

**CSSA B-3 BIOREACTOR OPERATIONS
ANNUAL PERFORMANCE STATUS REPORT
(QUARTER 33 – QUARTER 36, MAY 2015 – APRIL 2016)**

JULY 18, 2016

This status report summarizes the operation of a bioreactor at Solid Waste Management Unit (SWMU) B-3 from May 2015 through April 2016, comprising the ninth year of bioreactor operations and monitoring since system start-up. This status report includes descriptions of current conditions, field observations, analytical results, and an anticipated schedule of activities for the next reporting period. Analytical results from monthly and quarterly regulatory and performance sampling through April 2016 are attached for reference. Parsons personnel responsible for bioreactor operation during the reporting period include Ken Rice, Bradly Dietert, Samantha Elliott, Julie Bouch, Adrien Lindley, Elisa Rice, Richard Fincke, Fabian Bocanegra, and Scott Pearson.

Executive Summary

Site rainfall was above average for several months during the reporting period. For the year (May, 2015 through April, 2016) a total of 48.06 inches of rain was recorded, 15.15 inches above average. During the first half of the reporting period, several heavy rainfall events during the months of May and June resulted in a net gain and precipitous rise in area-wide aquifer water levels. Intermittent heavy rainfall events during the latter half of the reporting period sustained elevated aquifer water levels. Injection of extracted groundwater continued through the year with few interruptions. During the reporting period 4 additional trenches were opened to supplement trenches 1 and 6. Trench 2 became active in July 2015 and trenches 3, 4, and 5 were opened in January 2016. Minor interruptions include: system maintenance, reaching automatic cut-off levels in the wells and/or storage tank, and B-3 bioreactor system upgrade activities. During the reporting period, pumping at B3-EXW02 and B3-EXW05 was temporarily suspended for maintenance and electrical system issues. Pumping operations at B3-EXW03 are currently suspended pending flow-meter upgrades.

Through the reporting period, approximately 38,225,000 gallons of groundwater was extracted from CS-MW16-LGR, CS-MW16-CC, B3-EXW01, B3-EXW02, B3-EXW03, B3-EXW04, and B3-EXW05 was injected into bioreactor trenches 1 - 6. This annual total represents a significant increase (~85%) in the total volume of extracted groundwater compared to previous years and can be attributed to increased rainfall totals, bioreactor system automation upgrades improving well rotation and pumping rates, and the operation of a variable frequency drive transfer pump to maintain adequate storage capacity to keep up with improved pumping rates.

During the reporting period, extracted groundwater was spread more or less evenly across all extraction wells; B3-EXW01 was the most productive with ~5,993,000 gallons of groundwater extracted. Wells CS-MW16-LGR, and EXWs -02, -03, -04, and -05 provided similar volumes with ~5,975,000, ~5,693,000, ~5,208,000, ~5,492,000, and ~5,060,000 gallons extracted, respectively. Well CS-MW16-CC was the least productive with ~4,804,000 gallons extracted. Since the start of normal operations approximately 153,283,500 gallons of extracted groundwater have been injected into the bioreactor.

Data from monitoring efforts indicate that the B-3 bioreactor has continued to maintain appropriate geochemical conditions for effective anaerobic dechlorination of chlorinated aliphatic

hydrocarbons (CAHs). Geochemical parameters indicating optimal conditions include the following:

- Concentrations of dissolved oxygen (DO) are generally less than 0.5 milligrams per liter (mg/L) and oxidation-reduction potential (ORP) values are less than 100 millivolts (mV), indicating an anaerobic environment conducive to dechlorination of CAHs within the trenches;
- Production of methane indicating that fermentation is occurring; and
- Hydrogen concentrations are greater than 1.0 nanomoles per liter (nmol/L), indicating that there is sufficient electron donor present to stimulate anaerobic dechlorination of CAHs.

Analytical results for samples collected in trench sumps provide evidence that biotic and abiotic dechlorination of tetrachloroethene (PCE) and trichloroethene (TCE) is occurring. The presence of the end product ethene provides evidence that the biotic reductive dechlorination process appears to be the major pathway for degradation of CAHs within trenches 1, 2, and 6. Additionally, two other degradation mechanisms, both biotic and abiotic, appear to be occurring within trenches 1 - 6.

It appears that biotic anaerobic oxidation of CAHs to carbon dioxide may be occurring with Mn (IV) as the terminal electron acceptor. This degradation pathway reaction results in the production of the reduced form of manganese [Mn (II)]. The periodic detections of high concentrations of Mn(II) in trenches 1 - 6 may be the result of this biotic process.

Evidence for the existence of abiotic reductive dechlorination is indicated by the presence of reduced iron [Fe(II)] and trans-DCE in trenches 1 - 6. Field sampling analyses (Noblis) indicated positive results for hydrogen sulfide and sulfate-reducing bacteria. Hydrogen sulfide likely reduces iron [III] in soil minerals to iron [II], which is then available to facilitate reductive dechlorination of CAHs. Although evidence suggests this degradation pathway exists, it may not be a significant contributor to the overall degradation of contaminants.

Summary of Bioreactor Operation

Analytical results from biannual sampling at the bioreactor sumps indicate that SWMU B-3 trenches contain a range of *cis*-DCE levels (non-detect (ND) to 86 µg/L) as well as concentrations of other dechlorination products (e.g., VC, ethene). A summary of the analytical data collected for the reporting period (year 9) is included in Table 1. A summary of biannual monitoring results from the bioreactor trench sumps are attached, analytical results of the surrounding SWMU B-3 multi-port monitoring wells (MPMW or Westbay®) and monitoring wells are also attached.

Results of volatile organic carbon (VOC) analyses indicate that groundwater from the uppermost saturated zone (LGR-03B) of Westbay® wells CS-WB07 and CS-WB05 contain less than 100 micrograms per liter (µg/L) of PCE, TCE, and *cis*-DCE; well CS-WB06 contains less than 100 µg/L of PCE and greater than 100 µg/L of TCE and *cis*-DCE. The LGR-03B zone in CS-WB08 (when sampled) contained greater than 100 µg/L of PCE, TCE, and *cis*-DCE. Similar analysis of groundwater from extraction wells indicate wells CS-MW16-CC, B3-EXW02, and B3-EXW05 contain less than 100 micrograms per liter (µg/L) of PCE, TCE, and *cis*-DCE; wells B3-EXW01 and B3-EXW04 contains greater than 100 µg/L of PCE, TCE, and *cis*-DCE; and wells CS-MW16-LGR and B3-EXW03 contains greater than 100 µg/L of *cis*-DCE, but less than 100 µg/L of PCE and TCE.

VOC analytical results from bioreactor trench sumps samples indicate slight increases in contaminant mass (total molar concentration) in trench sumps T1-1 and T1-2, and a decrease in

trench sumps T1-3, T6-1, and T6-2 since the last reporting period in April 2014. Trench 2 has not been active since January 2009, however, since injections resumed July 2015, slight increases in total molar concentrations were observed in sumps T2-1 and T2-2. Trenches 3, 4, and 5 were introduced to the system in January 2016, and therefore, sumps T3-1, T3-2, T4-1, T5-1, and T5-2 were initially sampled at the end of the reporting period (April 2016). Over the bioreactor operational period (9 years), contaminant mass appears stable or decreasing.

Water quality field measurements from bioreactor trench 1 sumps indicate during the ninth year (2007) of bioreactor operations average annual values for DO, pH, ORP, and specific conductivity were 0.21 mg/L, 6.82, -101.9 mV, and 0.90 mS/cm, respectively, and temperatures ranged from ~18 °C to ~26 °C. Other observations regarding the data collected during this reporting period are listed below.

Water quality field measurements from trench 2 during seventh year (2009) of operations include average DO, pH, ORP, and specific conductivity of 0.15 mg/L, 6.72, -138.0 mV, and 1.12 mS/cm respectively; and temperatures ranged between ~19 °C to ~28 °C. Field measurements from trench 3 (when sampled) during first year (2016) of operations include average DO, pH, ORP, and specific conductivity of 0.48 mg/L, 6.74, 1.5 mV, and 0.99 mS/cm respectively; and temperatures ranged between 18 °C to 26 °C. Field measurements from trench 4 (when sampled) during first year (2016) of operations include average DO, pH, ORP, and specific conductivity of 0.28 mg/L, 6.70, -128.1 mV, and 0.92 mS/cm respectively; and temperatures ranged between 18 °C to 22 °C. Field measurements from trench 5 during first year (2016) of operations include average DO, pH, ORP, and specific conductivity of 0.16 mg/L, 6.65, -84.66 mV, and 1.29 mS/cm respectively; and temperatures ranged between 22 °C to 27 °C.

Water quality field measurements during sixth year (2010) of injection operations within trench 6 include average DO, pH, ORP, and specific conductivity of 0.60 mg/L, 6.79, -14.35 mV, and 0.77 mS/cm respectively; and temperatures ranged between 20 °C to 23 °C.

Ground water elevation data from the shallow UGR monitoring wells (B3-MW26-UGR – MW34) combined with similar data from the Westbay UGR zones (CS-WB06-UGR-01, CS-WB08-UGR-01) and the bioreactor sumps helped confirm the presence of a groundwater “mound” around the bioreactor trenches. Analyses of samples from these wells indicated the presence of vinyl chloride with concentrations ranging from ND to 73 ppb (WB08-UGR-01) with the highest levels typically found north of the bioreactor. MW-28, located southwest of the bioreactor, has been consistently dry and therefore was not sampled. Water quality parameters in the UGR wells fluctuated during the reporting period. In general, good reducing conditions (low DO, ORP, and pH) were reported in MW-26, 27, and 34, while moderate reducing conditions were observed in MW-31 and 33, and poor reducing conditions observed in MW-29, 30, and 32.

During the reporting period, 48.06 inches of precipitation were measured on-post. Over the year, average water thicknesses were greatest in trenches 1 and 6 (9.10 feet and 5.47, respectively). Trenches 2, 3, 4, and 5 were opened in the latter half of the reporting period and indicated saturated thickness of 4.58 feet, 2.58 feet, 2.19 feet, and 3.02 feet within these trenches, respectively. Average water thickness results indicate saturated conditions within the bioreactor is being maintained.

Attached are graphs including: B-3 trench 1 average water thickness with rainfall data, VOC concentration summaries for extraction wells, storage tanks (UIC), trench 1 and 6 sumps, and in the defined uppermost saturated zones (zone LGR-03B) in the surrounding multi-port monitoring wells, cumulative precipitation, as well as water level elevations in the defined uppermost saturated zone (zone LGR-03B) of the B-3 multi-port monitoring wells with rainfall data.

Quarter 36 - Analytical Data Observations

1. Arsenic (As) was detected in concentrations exceeding the MCL (10 µg/L) in one Westbay well zone, CS-WB05-LGR04B (25 µg/L) during the year. Manganese (Mn) was reported in bioreactor trench water samples at concentrations ranging from 40 to 1,500 µg/L (MCL is 50 µg/L). Six of the UGR wells sampled during the year had elevated levels of Mn with concentrations ranging from 5.0 to 1,180 µg/L. One shallow UGR well did not produce enough water to sample. An elevated level of Mn was reported in CS-B3-MW01 (142 µg/L) and elevated levels of Mn were also reported in CS-WB06-UGR-01 (683 µg/L), CS-WB06-LGR-01 (51 µg/L), CS-WB07-LGR-01 (814 µg/L), WB08-UGR-01 (568 µg/L), and WB08-LGR-04 (230 µg/L). All other multi-port monitoring well (MPMW) zones reported Mn and As levels below the MCL. The elevated levels are likely due to changing pH conditions of the groundwater and the reduction of naturally occurring As and Mn within the limestone media to more soluble forms. Additionally, the biotic anaerobic oxidation pathway of CAHs may also be contributing to the elevated levels of Mn within the treatment system.
2. DO and ORP values were favorable for the reduction of CAHs, and it is likely that geochemical conditions will remain favorable for continued enhanced anaerobic continue to improve as normal bioreactor operations continue.
3. The volatile organic compound summary for the trenches indicates an end-product (DCE isomer, VC, and ethene) dominated chemical composition in water. Total molar concentrations in sumps in trenches 1 and 6 have fluctuated through the year.
4. Reductive dechlorination of CAHs by microbial activity appears to be occurring as *dehalococcoides* (DHC) bacteria counts have been identified at or above the range of biostimulated populations ($1.0E +03$ cell/mL) in trenches 1 - 6.
5. Saturated conditions within the bioreactor were maintained through the year with an average water thicknesses ranging from 2.19 feet to 9.10 feet in trenches 1 - 6.

The reductive dechlorination end products VC, ethene, and ethane are present in samples collected from shallow UGR zone wells around the periphery of SWMU B-3 indicating the lateral influence of the bioreactor in the shallow subsurface. VC is present in samples from shallow UGR wells MW26, -27, (6.3, 4.7, 7.2, 11, 12, and 4.6 µg/L), and in samples from the WB06-UGR01 (18 µg/L) and WB08-UGR01 (73 µg/L) zones.

In addition to reductive dechlorination end products within the UGR, these products are also observed at depth. VC is observed in the LGR-03A, LGR-03B, -04A, -04B, and BS-01 zones within WB05 (9.1, 12, 69, 206, and 4.3 µg/L); in the LGR -04 zone within WB06 (3.7 µg/L); in the LGR-01, LGR-02, and -03B zones within WB07 (74, 4.1, and 1.3 µg/L); and within WB08-LGR-01 and B3-MW01 (1.2 and 87 µg/L). Ethene is observed at depth within WB05-LGR-04B, WB07-LGR-01, and WB08-LGR-04 (14, 8.5, and 10 µg/L). Ethane was observed within WB07-LGR-01 and WB08-LGR-04 (2.3 and 3.1 µg/L) during this reporting period.

Recommendations

Recommendation for further treatability study actions include:

- Continue monitoring bioreactor and surrounding wells for UIC Permit and Performance parameters.

Anticipated Schedule for Next Period (May, 2016 – April, 2017):

- Continue monitoring and maintenance activities for delivery of groundwater to the bioreactor trenches.

- Conduct semi-annual monitoring events for the bioreactor system.
- Continue UIC monitoring with annual reporting due July 2017.
- Continue SCADA control and automation integration.

