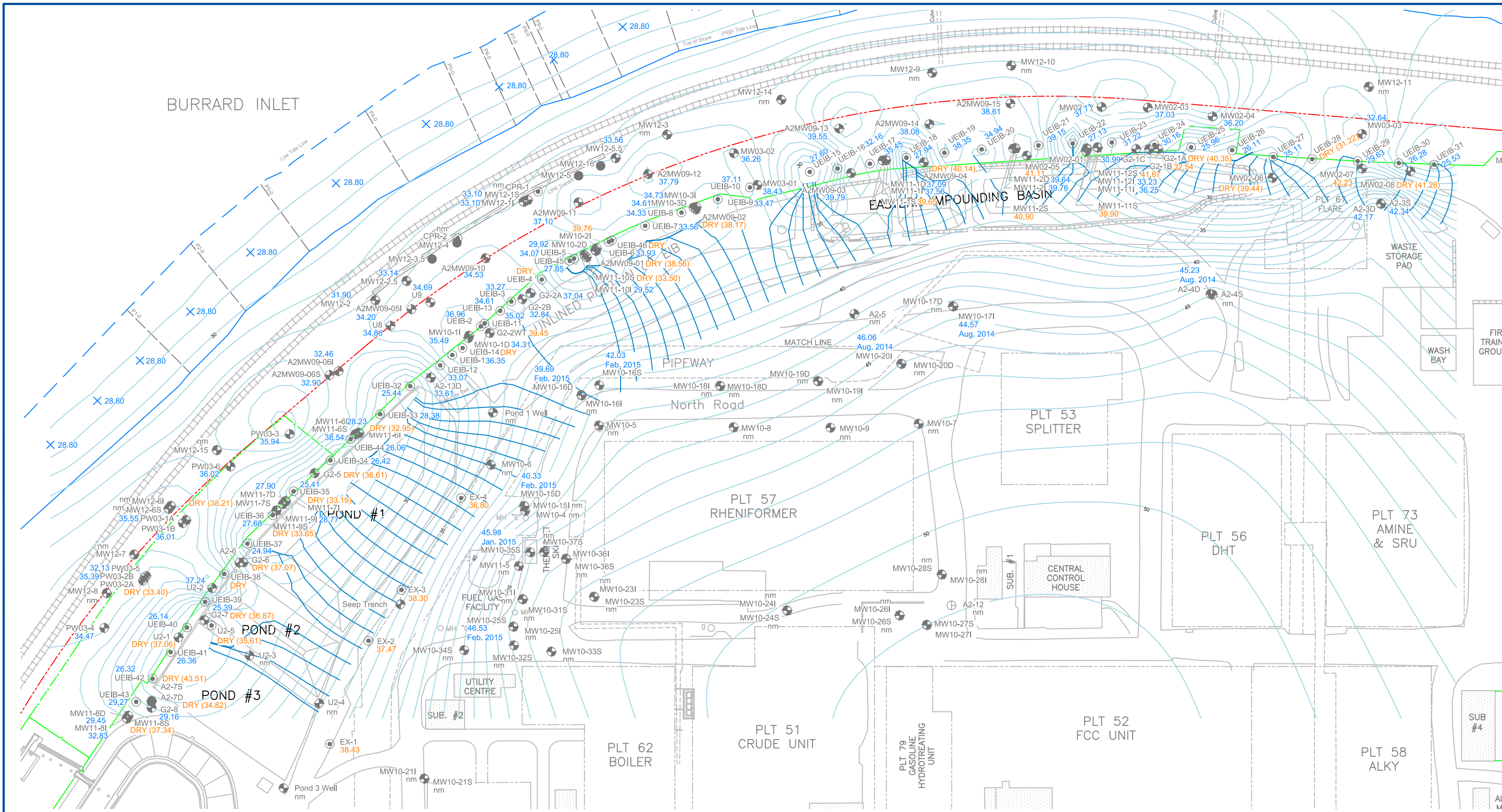
The results of a capture zone assessment, which is based on data collected throughout 2015 and 2016 are consistent among the four quarters (Q1 through Q4), and are shown in Figures C-1 through C-8. These maps show the estimated groundwater level contours and flow lines (which are NAPL migration paths), which provide an illustration of the drawdown and capture zone along the PES.