Specific Data Observation Notes for Attachments

- Table 36.1.1 presents field collected data from bioreactor trench sumps, and indicates saturated conditions were maintained during the year.
- Analytical results from the B-3 trench sump (trenches 1, 2, and 6) samples, shown in Table 36.1.2, present data from the ninth year of bioreactor operations.
- Table 36.1.2 presents the VOC concentrations from biannual samples collected in bioreactor trench sumps. These data indicate that dechlorination products are being generated within the bioreactor. VC was present at variable concentrations in trench sumps, ranging from, ND to 25 µg/L during the year. Ethene was observed in concentrations ranging from ND to 18 µg/L.
- Table 36.1.3 indicates that Mn(II) and Fe(II) were present at concentrations consistent with alternative degradation pathways. Additionally, Table 32.1.3 provides evidence of the biotic anaerobic degradation pathway with the elevated concentrations of Mn and CO₂ and presents ethane concentrations ranging from ND to 10 µg/L in trenches 1-6 at various times during the year.
- Table 36.3.3 indicates that VC was present (87 µg/L) in the samples collected from monitoring well CS-B3-MW01, thus reductive dechlorination is occurring at depth, within the LGR.
- Table 36.2.3a indicates VC concentrations of 69 µg/L in WB05-LGR04A and 206 µg/L in WB05-LGR04B, suggesting a connection between this zone and CS-B3-MW01. Additionally, ethene was observed in WB05 zones LGR04A and LGR04B during the year (2.9 and 14 µg/L, respectively).
- Table 36.4.4 indicates moderate populations of *Dehalococcoides* (DHC) bacteria exist in trenches 1 - 6 and smaller populations exist at greater depths in B3-EXW-01 and CS-WB05-LGR-04B.
- Figure 36.1.2 presents the changes in molar fraction and total molar concentrations at sumps in trenches 1, 2, and 6 and indicate slight increases in contaminant mass possibly derived from less-dechlorinated (higher proportion of PCE and TCE) water provided by the extraction wells or by the initiation of injection activities within previously unused trenches. Dechlorination of VOC impacted water to VC and ethene, however, is still occurring in the trenches.
- Table 36.6.2 indicates that significant amounts of contaminant mass are being provided for injection into the bioreactor by the seven extraction wells. Parent products (PCE and TCE) make up the majority of the contaminant mass, though *cis*-DCE is also present.
- Figure 36.2.5 shows that the water levels in Westbay wells are significantly influenced by drought conditions and precipitation, while pumping at CS-MW16-LGR and CS-

B3-EXW01 shows strong influence in the deeper LGR zones. Pumping at CS-MW16-CC appears to have no influence on UGR or upper LGR zones.

- Table 36.7.3 indicates the presence of VC in several of the shallow UGR wells with concentrations ranging from ND to 14 µg/L. Additionally, Table 36.7.3 provides evidence of the biotic anaerobic degradation pathway as indicated by elevated concentrations of Mn and CO₂.

Tables

Analytical Summary Data

Table 1 Summary of Analysis Presented for Reporting Period

Event	VOCs	TDS	TOC	DOC**	MEE & CO ₂	SO ₃ ⁻	Chloride, Sulfate	Fe ²⁺	Mn	Metals*	H ⁺	DHC
Semi-Annual Sampling ^a (Quarter 34)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Semi-Annual Sampling ^a (Quarter 36)	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓

^a - Semi-annual sampling includes samples from B3-trench sumps, Monitoring Wells, Extraction Wells, and Multi-port (Westbay) wells.

* - Metals analyses was reduced to include only arsenic results beginning with the Month 44 sampling event.

** - DOC (Dissolved Organic Carbon) no longer collected for analysis.

Table 36.1.1

SWMU B-3 Bioreactor Trenches - Field Measurement Data
April 2015 - April 2016

TRENCH 1								
Sump 1-1								
Sump Depth: 15.95 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	7.47	6.67	22.21	1.368	0.36	-1.1	8.48
7/31/2015	1015	6.54	6.79	25.10	0.876	0.16	-190.7	9.41
10/21/2015	1510	10.30	6.6	23.35	0.806	0.07	-261.6	5.65
1/6/2016	1350	5.47	7.12	20.16	0.729	0.50	-49.5	10.48
4/21/2016	1155	4.40	6.85	21.75	0.721	0.28	19.4	11.55

TRENCH 1								
Sump 1-2								
Sump Depth: 15.52 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	7.11	6.86	22.73	1.159	0.44	51.9	8.41
7/31/2015	1015	6.40	6.79	23.91	0.937	0.06	-173.8	9.12
10/21/2015	1335	10.36	6.54	24.28	0.895	0.1	-248.6	5.16
1/6/2016	1418	5.26	6.96	18.25	0.689	0.13	-78.2	10.26
4/21/2016	1405	4.06	6.86	21.92	0.711	0.14	-21.9	11.46

TRENCH 1								
Sump 1-3								
Sump Depth: 14.97 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	6.21	6.78	22.99	1.361	0.04	-219.3	8.76
7/31/2015	1015	5.2	7.02	25.71	0.802	0.08	-144.6	9.77
10/21/2015	1300	10.09	6.51	26.24	0.867	0.30	-261.9	4.88
1/6/2016	1440	3.91	7.11	11.12	0.864	0.27	-2.4	11.06
4/22/2016	830	2.85	6.89	21.58	0.762	0.13	-64.1	12.12

Table 36.1.1

SWMU B-3 Bioreactor Trenches - Field Measurement Data
April 2015 - April 2016

TRENCH 2								
Sump 2-1								
Sump Depth: 11.78 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	7.91	6.75	20.63	2.259	0.12	-135.3	3.87
7/31/2015	1015	6.8	6.75	28.24	1.109	0.13	-146.1	4.98
10/21/2015	1530	10.6	6.46	25.4	0.933	0.11	-266.7	1.18
1/6/2016	1335	5.85	6.79	18.78	0.659	0.17	-108.6	5.93
4/21/2016	1105	4.8	6.75	22.1	0.898	0.16	72.6	6.98

TRENCH 2								
Sump 2-2								
Sump Depth: 11.12 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	7.21	6.65	22.9	1.554	0.11	-101.4	3.91
7/31/2015	1015	6.24	6.62	24.6	1.151	0.2	-163.9	4.88
10/21/2015	1445	10.09	6.54	27.1	1.078	0.13	-217.4	1.03
1/6/2016	1405	5.2	7.03	19.22	0.731	0.13	-60.3	5.92
4/21/2016	1345	4.06	6.88	21.93	0.846	0.29	-135.1	7.06

Table 36.1.1

SWMU B-3 Bioreactor Trenches - Field Measurement Data
April 2015 - April 2016

TRENCH 3								
Sump 3-1								
Sump Depth: 11.05 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	8.59	6.55	18.86	1.92	0.13	-47.90	2.46
7/31/2015	1015	7.47	6.81	25.18	1.24	0.59	-119.00	3.58
10/21/2015	1545	10.17	6.62	26.93	0.87	0.09	-218.10	0.88
1/6/2016	1310	7.04	6.88	20.01	0.756	0.13	20.10	4.01
4/21/2016	1010	6.42	6.85	21.72	0.632	2.02	247.40	4.63

TRENCH 3								
Sump 3-2								
Sump Depth: 7.4 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	7.40						0.00
7/31/2015	1015	No data collected (dry)						
10/21/2015	1545	7.30	No data collected (dry)					
1/6/2016	1320	5.81	6.95	17.90	0.759	0.20	-30.10	1.59
4/21/2016	1340	4.92	6.52	22.35	0.762	0.17	158.10	2.48

Table 36.1.1

SWMU B-3 Bioreactor Trenches - Field Measurement Data
April 2015 - April 2016

TRENCH 4								
Sump 4-1								
Sump Depth: 8.42 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	8.42						0.00
7/31/2015	1015	No data collected (dry)						
10/21/2015	1545	8.31	No data collected (dry)					
1/6/2016	1250	6.66	6.81	18.02	0.894	0.31	-166.0	1.76
4/20/2016	1015	5.81	6.58	22.30	0.938	0.24	-90.2	2.61

Table 36.1.1

SWMU B-3 Bioreactor Trenches - Field Measurement Data
April 2015 - April 2016

TRENCH 5								
Sump 5-1								
Sump Depth: 11.55 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	9.29	6.53	22.14	1.464	0.15	-190.6	2.26
7/31/2015	1015	6.85	7.35	23.05	0.57	0.17	-20.8	4.70
10/21/2015	1545	9.79	6.48	23.02	0.811	0.23	-257.3	1.76
1/6/2016	1225	6.96	6.78	20.19	0.66	0.25	320.5	4.59
4/20/2016	915	8.04	6.7	21.58	0.64	0.21	-10.2	3.51

TRENCH 5								
Sump 5-2								
Sump Depth: 11.04 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	900	10.01	6.65	22.48	3.963	0.07	-171.5	1.03
7/31/2015	1015	8.03	6.63	27.49	1.343	0.03	-136.7	3.01
10/21/2015	1545	10.35	6.47	29.88	1.138	0.2	-234.5	0.69
1/6/2016	1205	6.94	6.38	21.57	1.22	0.26	-155.7	4.10
4/19/2016	1530	6.52	6.54	24.05	1.107	0.07	-66.7	4.52

Table 36.1.1

SWMU B-3 Bioreactor Trenches - Field Measurement Data
April 2015 - April 2016

TRENCH 6								
Sump 6-1								
Sump Depth: 14.63 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	1000	11.40	7.03	22.82	0.804	0.54	200.30	3.23
7/31/2015	1015	9.52	7.05	23.40	0.622	0.08	-3.40	5.11
10/21/2015	1700	10.17	6.88	22.76	0.631	1.57	11.10	4.46
1/6/2016	1135	6.57	7.05	21.06	0.623	1.25	407.50	8.06
4/19/2016	1505	10.82	6.67	21.89	0.651	1.29	22.60	3.81

TRENCH 6								
Sump 6-2								
Sump Depth: 15.56 feet BTOC								
Sample Date	Sample Time	Sump H ₂ O Level	pH	Temperature	Specific Conductivity	Dissolved Oxygen	ORP	Sump H ₂ O Thickness
		<i>(feet BTOC)</i>		<i>(°C)</i>	<i>(m-mho/cm)</i>	<i>(mg/L)</i>	<i>(eV)</i>	<i>(feet)</i>
4/13/2015	1000	11.37	6.55	21.87	0.697	0.07	-78.4	4.19
7/31/2015	1015	9.28	6.79	23.36	0.6	0.08	-169.7	6.28
10/21/2015	1605	10.1	6.61	22.82	0.648	0.08	-273.5	5.46
1/6/2016	1150	6.48	6.94	20.34	0.629	0.53	382.2	9.08
4/19/2016	1320	10.53	6.41	21.9	0.797	0.1	-127.3	5.03

Table 36.1.2

B-3 Bioreactor Trench VOC Summary
Apr 2015 - Apr 2016

Q36	T1-1			T1-2			T1-3			T2-1		T2-2	
	Date	4/13/2015	10/21/2015	4/21/2016	4/13/2015	10/21/2015	4/21/2016	4/13/2015	10/21/2015	4/22/2016	10/21/2015	4/21/2016	10/21/2015
PCE (µg/L)	9.9	0	0	26	0	0	0.40	0	0	0	26	0	0
TCE (µg/L)	25	0	0	32	0	0	0.85	0	0	0	30	0	0
cis-1,2-DCE (µg/L)	65	1.6	15	84	0.20	34	1.5	0	0.34	1.2	36	0	2.8
trans-1,2-DCE (µg/L)	1.4	0.78	0.99	4.2	0.66	5.2	2.9	0.34	0.51	0.35	0.26	0.22	1.9
Vinyl chloride (µg/L)	2.7	4.8	6.2	13	0	21	0	0	0	1.9	1.8	0	4.6
Ethene (µg/L)	1.0	2.5	0	6.6	1.4	0	2.0	0	0	0	0	0	18
PCE (nM/L)	59.881	0.000	0.000	159.018	0.000	0.000	2.412	0.000	0.000	0.000	155.400	0.000	0.000
TCE (nM/L)	190.425	0.000	0.000	243.169	0.000	0.000	6.469	0.000	0.000	0.000	232.057	0.000	0.000
cis-1,2-DCE (nM/L)	674.059	16.091	159.670	870.552	2.063	349.871	15.575	0.000	3.507	12.687	368.953	0.000	29.293
trans-1,2-DCE (nM/L)	13.925	8.045	10.211	43.218	6.808	53.430	29.500	3.507	5.260	3.610	2.682	2.269	19.495
Vinyl chloride (nM/L)	42.873	76.148	98.384	209.247	0.000	336.266	0.000	0.000	0.000	30.555	29.115	0.000	73.588
Ethene (nM/L)	35.651	89.127	0.000	235.294	49.911	0.000	71.301	0.000	0.000	0.000	0.000	0.000	623.886
Total Molar Conc. (nM/L)	1016.81	189.41	268.27	1760.50	58.78	739.57	125.26	3.51	8.77	46.85	788.21	2.27	746.26
% moles PCE	5.9%	0.0%	0.0%	9.0%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	19.7%	0.0%	0.0%
% moles TCE	18.7%	0.0%	0.0%	13.8%	0.0%	0.0%	5.2%	0.0%	0.0%	0.0%	29.4%	0.0%	0.0%
% moles cis-1,2-DCE	66.3%	8.5%	59.5%	49.4%	3.5%	47.3%	12.4%	0.0%	40.0%	27.1%	46.8%	0.0%	3.9%
% moles trans-1,2-DCE	1.4%	4.2%	3.8%	2.5%	11.6%	7.2%	23.6%	100.0%	60.0%	7.7%	0.3%	100.0%	2.6%
% moles Vinyl Chloride	4.2%	40.2%	36.7%	11.9%	0.0%	45.5%	0.0%	0.0%	0.0%	65.2%	3.7%	0.0%	9.9%
% moles Ethene	3.5%	47.1%	0.0%	13.4%	84.9%	0.0%	56.9%	0.0%	0.0%	0.0%	0.0%	0.0%	83.6%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Q36	T3-1	T3-2	T4-1	T5-1	T5-2	T6-1			T6-2		
	Date	4/21/2016	4/20/2016	4/20/2016	4/20/2016	4/19/2016	4/13/2015	10/21/2015	4/19/2016	4/13/2015	10/21/2015
PCE (µg/L)	37	24	29	3.0	0	0	2.3	12	1.1	2.1	0.27
TCE (µg/L)	60	32	38	10	0.29	0.71	9.9	18	3.8	2.1	0.26
cis-1,2-DCE (µg/L)	86	43	54	42	0.56	13	60	25	63	12	0.26
trans-1,2-DCE (µg/L)	0.59	0.24	0.31	0.63	0	1.5	1.8	0.24	2.4	1.8	0.53
Vinyl chloride (µg/L)	1.3	0	1.4	5.8	0	18	17	1.1	25	8.8	0
Ethene (µg/L)	0	0	0	0	0	9.6	2.4	0	3.4	7.6	0
PCE (nM/L)	224.628	141.772	175.963	18.392	0.000	0.000	14.111	75.378	6.513	12.664	1.628
TCE (nM/L)	457.950	242.789	289.291	76.185	2.207	5.404	75.272	134.637	28.922	16.287	1.979
cis-1,2-DCE (nM/L)	890.253	444.250	551.934	428.262	5.776	132.336	621.351	262.919	650.748	119.959	2.682
trans-1,2-DCE (nM/L)	6.086	2.476	3.198	6.498	0.000	15.059	18.773	2.476	24.961	18.051	5.467
Vinyl chloride (nM/L)	20.477	0.000	21.757	92.465	0.000	283.475	267.957	17.437	392.417	140.298	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000	342.246	85.561	0.000	121.212	270.945	0.000
Total Molar Conc. (nM/L)	1599.39	831.29	1042.14	621.80	7.98	778.52	1083.03	492.85	1224.77	578.20	11.8
% moles PCE	14.0%	17.1%	16.9%	3.0%	0.0%	0.0%	1.3%	15.3%	0.5%	2.2%	13.9%
% moles TCE	28.6%	29.2%	27.8%	12.3%	27.6%	0.7%	7.0%	27.3%	2.4%	2.8%	16.8%
% moles cis-1,2-DCE	55.7%	53.4%	53.0%	68.9%	72.4%	17.0%	57.4%	53.3%	53.1%	20.7%	22.8%
% moles trans-1,2-DCE	0.4%	0.3%	0.3%	1.0%	0.0%	1.9%	1.7%	0.5%	2.0%	3.1%	46.5%
% moles Vinyl Chloride	1.3%	0.0%	2.1%	14.9%	0.0%	36.4%	24.7%	3.5%	32.0%	24.3%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%	44.0%	7.9%	0.0%	9.9%	46.9%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 36.1.3

B-3 Bioreactor Analytical Summary
Apr 2015 - Apr 2016

Well ID		Bioreactor Active Trench Sumps																													
		T1-1						T1-2						T1-3						T2-1						T2-2					
		4/13/2015		10/21/2015		4/21/2016		4/13/2015		10/21/2015		4/21/2016		4/13/2015		10/21/2015		4/22/2016		10/21/2015		4/21/2016		10/21/2015		4/21/2016					
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag				
Dissolved Organic Carbon	mg/L	3.9		13		6.8		1.8		8.0		8.0		15		7.5		13		13		13		11		16		11			
Total Organic Carbon	mg/L	7.8		12		6.8		1.8		8.4		5.3		14		9.6		17		16		17		4,880		2,020		11			
Methane	µg/L	867		736		0		124		2,160		1.2		7,540		6,000		793		815		0		4,880		2,020		18			
Ethene	µg/L	1.0	F	2.5		0		6.6		1.4	F	0		2.0	F	0		0		0		0		0		0		1.4			
Ethane	µg/L	3.6		1.6	F	0		0		4.9		0		1.5	F	0		0		0		0		0		0		0			
Carbon Dioxide	µg/L	134,000		91,100		47,000		57,100		227,000		43,400		111,000		344,000		40,100		341,000		76,500		353,000		59,100		0			
Sulfate	mg/L	16		19		23		29		21		13		5.4		1.8		8.8		5.3		0.75	F	2.6		2.1		16			
Chloride	mg/L	17		15		11		15		16		11		15		16		11		16		8.0		16		10		10			
Ferrous Iron	mg/L	6.2		3.8		2.3		0.58	F	4.8		2.1		8.2		4.9		5.6		10		1.1		10		9.4		10			
Manganese	µg/L	1,150		440		643		40		626		436		393		486		404		1,500		416		1,010		629		10			
Hydrogen	nM							7.7		3.9		15										15									
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Total Dissolved Solids	mg/L	444		495		419		386		551		401		437		524		428		536		477		610		415		0			
Benzene	µg/L	0		0		0		0		0		0		0		0		0.31	F	0		0		0		0		0			
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichloroethene, cis-1,2-	µg/L	65		1.6		15		84		0.20	F	3.2		1.5		0.34	F	1.2		36		0		0		2.8		0			
Dichloroethene, trans-1,2-	µg/L	1.4		0.78		0.99		4.2		0.66	F	5.4		2.9		0.34	F	0.51	F	0.35	F	0.26	F	0.22	F	1.9		0			
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0.41	F	0		0		0		0			
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0			
Tetrachloroethene	µg/L	9.9		0		0		26		0		0		0.40	F	0		0		26		0		0		0		0			
Toluene	µg/L	0		0		0		0		0		0		0		0		0.18	F	0		0		0		0		0			
Trichloroethene	µg/L	25		0		32		0		0		0		0.85	F	0		0		30		0		0		0		0			
Vinyl chloride	µg/L	2.7		4.8		6.2		13		0		21		0		0		1.9		1.8		0		0		4.6		0			
Arsenic	µg/L	0		5.0	F	3.8	F	0		3.2	F	0		4.3	F	4.4	F	5.6	F	15	F	6.0	F	0.80	F	0		0			
		Month 096		Month 102		Month 108		Month 096		Month 102		Month 108		Month 096		Month 102		Month 108		Month 102		Month 108		Month 102		Month 108		Month 108			

Well ID		Bioreactor Active Trench Sumps																										
		T3-1			T3-2			T4-1			T5-1			T5-2			T6-1			T6-2								
		4/21/2016		10/20/2016		4/20/2016		4/20/2016		4/19/2016		4/13/2015		10/21/2015		4/19/2016		4/13/2015		10/21/2015		4/19/2016						
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	
Dissolved Organic Carbon	mg/L											2.6		1.4		4.5		4.0		4.0		6.5		3.3		3.3		6.5
Total Organic Carbon	mg/L	2.5		11		12		3.2		33		5.1		0.96		3.5		4.9		3.3		3.3		6.5		3.3		6.5
Methane	µg/L	6.4		19		39		65		0		1,230		68		179		149		149		375		375		375		375
Ethene	µg/L	0		0		0		0		0		9.6		2.4	F	0		3.4		7.6		0		0		0		0
Ethane	µg/L	0		0		0		0		0		8.4		0		0		0		0		0		0		0		0
Carbon Dioxide	µg/L	31,200		59,000		73,300		53,200		104,000		104,000		18,700		41,700		195,000		55,200		115,000		115,000		115,000		115,000
Sulfate	mg/L	12		11		14		12		3.3		11		38		17		21		26		12		12		12		12
Chloride	mg/L	11		10		10		10		5.4		15		16		7.6		15		16		6.7		6.7		6.7		6.7
Ferrous Iron	mg/L	0.22	F	0.57	F	3.3		0.92	F	8.3		7.3		0.78	F	0.83	F	2.6		1.7		2.7		2.7		2.7		2.7
Manganese	µg/L	68		1,220		296		92		1,140		208		58		165		55		68		74		74		74		74
Hydrogen	nM	12				12		25		0		0		0		8.3		27		16		16		16		16		16
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Total Dissolved Solids	mg/L	361		432		414		348		699		373		378		348		376		384		418		418		418		418
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Chloroform	µg/L	0.36		0.33		0.33		0		0		0		0		0		0		0		0		0		0		0
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Dichloroethene, cis-1,2-	µg/L	86		43		54		42		0.56	F	13		60		25		63		12		0.26	F	0.26	F	0.26	F	0.26
Dichloroethene, trans-1,2-	µg/L	0.59	F	0.24	F	0.31	F	0.63		0		1.5		1.8		0.24	F	2.4		1.8		0.53	F	0.53	F	0.53	F	
Methylene chloride	µg/L	0		0.42	F	0.40	F	0		0		0		0		0		0		0		0		0		0		0
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0		0
Tetrachloroethene	µg/L	37		24		29																						

Table 36.2.2

Upper Saturated Zone (Zone 03B) VOC Summary
Apr 2015 - Apr 2016

Q36 Date	CS-WB05-LGR03B			CS-WB06-LGR03B			CS-WB07-LGR03B			CS-WB08-LGR03B	
	4/27/2015	10/15/2015	4/5/2016	4/21/2015	10/6/2015	4/11/2016	4/16/2015	10/8/2015	4/6/2016	10/5/2015	4/12/2016
PCE (µg/L)	1.2	6.5	1.2	60	0	27	2.4	39	30	54	107
TCE (µg/L)	2.6	30	28	109	74	63	8.2	63	40	68	134
cis-1,2-DCE (µg/L)	44	62	55	107	134	113	18	92	50	76	158
trans-1,2-DCE (µg/L)	4.4	6.0	5.2	1.7	0	0.99	0	1.5	0.99	0	1.6
Vinyl chloride (µg/L)	11	12	11	0	0	0	1.3	1.0	1.1	0	0
Ethene (µg/L)	0	0	0	0	0	0	0	0	0	0	0
PCE (nM/L)	7.297	39.016	7.478	364.409	0.000	161.551	14.473	235.965	177.893	327.504	643.430
TCE (nM/L)	19.484	230.763	210.138	826.927	567.014	480.250	62.257	478.956	304.742	514.194	1019.941
cis-1,2-DCE (nM/L)	452.398	643.940	566.581	1098.711	1383.497	1169.366	184.631	953.687	513.667	788.654	1630.634
trans-1,2-DCE (nM/L)	45.591	61.784	53.223	17.535	0.000	10.211	0.000	15.059	10.211	0.000	16.194
Vinyl chloride (nM/L)	176.452	187.810	178.691	0.000	0.000	0.000	20.317	15.997	17.757	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Molar Conc. (nM/L)	701.22	1163.31	1016.11	2307.58	1950.51	1821.38	281.68	1699.66	1024.27	1630.35	3310.2
% moles PCE	1.0%	3.4%	0.7%	15.8%	0.0%	8.9%	5.1%	13.9%	17.4%	20.1%	19.4%
% moles TCE	2.8%	19.8%	20.7%	35.8%	29.1%	26.4%	22.1%	28.2%	29.8%	31.5%	30.8%
% moles cis-1,2-DCE	64.5%	55.4%	55.8%	47.6%	70.9%	64.2%	65.5%	56.1%	50.2%	48.4%	49.3%
% moles trans-1,2-DCE	6.5%	5.3%	5.2%	0.8%	0.0%	0.6%	0.0%	0.9%	1.0%	0.0%	0.5%
% moles Vinyl Chloride	25.2%	16.1%	17.6%	0.0%	0.0%	0.0%	7.2%	0.9%	1.7%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 36.2.3a

B-3 Bioreactor Multi-Port Well CS-WB05 Analytical Summary
Apr 2015 - Apr 2016

Q36		CS-WB05																											
Well ID		CS-WB05-LGR-01						CS-WB05-LGR03A				CS-WB05-LGR03B						CS-WB05-LGR-04A						CS-WB05-LGR-04B					
Sample Date		4/27/2015		10/19/2015		4/6/2016		4/5/2016		4/27/2015		10/15/2015		4/5/2016		4/27/2015		10/15/2015		4/5/2016		4/27/2015		10/14/2015		4/5/2016			
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag		
Dissolved Organic Carbon	mg/L	0.81		0.33	F			0.90	F	0.79		0.46	F	0.99	F	0.90		0.51		1.0		1.2		1.2		1.4			
Total Organic Carbon	mg/L	0.57		0.20	F	1.2		0.90	F	0.83		0		0.92	F	0.60		0.60		1.0		1.1		0.70		1.330			
Methane	µg/L	0		9.5		0		56		134		80		70		1,970		356		528	F	1,430		1,330		1,890			
Ethene	µg/L	0		0		0		0		0		0		2.9	F	0		0		1.2	F	8.5		0		0			
Ethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Carbon Dioxide	µg/L	15,100		16,500		29,900		19,700		27,600		12,600		24,000		50,900		11,000		16,600		50,100		20,100		31,900			
Sulfate	mg/L	101		94		113		47		42		38		47		26		21		23		8.2		6.1		9.6			
Chloride	mg/L	14		13		13		11		12		11		12		12		12		12		13		12		13			
Ferrous Iron	mg/L	0.22	F	0		0.16	F	0		0.23	F	0		0		0.50	F	0.24	F	0.35	F	0.45	F	1.9		1.8			
Manganese	µg/L	0		0		0		0		0		0		0		4.0	F	7.0		7.0		37		43		38			
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Total Dissolved Solids	mg/L	550		528		516		362		370		375		353		340		344		335		330		360		333			
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Dichloroethene, cis-1,2-	µg/L	2.8		3.3		3.1		51		44		62		55		196		435		409		328		47		97			
Dichloroethene, trans-1,2-	µg/L	0.70		0.67		0.76		4.5		4.4		6.0		5.2		16		15		11		5.6		8.8		8.3			
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Tetrachloroethene	µg/L	0		1.1	F	0.34	F	1.2	F	1.2	F	6.5		1.2	F	0		0		0.32	F	88		7.8		32			
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0		0			
Trichloroethene	µg/L	0.46	F	1.5		0.43	F	25		2.6		30		28		0.62	F	13		3.6		200		12		55			
Vinyl chloride	µg/L	0		0		0		9.1		11		12		11		34		69		64		60		189		206			
Arsenic	µg/L	2.5	F	1.9	F	3.5	F	3.7	F	2.7	F	3.2	F	5.5	F	3.7	F	3.3	F	3.1	F	11	F	21	F	25	F		
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108			

Q36		CS-WB05																	
Well ID		CS-WB05-BS-01						CS-WB05-CC-01						CS-WB05-CC-02					
Sample Date		4/23/2015		10/14/2015		4/5/2016		4/23/2015		10/14/2015		4/4/2016		4/23/2015		10/13/2015		4/4/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	0.54		0.47	F			0.54		0.36	F			0.68		0.40	F		
Total Organic Carbon	mg/L	0.54		0		0.88	F	0.48	F	0		0.77	F	0.56		0		0.92	F
Methane	µg/L	18		18		27		0.80	F	2.6		1.9		2.9		586		3.9	
Ethene	µg/L	0		0		0		0		0		0		0		1.1	F	0	
Ethane	µg/L	0		0		0		0		0		0		0		1.8	F	0	
Carbon Dioxide	µg/L	10,600		10,600		12,500		8,100		10,500		11,500		30,400		20,800		11,600	
Sulfate	mg/L	30		29		34		87		83		88		97		97		102	
Chloride	mg/L	12		12		12		18		18		17		19		19		18	
Ferrous Iron	mg/L	0.23	F	0.34	F	0.20	F	0.40	F	0.28	F	0.32	F	0.30	F	0.24	F	0.26	F
Manganese	µg/L	0		0		0		0		0		0		0		2.0	F	0	
Sulfide	mg/L	0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	331		346		314		413		425		407		430		448		428	
Benzene	µg/L	0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	29		20		23		1.0	F	0.47	F	0		9.7		11		9.2	
Dichloroethene, trans-1,2-	µg/L	0.23	F	0		0		0.65		0.36	F	0		5.5		6.8		6.3	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		1.3	
Tetrachloroethene	µg/L	0		0		0		0		0		0		0		0		0	
Toluene	µg/L	0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	0.63	F	0.18	F	0		0.38	F	0.31	F	0		0.52	F	1.3		0.35	F
Vinyl chloride	µg/L	4.3		1.4		2.8		0		0		0		0		1.1		0	
Arsenic	µg/L	1.5	F	2.6	F	3.4	F	0.90	F	2.3	F	0		0.90	F	2.3	F	0.50	F
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108	

Note: 0 sample indicates a non-detect analyte value

Table 36.2.3b

B-3 Bioreactor Multi-Port Well CS-WB06 Analytical Summary
Apr 2015 - Apr 2016

Q36		CS-WB06																	
Well ID		CS-WB06-LGR-01						CS-WB06-LGR-01						CS-WB06-LGR-02					
Sample Date		4/22/2015		10/8/2015		4/12/2016		4/22/2015		10/7/2015		4/11/2016		4/22/2015		10/7/2015		4/11/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	2.1		2.0				3.2		2.2				0.75		0.78			
Total Organic Carbon	mg/L	2.3		1.5		1.9		3.2		1.8		2.3		0.59		0.53		0.91	F
Ethane	µg/L	33		167		187		0.70	F	0		0		0.90	F	2.0		5.3	F
Ethene	µg/L	0		0		0		0		0		0		0		0		0	
Ethane	µg/L	0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	45,800		45,100		39,100		24,900		24,100		30,700		7,190		12,400		10,100	
Sulfate	mg/L	23		15		14		18		16		16		26		25		25	
Chloride	mg/L	20		15		13		15		14		13		9.8		9.9		8.8	
Ferrous Iron	mg/L	0.67	F	0.51	F	0.16	F	0.20	F	0		0		0.22	F	0		0.18	F
Manganese	µg/L	683		674		550		51		5.0		33		0		0		2.0	F
Sulfide	mg/L	0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	517		420		404		417		437		425		329		317		322	
Benzene	µg/L	0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	8.9		81		75		18		12		18		14		28		12	
Dichloroethene, trans-1,2-	µg/L	0.22	F	1.1		2.3		0.76		0		0		0.27	F	0.38	F	0	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	0.51	F	0.70	F	0		3.1		12		5.7		0.28	F	1.1	F	0.28	F
Toluene	µg/L	0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	0		9.7		5.7		9.8		12		5.0		1.2		2.3		0.97	F
Vinyl chloride	µg/L	1.8		18		14		0.90	F	0		0		0.42	F	0		0.52	F
Arsenic	µg/L	2.7	F	3.8	F	1.2	F	1.4	F	1.5	F	1.7	F	1.1	F	3.3	F	0.50	F
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108	