In evaluating the PES effects on groundwater levels and capture, the monitoring data were used to interpret groundwater level contours and estimate potential directions of movement for NAPL and groundwater near the water table surface (flow paths). AECOM used Surfer 8 by Golden Software to generate initial groundwater contours, which an AECOM engineer then modified using control points. Once the contours were completed, flow lines orthogonal to the contours were added to these potentiometric maps to estimate the hydraulic capture zone created by pumping the PES wells. Information resolution based on the available monitoring points is denser in some areas (e.g., there are several data points located between extraction well pairs UEIB-25/27, UEIB-32/39, and UEIB-45/46), but relatively few data points in some other areas (e.g., where wells downslope of the PES become seasonally dry in the summer). Overall, the data point locations are generally sufficient to interpret flow and capture. Once generated, the estimated flow direction lines were smoothed and interpreted by an AECOM engineer based on professional judgement. Figures C-1 to C-8 show the potentiometric contours and estimated flow direction lines.

The groundwater monitoring data indicate the PES effectively limits the migration of NAPL and dissolved phase hydrocarbons. Continued operation of the PES is expected to prevent NAPL from migrating beyond the refinery property line. The PES is also capturing and removing impacted groundwater.

6 CONCLUSION

The PES operation precludes off-site migration of NAPL and dissolved phase hydrocarbons along the northern perimeter of Area 2.



LEGEND:

Property Line	---	Monitoring Well	⊕	Groundwater Contour (m)	~	Well Not Monitored	nm
Fence Line	-x-x-	Borehole	●	Groundwater Elevation (m)	32.49	NOTE: Some wells have a date beside them as they were not monitored during the April 2015 monitoring event.	
Foreshore Sampling Transect	- - -	Extraction Well	⊙	Groundwater Elevation (m)	40.14	UEIB well elevations taken on April 15, 2015.	
		Groundwater Flow	→	Groundwater Elevation (m)		Wells indicated as dry show a bottom of well elevation in brackets.	
				Mean Tide Elevation Point	X		

**PERIMETER EXTRACTION SYSTEM
GROUNDWATER ELEVATIONS -
APRIL 7-15, 2015**

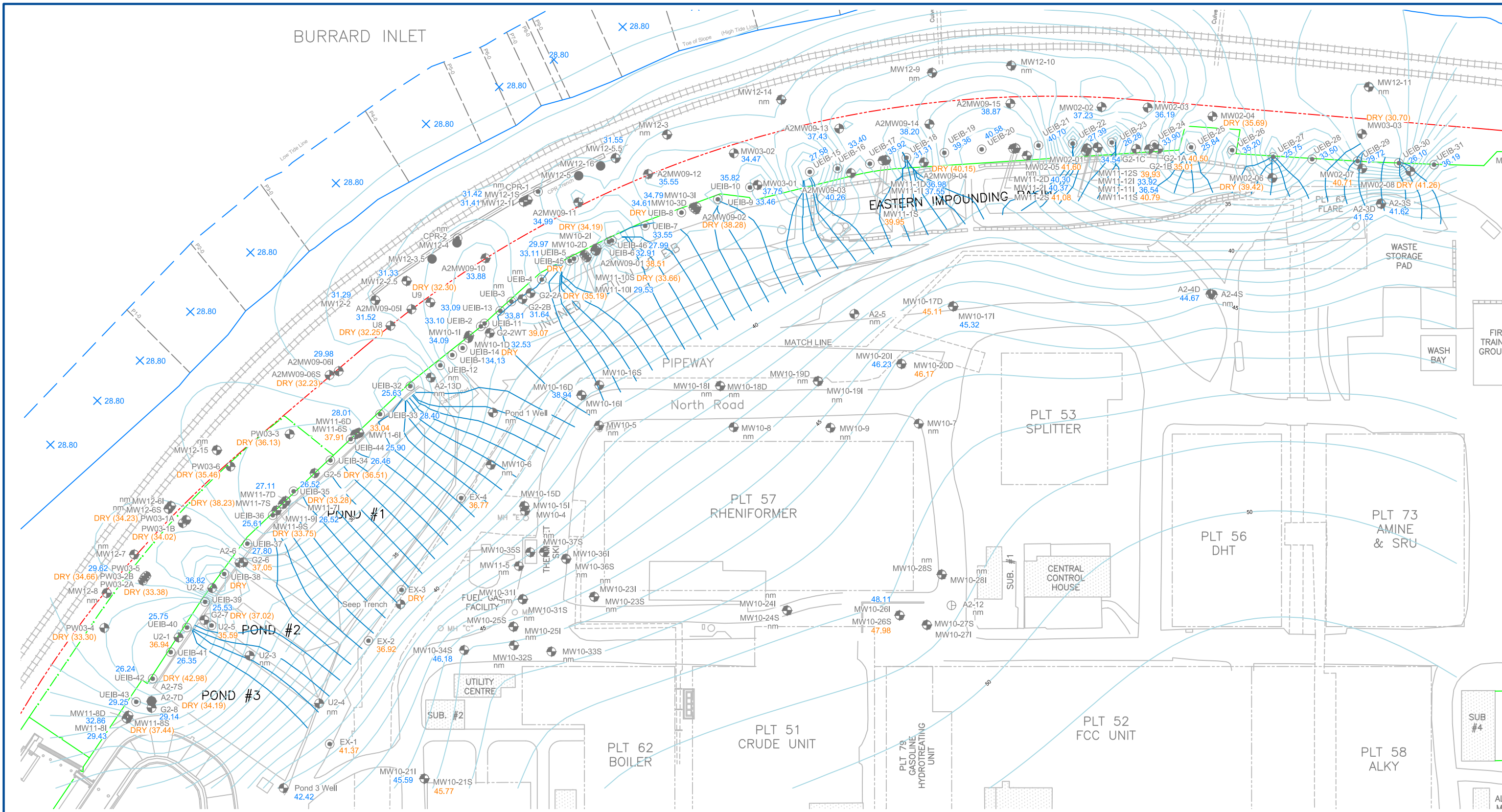
The 2015 and 2016 Perimeter Monitoring Program and Perimeter Extraction System
Chevron Burnaby Refinery, Burnaby, BC