Q36		CS-WB06																	
Well ID		CS-WB06-LGR03A						CS-WB06-LGR03B						CS-WB06-LGR-04					
Sample Date		4/21/2015		10/7/2015		4/11/2016		4/21/2015		10/6/2015		4/11/2016		4/21/2015		10/6/2015		4/11/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	0.66		0.60				1.1		0.70				1.3		0.76			
Total Organic Carbon	mg/L	0.54		0.28	F	0.92	F	0.40	F	0.31	F	0		3.0		0.47	F	0.69	F
Methane	µg/L	0		0.40	F	0.60	F	0		0.40	F	0.90	F	219		3.6		1.6	
Ethane	µg/L	0		0		0		0		0		0		2.3	F	0		0	
Ethene	µg/L	0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	10,500		19,700		11,100		20,600		15,400		17,200		59,600		36,300		39,500	
Sulfate	mg/L	21		21		23		21		24		23		12		12		13	
Chloride	mg/L	12		12		11		12		12		11		15		15		14	
Ferrous Iron	mg/L	0.22	F	0.22	F	0.19	F	0.23	F	0.29	F	0		0.20	F	0		0	
Manganese	µg/L	0		0		0		0		0		0		0		0		0	
Sulfide	mg/L	0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	330		338		328		333		334		330		366		378		394	
Benzene	µg/L	0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	107		125		108		107		134		113		94		105		92	
Dichloroethene, trans-1,2-	µg/L	0.75		0		0		1.7		0		0.99		1.4		1.1		0	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	24		38		25		60		0		27		41		39		35	
Toluene	µg/L	0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	47		67		56		109		74		63		31		34		31	
Vinyl chloride	µg/L	0		0		0		0		0		0		3.7		2.5		0	
Arsenic	µg/L	1.8	F	2.7	F	0		1.8	F	2.2	F	1.1	F	0.90	F	2.3	F	0.30	F
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108	

Note: 0 sample indicates a non-detect analyte value

Table 36.2.3c

B-3 Bioreactor Multi-Port Well CS-WB07 Analytical Summary
Apr 2015 - Apr 2016

Q36		CS-WB07																	
Well ID		CS-WB07-LGR-01						CS-WB07-LGR-02						CS-WB07-LGR03A					
Sample Date		4/21/2015		10/13/2015		4/7/2016		4/16/2015		10/13/2015		4/7/2016		10/13/2015		4/7/2016			
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag		
Dissolved Organic Carbon	mg/L	2.6		2.4				0.60		0.46	F	1.4		0.56					
Total Organic Carbon	mg/L	1.6		1.8		2.5		0.52		0.14	F	1.4		0		0.91	F		
Methane	µg/L	745		662		1,250		0		22		85		0.90	F	0			
Ethene	µg/L	8.5		1.8	F	1.8	F	0		0		0		0		0			
Ethane	µg/L	1.9	F	2.3		1.9	F	0		0		0		0		0			
Carbon Dioxide	µg/L	106,000		60,800		46,200		14,700		11,500		20,400		12,800		12,300			
Sulfate	mg/L	13		4.7		12		32		35		15		17		21			
Chloride	mg/L	20		18		19		13		14		15		11		10			
Ferrous Iron	mg/L	1.5		1.8		1.5		0.28	F	0.27	F	0.29	F	0		0.32	F		
Manganese	µg/L	569		745		814		13		14		17		0		0			
Sulfide	mg/L	0		0		0		0		0		0		0		0			
Total Dissolved Solids	mg/L	380		434		401		361		385		394		332		376			
Benzene	µg/L	0		0		0		0		0		0		0		0			
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0			
Bromoform	µg/L	0		0		0		0		0		0		0		0			
Chloroform	µg/L	0		0		0		0		0		0		0		0			
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0			
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0			
Dichloroethene, 1,1-	µg/L	0.48	F	0		0		0		0		0		0		0			
Dichloroethene, cis-1,2-	µg/L	225		103		97		3.0		1.9		21		94		51			
Dichloroethene, trans-1,2-	µg/L	18		2.7		1.6		0		0.47	F	1.5		1.5		1.0			
Methylene chloride	µg/L	0		0		0		0		0		0		0		0			
Naphthalene	µg/L	0		0		0		0		0		0		0		0			
Tetrachloroethene	µg/L	0		0		0		2.7		2.0		0.50	F	39		23			
Toluene	µg/L	0		0		0		0		0		0		0		0			
Trichloroethene	µg/L	7.6		5.2		7.0		0		2.2		0.65	F	61		36			
Vinyl chloride	µg/L	74		13		17		0		0		4.1		0.58	F	1.1	F		
Arsenic	µg/L	2.6	F	4.9	F	7.6	F	0.60	F	3.4	F	3.6	F	3.7	F	8.5	F		
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q34-Month 102		Q36-Month 108			

Q36		CS-WB07-LGR03B						CS-WB07-LGR-04					
Well ID		4/16/2015		10/8/2015		4/6/2016		4/16/2015		10/8/2015		4/6/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	0.58		1.6				0.38	F	0.45	F		
Total Organic Carbon	mg/L	0.31	F	0		0.91	F	0.63		0	F	0.96	F
Methane	µg/L	0		0.40	F	0		0		5.7		0	
Ethene	µg/L	0		0		0		0		0		0	
Ethane	µg/L	0		0		0		0		0		0	
Carbon Dioxide	µg/L	9,210		23,500		12,100		20,000		33,300		30,000	
Sulfate	mg/L	22		17		23		10		9.8		11	
Chloride	mg/L	10		11		11		12		13		13	
Ferrous Iron	mg/L	0.22	F	0.26	F	0		0.20	F	0		0	
Manganese	µg/L	0		0		0		2.0	F	0		0	
Sulfide	mg/L	0		0		0		0		0		0	
Total Dissolved Solids	mg/L	323		319		317		338		298		314	
Benzene	µg/L	0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0.26	F	0.20	F
Dibromochloromethane	µg/L	0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	18		92		50		221		384		283	
Dichloroethene, trans-1,2-	µg/L	0		1.5		0.99		1.2	F	1.9		0	
Methylene chloride	µg/L	0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0	
Tetrachloroethene	µg/L	2.4		39		30		85		262		168	
Toluene	µg/L	0		0		0		0		0		0	
Trichloroethene	µg/L	8.2		63		40		129		289		205	
Vinyl chloride	µg/L	1.3		1.0	F	1.1		0		1.2		0	
Arsenic	µg/L	2.1	F	2.6	F	1.0	F	0		2.7	F	2.8	F
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108	

Note: 0 sample indicates a non-detect analyte value

Table 36.2.3d

B-3 Bioreactor Multi-Port Well CS-WB08 Analytical Summary
Apr 2015 - Apr 2016

Q36		CS-WB08																	
Well ID		CS-WB08-LGR-01						CS-WB08-LGR-01						CS-WB08-LGR-02					
Sample Date		4/15/2015		10/6/2015		4/13/2016		4/15/2015		10/5/2015		4/12/2016		4/15/2015		10/5/2015		4/12/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	1.7		2.0				0.85		0.77				1.1		0.74			
Total Organic Carbon	mg/L	1.7		1.7		2.2		0.37	F	0.51		1.1		0.63		0.35	F	1.1	
Methane	µg/L	923		189		655		0		0		0		7.1		6.0		6.8	
Ethene	µg/L	18		5.4		11		0		0		0		0		0		0	
Ethane	µg/L	2.9		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	88,500		25,900		60,100		37,400		28,700		20,100		39,300		9,800		18,000	
Sulfate	mg/L	7.6		16		6.9		102		100		99		99		95		99	
Chloride	mg/L	16		16		13		12		12		11		12		11		10	
Ferrous Iron	mg/L	1.7		1.6		0.84	F	0.18	F	0.30	F	0		0		0.24	F	0	
Manganese	µg/L	477		435		568		0		0		0		0		0		0	
Sulfide	mg/L	0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	376		387		462		540		547		554		525		539		523	
Benzene	µg/L	0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	67		100		193		30		25		24		13		7.1		6.6	
Dichloroethene, trans-1,2-	µg/L	1.9		2.4		2.7		2.4		1.6		1.7		0.25	F	0		0	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	0		0		0.45	F	0		0		0		0		3.0		1.6	
Toluene	µg/L	0		0		0.10	F	0		0		0		0		0		0	
Trichloroethene	µg/L	0.26	F	0.95	F	1.4		0		0		0		0		2.4		1.6	
Vinyl chloride	µg/L	29		48		73		1.2		0		1.1		0.44	F	0		0.46	F
Arsenic	µg/L	0		4.7	F	2.4	F	0.50	F	3.2	F	2.5	F	0.30	F	2.6	F	0	
		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108	

Q36		CS-WB08											
Well ID		CS-WB08-LGR03A				CS-WB08-LGR03B				CS-WB08-LGR-04			
Sample Date		4/12/2016		10/5/2015		4/12/2016		4/15/2015		10/5/2015		4/12/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L			1.0				2.5		12			
Total Organic Carbon	mg/L	0.89	F	2.1		0.93	F	2.2		11		2.3	
Methane	µg/L	0		8.1		0		303		0.90	F		
Ethene	µg/L	0		0		0		10		0			
Ethane	µg/L	0		0		0		3.1		0			
Carbon Dioxide	µg/L	20,300		26,400		21,900		96,300		26,900		22,400	
Sulfate	mg/L	15		17		15		14		13		12	
Chloride	mg/L	11		13		11		20		16		16	
Ferrous Iron	mg/L	0.16	F	0.16	F	0		0.20	F	0		0.16	F
Manganese	µg/L	0		0		0		230		85		21	
Sulfide	mg/L	0		0		0		0		0		0	
Total Dissolved Solids	mg/L	347		359		351		435		443		422	
Benzene	µg/L	0		0		0		0		0.48		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0	
Chloroform	µg/L	0.15	F	0		0.15	F	0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	159		76		158		23		2.4		25	
Dichloroethene, trans-1,2-	µg/L	1.4		0		1.6		0.59	F	0		0.36	F
Methylene chloride	µg/L	0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0	
Tetrachloroethene	µg/L	106		54		107		1.1	F	0		1.1	F
Toluene	µg/L	0		0		0		0		0.19	F	0	
Trichloroethene	µg/L	131		68		134		1.8		0		1.9	
Vinyl chloride	µg/L	0		0		0		0		0		0.67	F
Arsenic	µg/L	3.0	F	1.3	F	1.4	F	0		1.8	F	4.2	F
		Q36-Month 108		Q34-Month 102		Q36-Month 108		Q32-Month 096		Q34-Month 102		Q36-Month 108	

Note: 0 sample indicates a non-detect analyte value

Table 36.3.3

**B-3 Bioreactor Monitoring Well Analytical Summary
Apr 2015 - Apr 2016**

Q36		Monitoring Wells													
Well ID		CS-MW1-LGR						CS-D		CS-B3-MW01					
Sample Date		4/9/2015		10/20/2015		4/14/2016		4/14/2016		4/9/2015		10/21/2015		4/14/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	0.46	F	0.24	F					7.2		11			
Total Organic Carbon	mg/L	0.28	F	0.33	F	0.74	F	0.78	F	7.3		10		5.1	
Methane	µg/L	0		0		0		0		533		1,220		16,800	
Ethene	µg/L	0		0		0		0		0		0		6.1	
Ethane	µg/L	0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	40,700		35,800		30,900		20,600		74,100		71,000		146,000	
Sulfate	mg/L	14		14		17		17		1.5		1.9		3.0	
Chloride	mg/L	9.0		9.5		9.9		9.1		12		13		12	
Ferrous Iron	mg/L	0		0		0.19	F	0.32	F	1.8		3.5		3.4	
Manganese	µg/L	0		0		0		0		117		142		129	
Hydrogen	nM	23		3.4		10									
Sulfide	mg/L	0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	306		318		319		308		548		495		490	
Benzene	µg/L	0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0	
Chloroform	µg/L	0.12	F	0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	22		20		21		10		0		0		0	
Dichloroethene, trans-1,2-	µg/L	0.27	F	0		0		0		0.83		1.4		2.8	
Methylene chloride	µg/L	0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	13		14		16		13		0		0		0	
Toluene	µg/L	0		0		0		0		0		0		0	
Trichloroethene	µg/L	31		29		28		14		0		0		0	
Vinyl chloride	µg/L	0		0		0		0		23		40		87	
Arsenic	µg/L	0		0		1.8	F	1.5	F	0		1.8	F	0	

Note: 0 sample indicates a non-detect analyte value

Table 36.4.4

SWMU B-3 Microbial Data Summary

Apr 2015 - Apr 2016

Trench Sump				
B3-T1-2	Sample Date:	4/13/2015	10/21/2015	4/21/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	4.56E+04	2.66E+04	8.66E+03
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	6.04E+02	5.74E+02	2.35E+02
BAV1 VC R-Dase (1)	cells/mL	5.05E+03	1.82E+03	1.98E+03
VC R-Dase	cells/mL	3.18E+02	1.81E+02	1.06E+02
B3-T2-1	Sample Date:	Not Sampled	Not Sampled	4/21/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	--	--	8.04E+04
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	--	--	1.57E+02
BAV1 VC R-Dase (1)	cells/mL	--	--	1.30E+00
VC R-Dase	cells/mL	--	--	4.76E+03
B3-T3-1	Sample Date:	Not Sampled	Not Sampled	4/21/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	--	--	6.58E+03
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	--	--	1.08E+02
BAV1 VC R-Dase (1)	cells/mL	--	--	2.01E+02
VC R-Dase	cells/mL	--	--	6.45E+01
B3-T4-1	Sample Date:	Not Sampled	Not Sampled	4/20/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	--	--	4.50E+03
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	--	--	5.21E+01
BAV1 VC R-Dase (1)	cells/mL	--	--	4.22E+01
VC R-Dase	cells/mL	--	--	4.52E+01
B3-T5-1	Sample Date:	Not Sampled	Not Sampled	4/20/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	--	--	2.52E+03
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	--	--	5.87E+01
BAV1 VC R-Dase (1)	cells/mL	--	--	5.00E+01
VC R-Dase	cells/mL	--	--	3.19E+01
B3-T6-2	Sample Date:	4/13/2015	10/21/2015	4/19/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	4.76E+04	1.42E+05	4.93E+04
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	5.15E+02	1.24E+03	3.81E+02
BAV1 VC R-Dase (1)	cells/mL	3.03E+03	5.36E+03	4.79E+03
VC R-Dase	cells/mL	5.58E+02	2.03E+03	1.28E+03

Extraction Wells				
CS-MW16-LGR	Sample Date:	4/7/2015	10/19/2015	4/8/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	< 5.00E-01	4.58E+02	< 5.00E-01
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	< 5.00E-01	4.39E+01	< 5.00E-01
BAV1 VC R-Dase (1)	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
VC R-Dase	cells/mL	< 5.00E-01	2.63E+01	< 5.00E-01
B3-EXW01	Sample Date:	4/7/2015	10/19/2015	4/8/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	1.24E+02	9.75E+01	< 5.00E-01
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	2.00E+00	1.19E+01	< 5.00E-01
BAV1 VC R-Dase (1)	cells/mL	2.30E+00	< 5.00E-01	< 5.00E-01
VC R-Dase	cells/mL	9.00E-01	3.50E+00	< 5.00E-01

Monitoring Wells				
CS-MW1-LGR	Sample Date:	4/9/2015	10/20/2015	4/14/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	< 5.00E-01	5.83E+02	8.00E-01
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	< 5.00E-01	4.09E+01	< 5.00E-01
BAV1 VC R-Dase (1)	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01
VC R-Dase	cells/mL	< 5.00E-01	1.69E+01	< 5.00E-01

Westbay Multi-Port Wells				
CS-WB05-LGR-04B	Sample Date:	4/27/2015	10/14/2015	4/5/2016
Dechlorinating Bacteria	Units			
Dehalococcoides spp (1)	cells/mL	6.57E+01	9.30E+00	2.12E+02
Functional Genes	Units			
TCE R-Dase (1)	cells/mL	2.10E+00	5.00E-01	3.80E+00
BAV1 VC R-Dase (1)	cells/mL	< 5.00E-01	< 5.00E-01	5.00E-01 F
VC R-Dase	cells/mL	< 5.00E-01	< 5.00E-01	< 5.00E-01

Table 36.5.2

Storage Tank (UIC) VOC Summary
Apr 2015 - Apr 2016

Q36	B3-UIC				
Date	4/13/2015	7/29/2015	10/21/2015	1/6/2016	4/20/2016
PCE (µg/L)	88	67	53	72	99
TCE (µg/L)	123	82	66	88	129
cis-1,2-DCE (µg/L)	97	88	76	96	147
trans-1,2-DCE (µg/L)	1.2	1.5	2.0	1.5	0.69
Vinyl chloride (µg/L)	0	0	0	0	0
Ethene (µg/L)	0	0	0	0	0
PCE (nM/L)	528.674	401.134	320.810	431.647	595.791
TCE (nM/L)	936.829	620.519	502.702	669.914	978.157
cis-1,2-DCE (nM/L)	1000.619	912.739	786.797	994.224	1512.120
trans-1,2-DCE (nM/L)	12.068	15.059	20.526	15.781	7.117
Vinyl chloride (nM/L)	0.000	0.000	0.000	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000
Total Molar Conc. (nM/L)	2478.2	1949.5	1630.8	2111.6	3093.2
% moles PCE	21.3%	20.6%	19.7%	20.4%	19.3%
% moles TCE	37.8%	31.8%	30.8%	31.7%	31.6%
% moles cis-1,2-DCE	40.4%	46.8%	48.2%	47.1%	48.9%
% moles trans-1,2-DCE	0.5%	0.8%	1.3%	0.7%	0.2%
% moles Vinyl Chloride	0.0%	0.0%	0.0%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 36.5.3

SWMU B3-UIC Analytical Summary Table
Apr 2015 - Apr 2016

Q36		B3-UIC									
Well ID		B3-UIC									
Sample Date		4/13/2015		7/29/2015		10/21/2015		1/6/2016		4/20/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Total Dissolved Solids	mg/L	368		330		382		337		357	
Benzene	µg/L	0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0	
Chloroform	µg/L	0		0.10	F	0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	97		88		76		96		147	
Dichloroethene, trans-1,2-	µg/L	1.2		1.5		2.0		1.5		0.69	
Methylene chloride	µg/L	0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0	
Tetrachloroethene	µg/L	88		67		53		72		99	
Toluene	µg/L	0		0		0		0		0	
Trichloroethene	µg/L	123		82		66		88		129	
Vinyl chloride	µg/L	0		0		0		0		0	

Table 36.6.2

B-3 Bioreactor Extraction Well VOC Summary

Apr 2015 - Apr 2016

Q36	16-LGR			16-CC			EXW01			EXW02		
	Date	4/7/2015	10/19/2015	4/8/2016	4/7/2015	10/19/2015	4/8/2016	4/7/2015	10/19/2015	4/8/2016	4/7/2015	10/19/2015
PCE (µg/L)	71	84	79	0	0	0	116	102	104	58	78	56
TCE (µg/L)	91	94	82	5.1	4.5	3.3	143	112	116	88	98	84
cis-1,2-DCE (µg/L)	95	101	87	15	15	11	205	153	163	92	97	70
trans-1,2-DCE (µg/L)	0.50	0	0.30	6.3	6.6	6.4	1.5	0.98	0.92	0.87	0	0.57
Vinyl chloride (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
Ethene (µg/L)	0	0	0	0	0	0	0	0	0	0	0	0
PCE (nM/L)	426.943	506.422	476.030	0.000	0.000	0.000	697.763	616.897	629.802	348.972	470.964	334.982
TCE (nM/L)	695.715	711.926	622.346	38.511	34.021	25.268	1086.841	851.282	883.096	667.707	742.674	642.819
cis-1,2-DCE (nM/L)	981.124	1043.012	895.719	155.132	151.006	118.412	2114.698	1577.102	1680.660	953.378	996.184	722.331
trans-1,2-DCE (nM/L)	5.157	0.000	3.094	64.982	68.076	65.807	15.678	10.108	9.489	8.974	0.000	5.879
Vinyl chloride (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Molar Conc. (nM/L)	2108.94	2261.36	1997.2	258.62	253.10	209.49	3914.98	3055.39	3203.05	1979.03	2209.82	1706.01
% moles PCE	20.2%	22.4%	23.8%	0.0%	0.0%	0.0%	17.8%	20.2%	19.7%	17.6%	21.3%	19.6%
% moles TCE	33.0%	31.5%	31.2%	14.9%	13.4%	12.1%	27.8%	27.9%	27.6%	33.7%	33.6%	37.7%
% moles cis-1,2-DCE	46.5%	46.1%	44.8%	60.0%	59.7%	56.5%	54.0%	51.6%	52.5%	48.2%	45.1%	42.3%
% moles trans-1,2-DCE	0.2%	0.0%	0.2%	25.1%	26.9%	31.4%	0.4%	0.3%	0.3%	0.5%	0.0%	0.3%
% moles Vinyl Chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Q36	EXW03			EXW04			EXW05		
	Date	4/7/2015	10/19/2015	4/8/2016	4/8/2015	10/19/2015	4/8/2016	4/8/2015	10/27/2015
PCE (µg/L)	65	84	3.4	135	132	100	37	67	44
TCE (µg/L)	84	97	3.3	201	156	128	52	94	60
cis-1,2-DCE (µg/L)	100	108	19	225	179	150	43	81	49
trans-1,2-DCE (µg/L)	0.53	0	0.42	0.85	0	0.81	0	0.33	0.30
Vinyl chloride (µg/L)	0	0	0	0	0	0	0	0	0
Ethene (µg/L)	0	0	0	0	0	0	2.1	0	0
PCE (nM/L)	390.340	509.196	20.503	815.413	796.056	600.917	223.241	405.898	263.885
TCE (nM/L)	640.992	740.620	25.116	1531.700	1185.631	972.372	394.094	717.178	456.732
cis-1,2-DCE (nM/L)	1029.912	1109.025	195.874	2320.474	1845.178	1544.817	439.917	834.141	504.074
trans-1,2-DCE (nM/L)	5.467	0.000	4.332	8.767	0.000	8.355	0.000	3.404	3.094
Vinyl chloride (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ethene (nM/L)	0.000	0.000	0.000	0.000	0.000	0.000	74.866	0.000	0.000
Total Molar Conc. (nM/L)	2066.71	2358.84	245.83	4676.35	3826.86	3126.46	1132.12	1960.62	1227.79
% moles PCE	18.9%	21.6%	8.3%	17.4%	20.8%	19.2%	19.7%	20.7%	21.5%
% moles TCE	31.0%	31.4%	10.2%	32.8%	31.0%	31.1%	34.8%	36.6%	37.2%
% moles cis-1,2-DCE	49.8%	47.0%	79.7%	49.6%	48.2%	49.4%	38.9%	42.5%	41.1%
% moles trans-1,2-DCE	0.3%	0.0%	1.8%	0.2%	0.0%	0.3%	0.0%	0.2%	0.3%
% moles Vinyl Chloride	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% moles Ethene	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	0.0%	0.0%
sum % moles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: 0 sample indicates a non-detect analyte value

Table 36.6.3

B-3 Bioreactor Extraction Well Analytical Summary
Apr 2015 - Apr 2016

Q36		Extraction Wells																							
Well ID		CS-MW16-LGR						CS-MW16-CC						B3-EWX01						B3-EWX02					
Sample Date		4/7/2015		10/19/2015		4/8/2016		4/7/2015		10/19/2015		4/8/2016		4/7/2015		10/19/2015		4/8/2016		4/7/2015		10/19/2015		4/8/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	0.35	F	0.34	F			0.41	F	0		0		0.49	F	0.44	F	0.42	F	0		0.42	F	0	
Total Organic Carbon	mg/L	0.56		0		0.82	F	0.17	F	0		0.84	F	0.41	F	0.38	F	0.96	F	0.39	F	0.16	F	0.92	F
Methane	µg/L	0		0		0		6.2		5.7		7.4		0		0		0		0		0		0	
Ethene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Ethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	34,000		41,500		28,400		22,000		8,960		22,700		31,900		65,500		37,600		57,200		48,400		34,100	
Sulfate	mg/L	18		18		18		76		72		75		11		10		12		13		17		13	
Chloride	mg/L	10		11		10		18		17		19		13		12		12		14		15		12	
Ferrous Iron	mg/L	0		0		0		0.16	F	0.37	F	0.16	F	0		0		0		0.22	F	0		0	
Manganese	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Hydrogen	nM	34		3.2		16								10		21		2.2							
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	297		321		318		384		417		398		321		352		351		329		381		344	
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0.10	F	0		0		0		0		0.16	F	0		0		0.14	F	0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	95		101		87		15		15		11		205		153		163		92		97		70	
Dichloroethene, trans-1,2-	µg/L	0.50	F	0		0.30	F	6.3		6.6		6.4		1.5		0.98		0.92		0.87	F	0		0.57	F
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		1.5		0		0		1.6		0		0		0		0		0		0	
Tetrachloroethene	µg/L	71		84		79		0		0		0		116		102		104		58		78		56	
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	91		94		82		5.1		4.5		3.3		143		112		116		88		98		84	
Vinyl chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Arsenic	µg/L	0.60	F	0.60	F	4.2	F	2.7	F	2.2	F	3.1	F	2.2	F	1.7	F	4.1	F	2.1	F	1.8	F	4.2	F

Q36		Extraction Wells																	
Well ID		B3-EWX03						B3-EWX04						B3-EWX05					
Sample Date		4/7/2015		10/19/2015		4/8/2016		4/8/2015		10/19/2015		4/8/2016		4/8/2015		10/27/2015		4/8/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	2.0		1.8				0.43	F	0.16	F			0.49	F	0		0	
Total Organic Carbon	mg/L	1.6		1.2		2.7		0.15	F	0		0.99	F	0.16	F	0		0.76	F
Methane	µg/L	0		0		0		0		0		0.50	F	0		0		0	
Ethene	µg/L	0		0		0		0		0		2.1	F	0		0		0	
Ethane	µg/L	0		0		0		0		0		0		0		0		0	
Carbon Dioxide	µg/L	70,400		80,900		43,900		37,100		40,500		28,100		20,900		27,200		19,100	
Sulfate	mg/L	13		10		13		8.7		6.7		9.4		16		14		20	
Chloride	mg/L	17		14		16		12		13		12		9.4		9.7		9.2	
Ferrous Iron	mg/L	0.20	F	0.30	F	0.27	F	0		0.16	F	0		0.47	F	0.26	F	0.17	F
Manganese	µg/L	33		59		1,980		0		0		2.0	F	3.0	F	3.0	F	2.0	F
Hydrogen	nM																		
Sulfide	mg/L	0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	363		354		425		317		352		352		281		312		329	
Benzene	µg/L	0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0.21	F	0		0.17	F	0.16	F	0.20	F	0.15	F
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	100		108		19		225		179		150		43		81		49	
Dichloroethene, trans-1,2-	µg/L	0.53	F	0		0.42	F	0.85		0		0.81		0		0.33	F	0.30	F
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	65		84		3.4		135		132		100		37		67		44	
Toluene	µg/L	0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	84		97		3.3		201		156		128		52		94		60	
Vinyl chloride	µg/L	0		0		0		0		0		0		0		0		0	
Arsenic	µg/L	3.4	F	0.60	F	13	F	1.4	F	2.2	F	6.1	F	1.2	F	3.4	F	3.8	F

Note: 0 sample indicates a non-detect analyte value

Table 36.7.3

B-3 Bioreactor UGR Well Analytical Summary
Apr 2015 - Apr 2016

Q36		Shallow UGR Wells																			
Well ID		B3-MW26-UGR						B3-MW27-UGR						B3-MW29-UGR				B3-MW30-UGR			
Sample Date		4/6/2015		10/26/2015		4/18/2016		4/6/2015		10/26/2015		4/18/2016		10/26/2015		4/18/2016		10/26/2015		4/18/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	2.5		3.5				2.3		3.5				1.9				6.0			
Total Organic Carbon	mg/L	3.8		2.9		2.5		2.3		3.2		3.3		1.6		3.0		5.5		12	
Methane	µg/L	2,580		1,010		2,910		1,790		3,480		3,250		0		0		0		0	
Ethene	µg/L	4.0		1.8	F	4.1		1.8	F	4.2		3.6		0		0		0		0	
Ethane	µg/L	11		2.1		11		7.6		5.0		7.1		0		0		0		0	
Carbon Dioxide	µg/L	128,000		90,000		105,000		104,000		120,000		117,000		68,000		47,400		75,900		73,700	
Sulfate	mg/L	7.1		43		12		12		6.2		12		8.4		22		26		27	
Chloride	mg/L	18		39		22		22		16		14		21		22		12		9.0	
Ferrous Iron	mg/L	0.51	F	1.1		0.62	F	0.63	F	1.0		0.68	F	0.35	F	1.8		0.18	F	0.21	F
Manganese	µg/L	1,090		384		1,180		232		224		233		131		53		5.0		21	
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	418		499		452		409		434		422		443		383		468		450	
Benzene	µg/L	0.18	F	0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	6.8		6.2		8.0		15		10		4.7		0		0		0		3.7	
Dichloroethene, trans-1,2-	µg/L	3.8		1.8		1.8		2.9		1.8		1.7		0		0		0		0	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	0		0		0		0		0		0		0.30	F	0		5.8		4.2	
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	0		0.18	F	0		0		0		0		0		0		0.36	F	2.2	
Vinyl chloride	µg/L	6.3		4.7		7.2		11		12		4.6		0		0		0		0	
Arsenic	µg/L	2.3	F	4.3	F	0.60	F	4.3	F	5.4	F	4.3	F	3.0	F	0.40	F	2.4	F	0	