CHEVRON CANADA LIMITED

DATE:	PROJECT NO.:	DRAWN BY:	REVISION NO.:	DRAWING NO.:
June 2017	60486755	TS	0	FIGURE C-1

AECOM

FILE NAME: H:\URS-CHEVRON\60486755_2016 PMP\5. Deliverables\2015 and 2016 MOE PMP PES Report\Figures\01 Q1 2015 GW Elev Apr 2015.dwg



LEGEND:

Property Line	---	Monitoring Well	⊕	Groundwater Contour (m)	---	Well Not Monitored	nm
Fence Line	-x-x-	Borehole	●	May 19-26, 2015			
Foreshore Sampling Transect	- - -	Extraction Well	⊙	Groundwater Elevation (m)	32.49		
		Groundwater Flow	→	May 19-26, 2015	40.14		
				Groundwater Elevation (m)			
				May 19-26, 2015			
				not used to extrapolate contours			
				Mean Tide Elevation Point	X		

NOTE: Some wells have a date beside them as they were not monitored during the May 2015 monitoring event.

UEIB well elevations taken May 26-28, 2015.

Wells indicated as dry show a bottom of well elevation in brackets.

GRID NORTH

W E S N

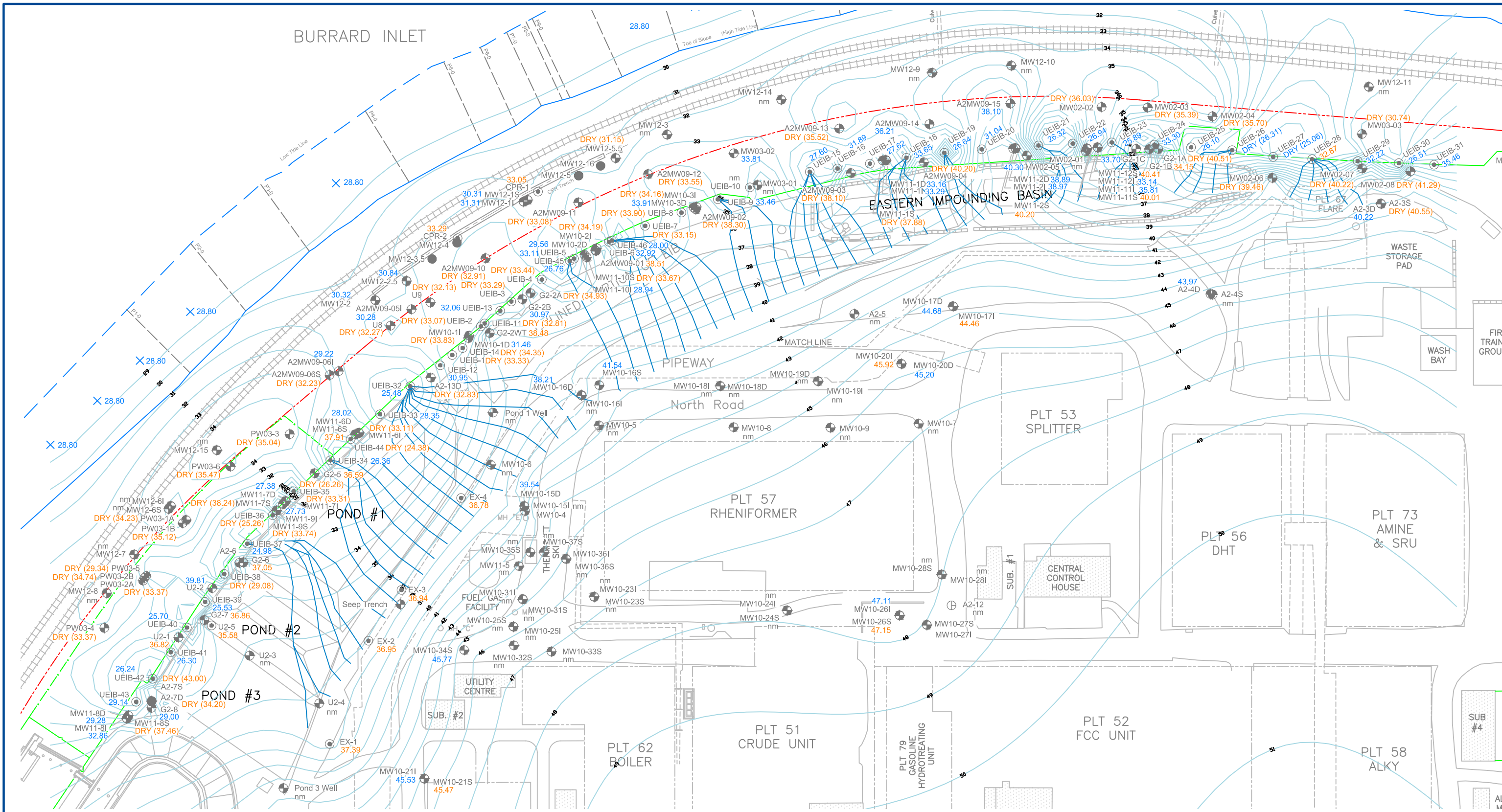
0 20 40 metres

**PERIMETER EXTRACTION SYSTEM
GROUNDWATER ELEVATIONS -
MAY 19-26, 2015**

The 2015 and 2016 Perimeter Monitoring Program and Perimeter Extraction System