Q36		Shallow UGR Wells																							
Well ID		B3-MW31-UGR						B3-MW32-UGR						B3-MW33-UGR				B3-MW34-UGR							
Sample Date		4/6/2015		10/26/2015		4/18/2016		4/7/2015		10/26/2015		4/18/2016		4/6/2015		10/26/2015		4/18/2016		4/7/2015		10/26/2015		4/18/2016	
Compound	Units	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag	Value	Flag
Dissolved Organic Carbon	mg/L	1.8		1.5				4.8		12				2.5		2.3		15		7.9					
Total Organic Carbon	mg/L	2.0		1.6		2.0		4.7		11		5.8		2.6		1.7		1.9		15		7.9		4.2	
Methane	µg/L	16		10		24		0		0		3.6		134		226		2.9		0		526		0	
Ethene	µg/L	0		0		0		0		0		0		2.2	F	0		0		0		1.0	F	0	
Ethane	µg/L	0		0		0		0		0		0		1.0	F	0		0		0		0		0	
Carbon Dioxide	µg/L	133,000		84,100		67,200		77,500		35,000		60,200		73,500		68,000		58,200		145,000		98,700		86,500	
Sulfate	mg/L	97		19		27		16		16		15		22		20		18		14		16		14	
Chloride	mg/L	12		14		12		12		13		12		16		15		12		22		40		20	
Ferrous Iron	mg/L	8.1		0.86	F	1.6		0.48	F	0.68	F	0.24	F	0.20	F	0		0.68	F	0.32	F	5.7		0.63	F
Manganese	µg/L	137		37		59		8.0		24		17		87		341		557		374		404		424	
Sulfide	mg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Total Dissolved Solids	mg/L	538		409		431		340		349		401		370		427		390		459		494		440	
Benzene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromodichloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Bromoform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Chloroform	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dibromochloromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichlorodifluoromethane	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, 1,1-	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Dichloroethene, cis-1,2-	µg/L	8.7		51		32		6.2		21		36		50		29		86		0.29	F	10		41	
Dichloroethene, trans-1,2-	µg/L	0.45	F	1.9		1.7		0		0		0.61		0.84		1.1		1.7		0.86		0.78		1.7	
Methylene chloride	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Naphthalene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Tetrachloroethene	µg/L	0.58	F	4.3		1.4	F	5.5		6.6		5.1		9.7		2.2		5.9		0.43	F	0		0	
Toluene	µg/L	0		0		0		0		0		0		0		0		0		0		0		0	
Trichloroethene	µg/L	1.6		5.9		2.8		3.3		4.2		7.2		13		4.7		15		0		0.42	F	0.74	F
Vinyl chloride	µg/L	0.55	F	4.5		2.4		0		0		2.1		8.6		2.0		11		0		5.2		14	
Arsenic	µg/L	3.6	F	3.1	F	0		2.1	F	2.9	F	3.5	F	0.60	F	1.9	F	1.1	F	3.0	F	14	F	1.8	F