Chevron Burnaby Refinery, Burnaby, BC

CHEVRON CANADA LIMITED

DATE:	PROJECT NO.:	DRAWN BY:	REVISION NO.:	DRAWING NO.:
June 2017	60486755	TS	0	FIGURE C-2



LEGEND:

Property Line	---	Monitoring Well	⊕	Groundwater Contour (m)		Well Not Monitored	nm
Fence Line	-x-x-	Borehole	●	August 5-13, 2015			
Foreshore Sampling Transect	- - -	Extraction Well	⊙	Groundwater Elevation (m)	32.49		
		Groundwater Flow	→	August 5-13, 2015	40.14		
				not used to extrapolate contours			
				Mean Tide Elevation Point	X		

NOTE: UEIB well elevations taken August 5-13, 2015.

Wells indicated as dry show a bottom of well elevation in brackets.

GRID NORTH

metres

0 20 40

AECOM

FILE NAME: H:\URS-CHEVRON\60486755_2016 PMP\5_Deliverables\2015 and 2016 MOE PMP PES Report\Figures\C03 Q3 2015 GW Elev Aug 2015.dwg

PERIMETER EXTRACTION SYSTEM

GROUNDWATER ELEVATIONS - AUGUST 5-13, 2015

The 2015 and 2016 Perimeter Monitoring Program and Perimeter Extraction System
Chevron Burnaby Refinery, Burnaby, BC

CHEVRON CANADA LIMITED

DATE:	PROJECT NO.:	DRAWN BY:	REVISION NO.:	DRAWING NO.:
June 2017	39549102	TS	0	FIGURE C-3