Note: 0 sample indicates a non-detect analyte value

Figures

Figure 36.1.2 T1-1

B-3 Bioreactor Trench 1 Sump 1 VOC Summary
Apr 2015 - Apr 2016

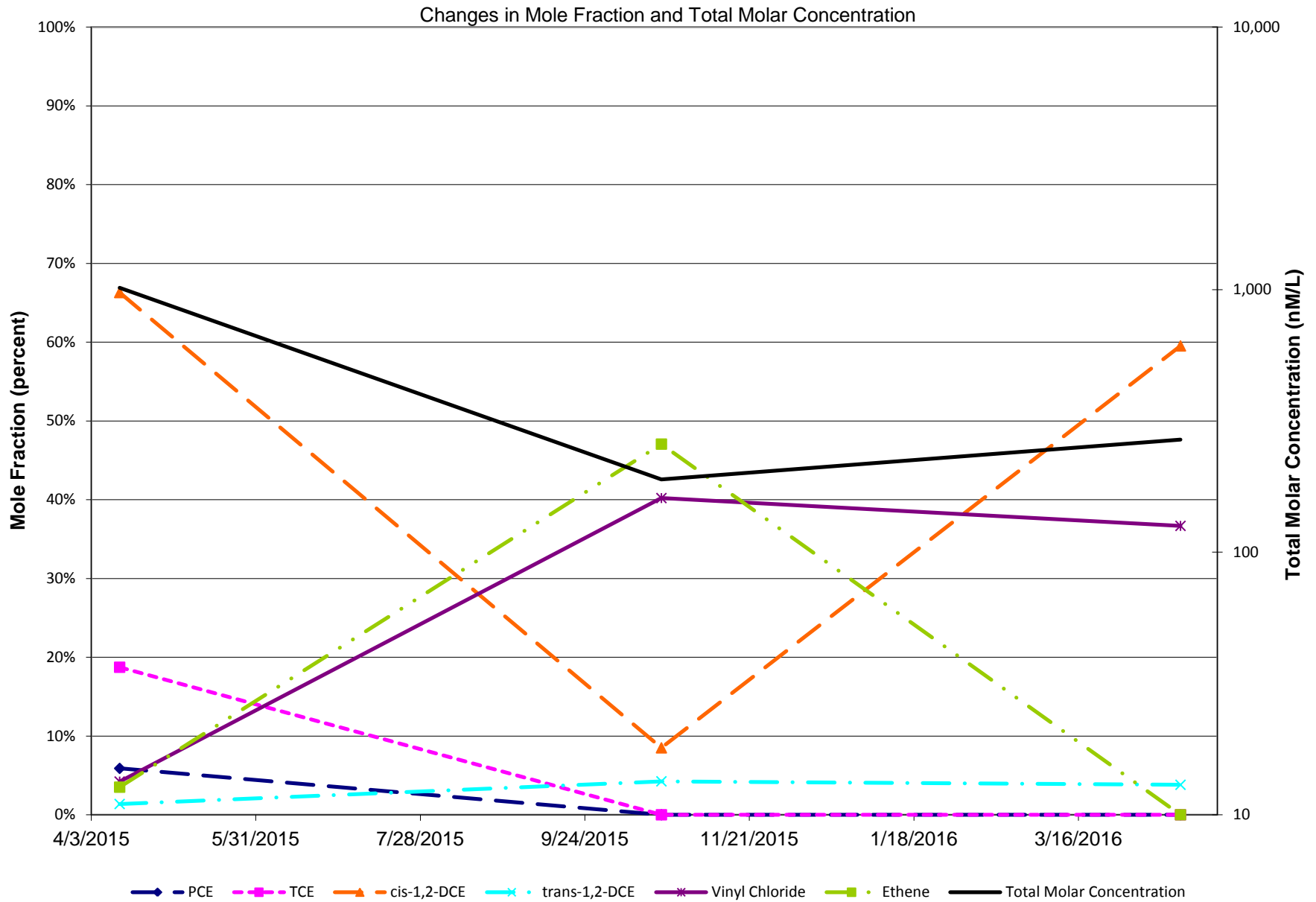


Figure 36.1.2 T1-2

B-3 Bioreactor Trench 1 Sump 2 VOC Summary Apr 2015 - Apr 2016

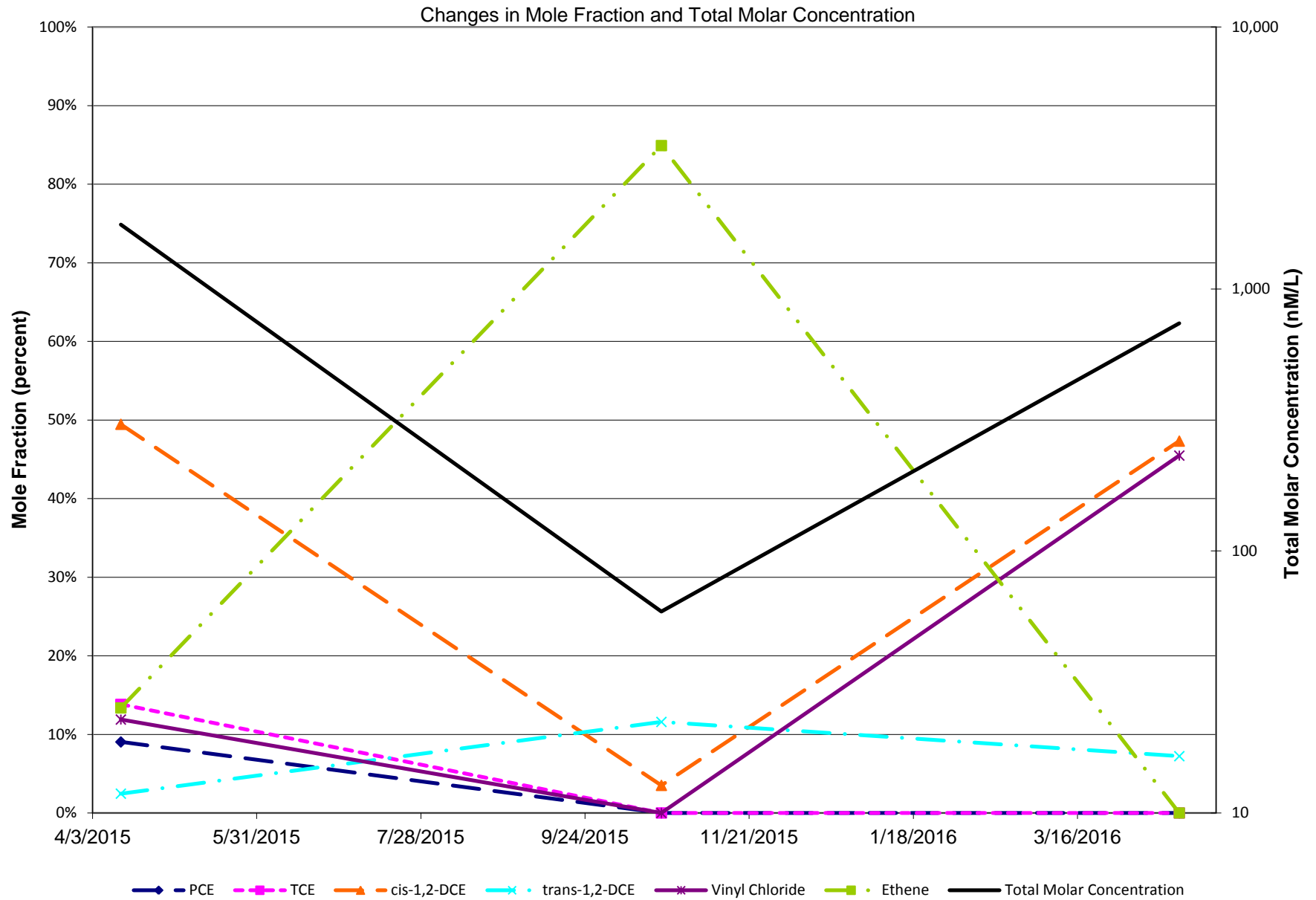


Figure 36.1.2 T1-3

B-3 Bioreactor Trench 1 Sump 3 VOC Summary Apr 2015 - Apr 2016

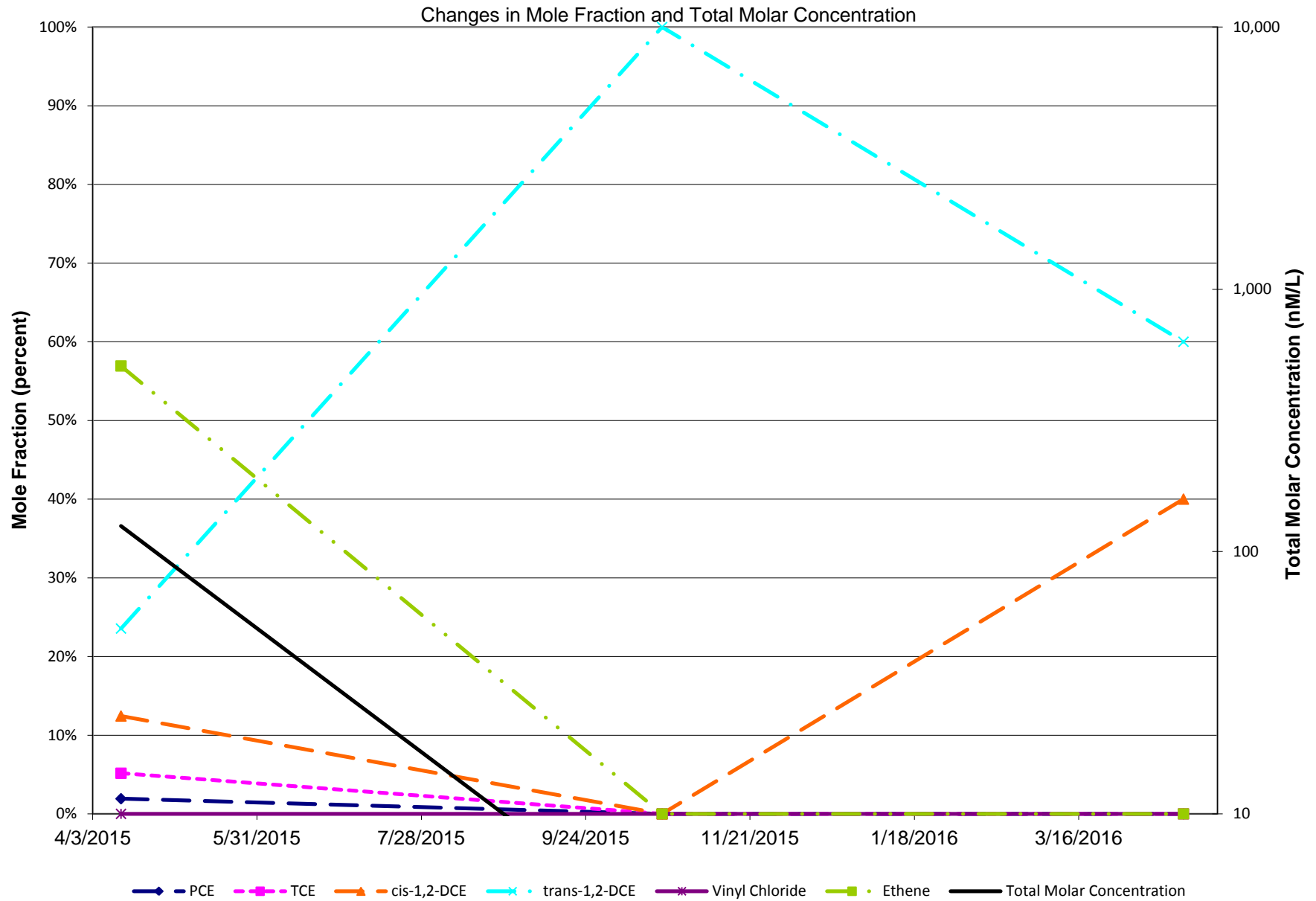


Figure 36.1.2 T2-1

B-3 Bioreactor Trench 2 Sump 1 VOC Summary
Apr 2015 - Apr 2016

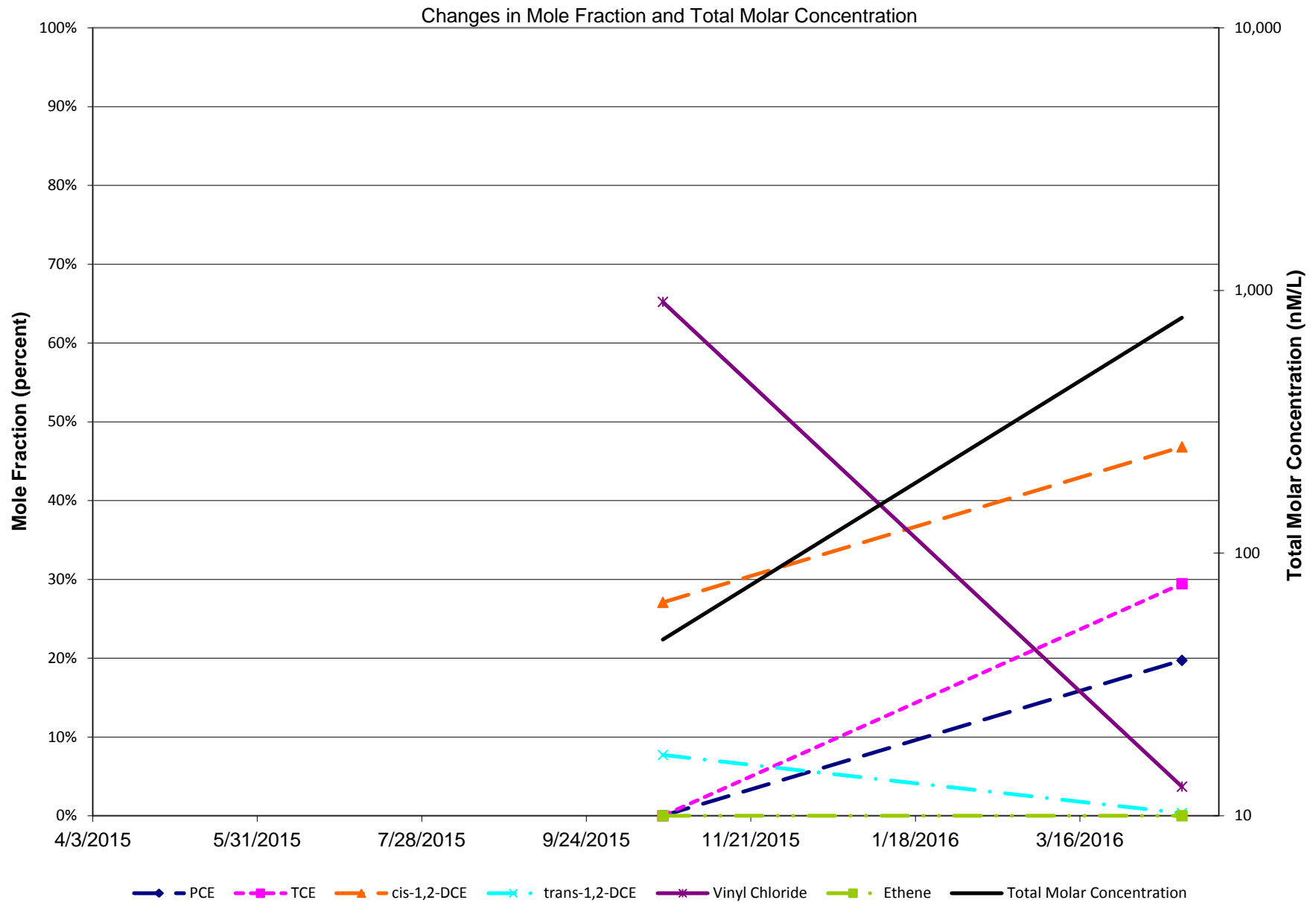


Figure 36.1.2 T2-2

B-3 Bioreactor Trench 2 Sump 2 VOC Summary
Apr 2015 - Apr 2016

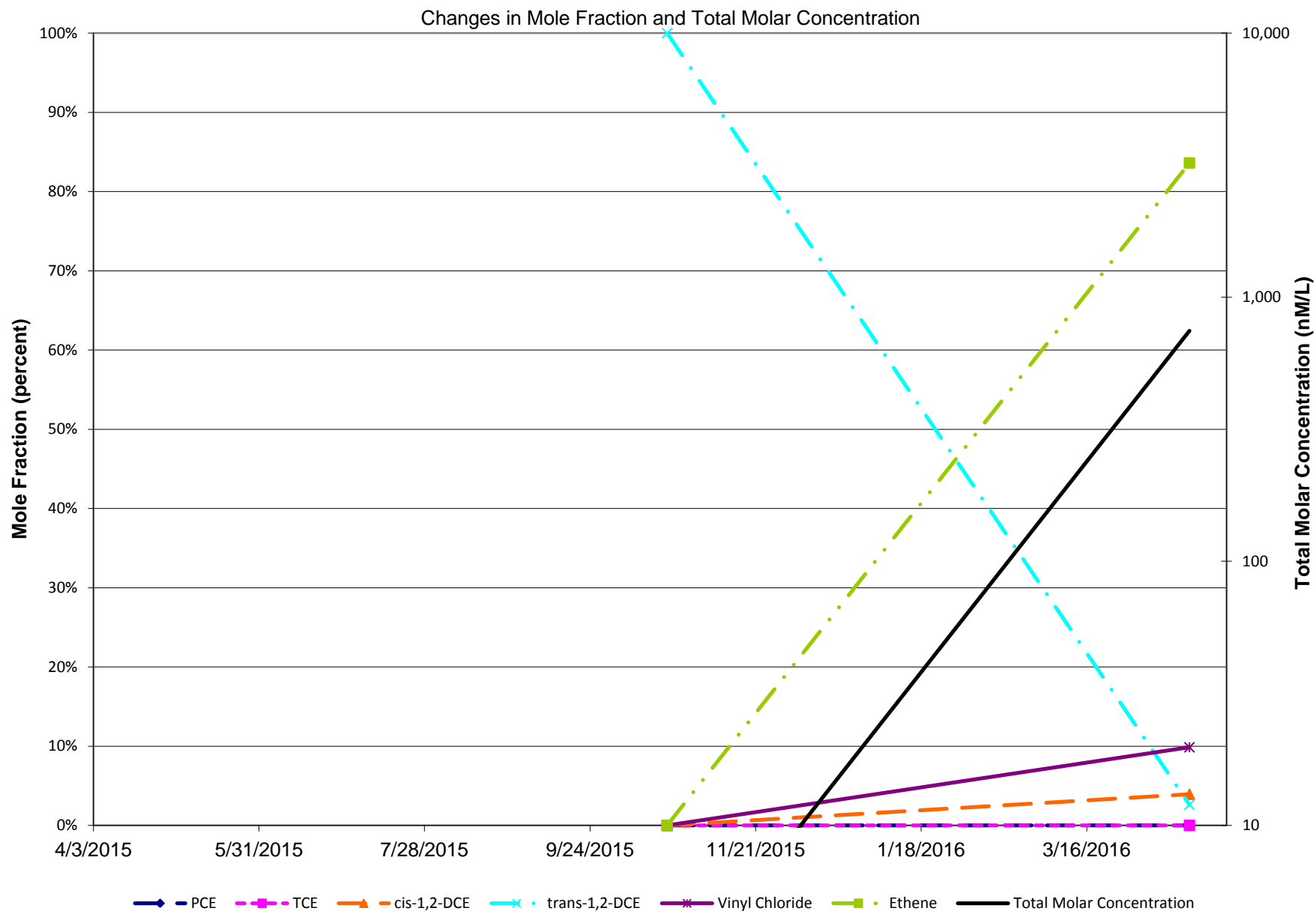


Figure 36.1.2 T6-1

B-3 Bioreactor Trench 6 Sump 1 VOC Summary
Apr 2015 - Apr 2016

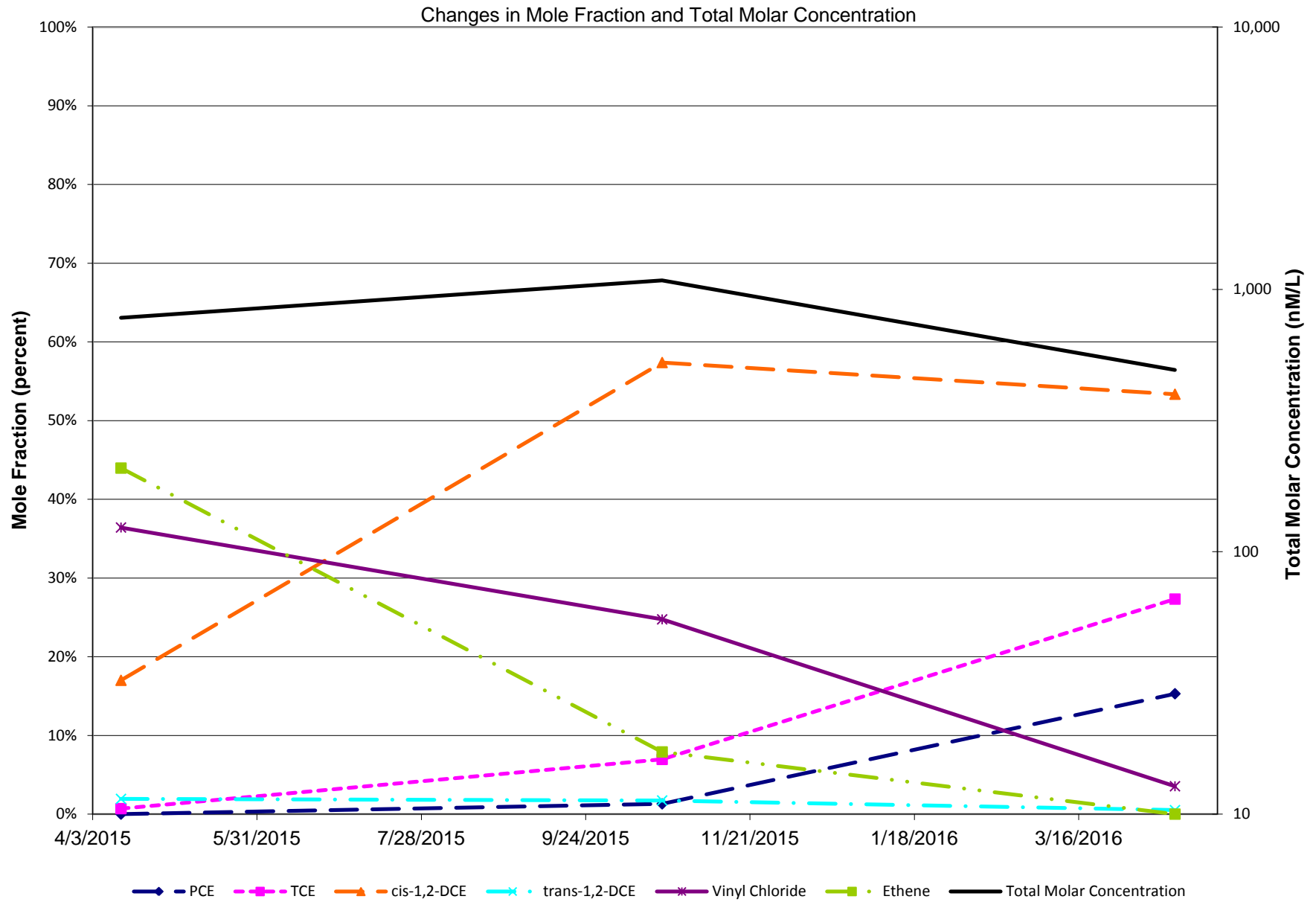


Figure 36.1.2 T6-2

B-3 Bioreactor Trench 6 Sump 2 VOC Summary
Apr 2015 - Apr 2016

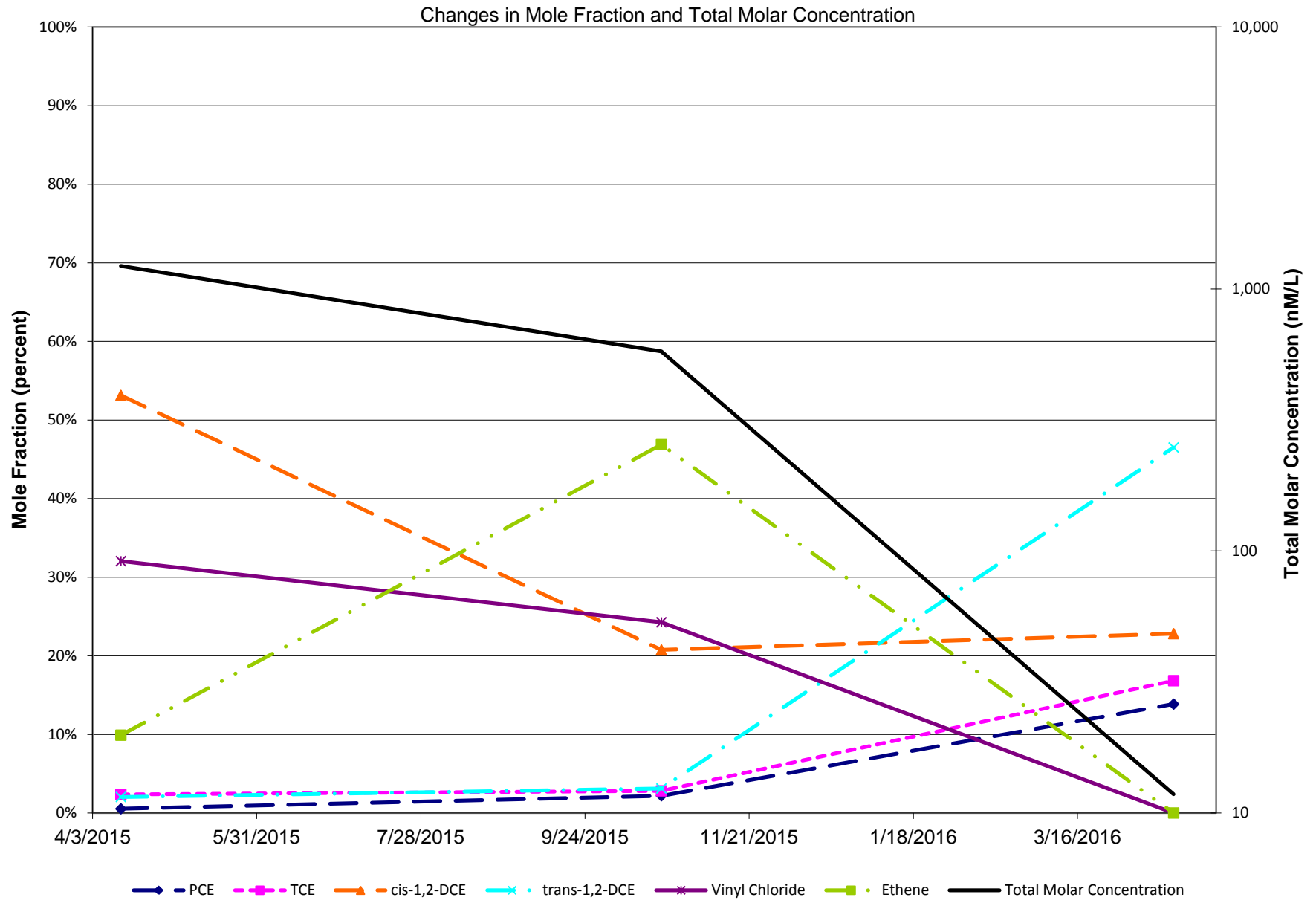


Figure 36.2.2a

CS-WB05-LGR03B VOC Summary
Apr 2015 - Apr 2016

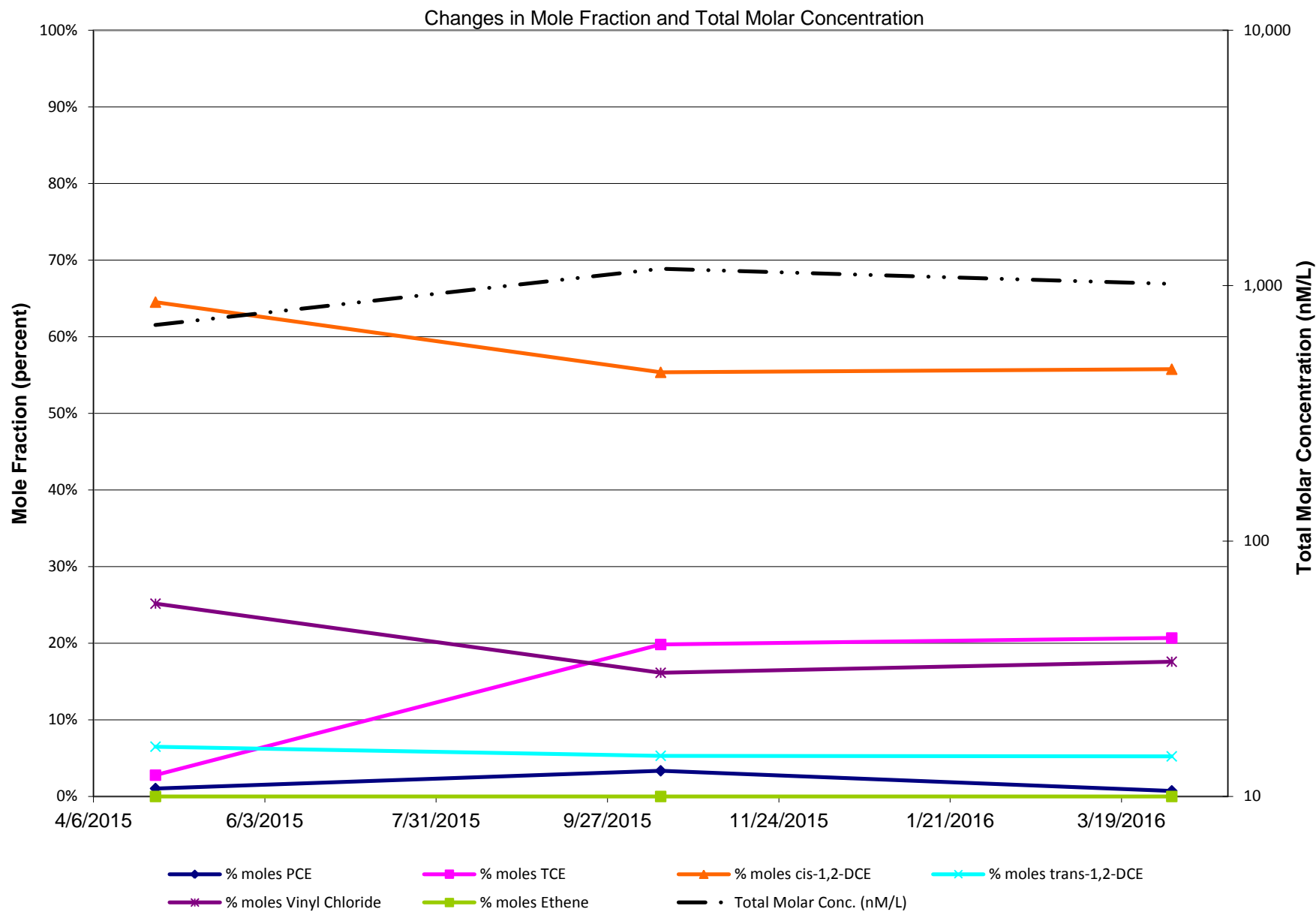


Figure 36.2.2b

CS-WB06-LGR03B VOC Summary
Apr 2015 - Apr 2016

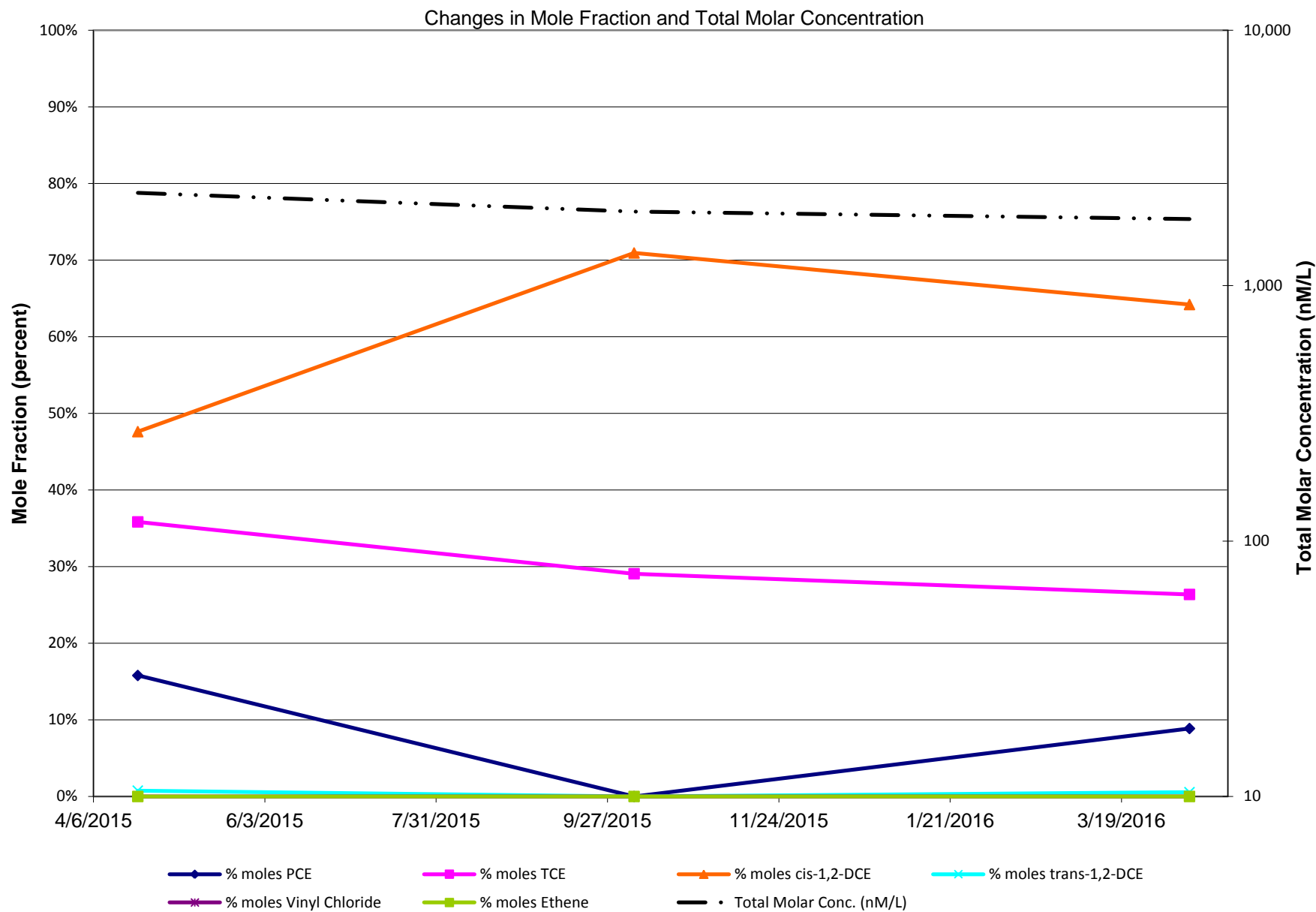


Figure 36.2.2c

CS-WB07-LGR03B VOC Summary Apr 2015 - Apr 2016

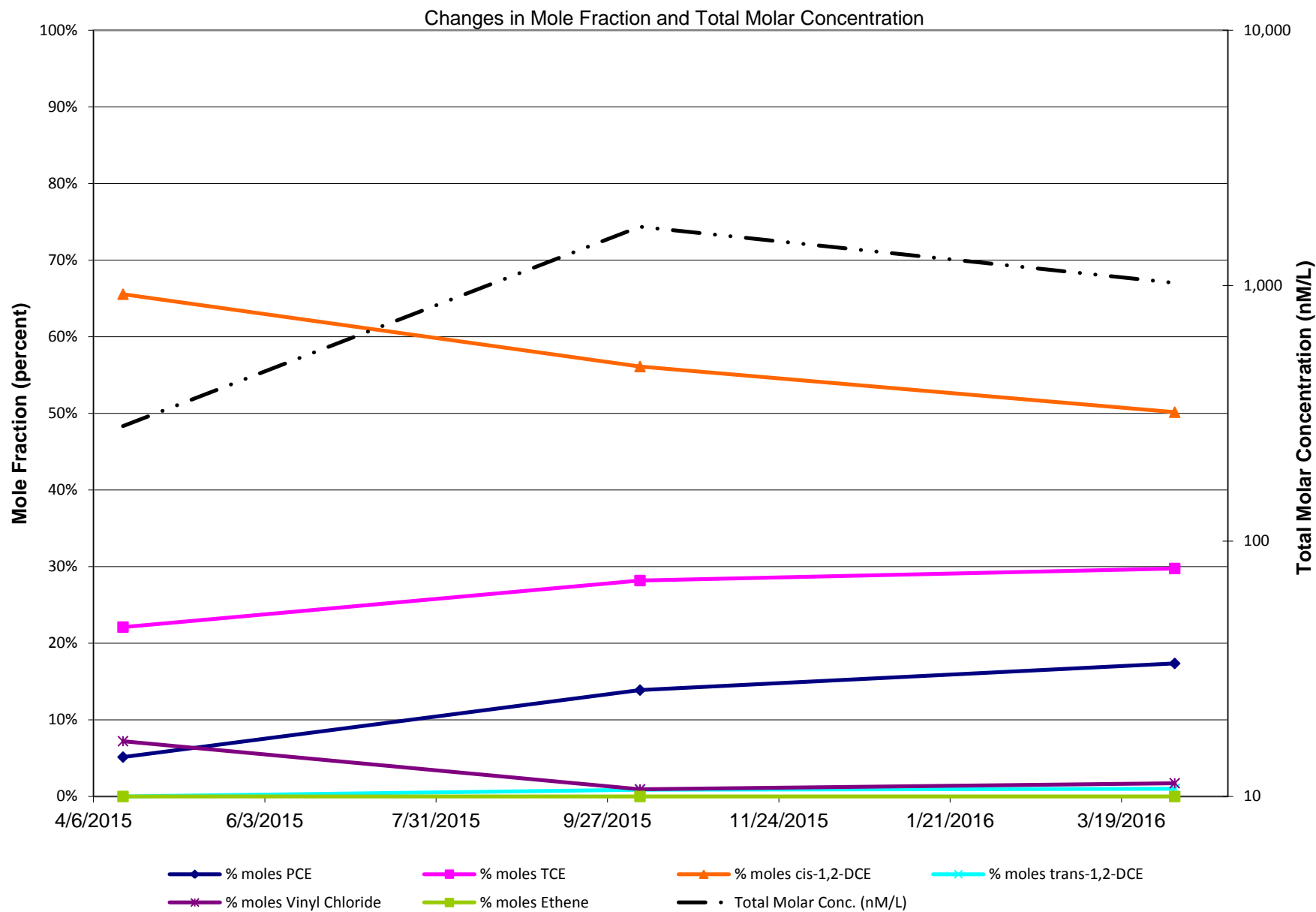


Figure 36.2.2d

CS-WB08-LGR03B VOC Summary
Apr 2015 - Apr 2016

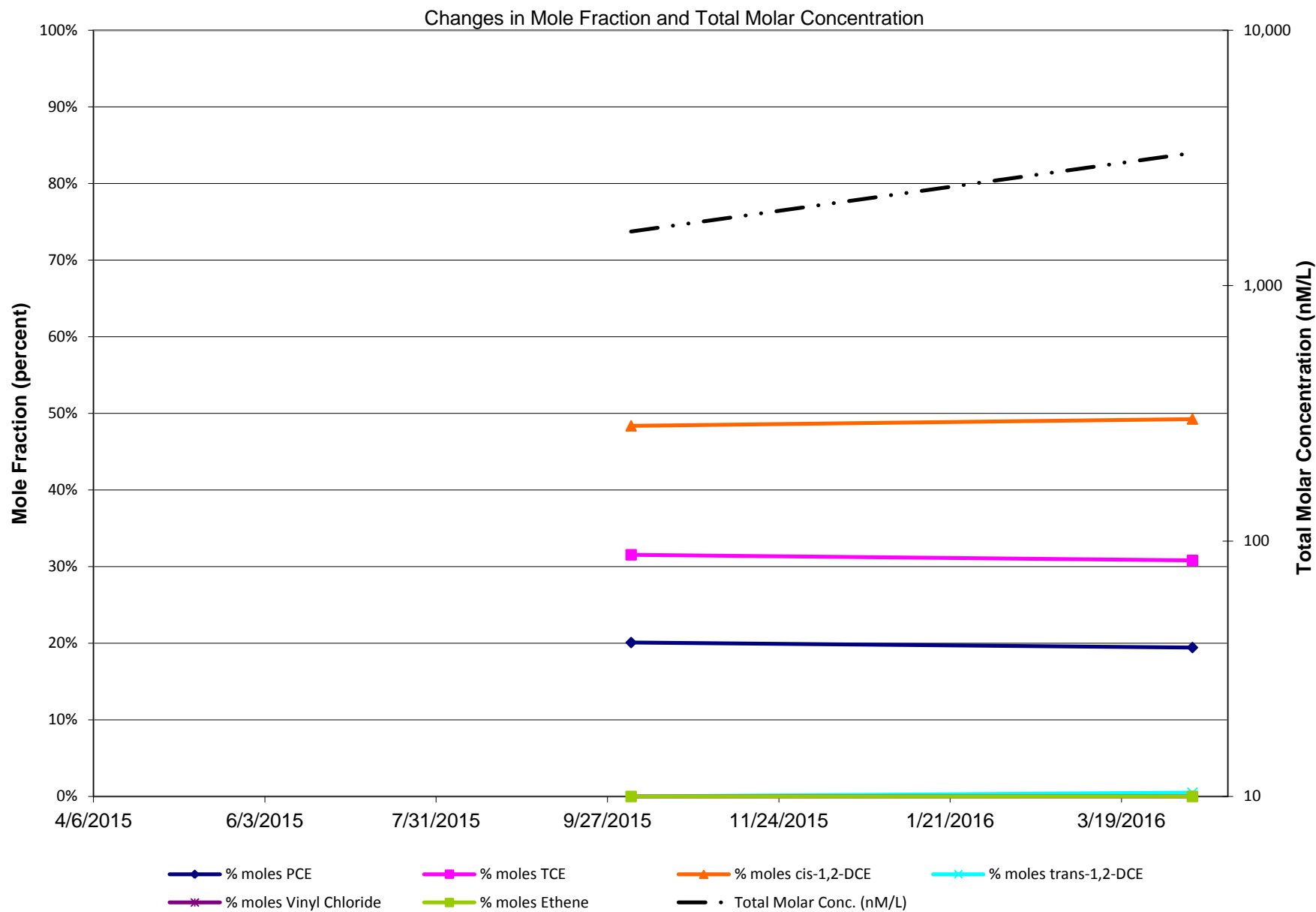


Figure 36.2.5

Lower Glen Rose Groundwater Elevations (feet above MSL) Measured in Westbay Wells May 2012 - April 2016

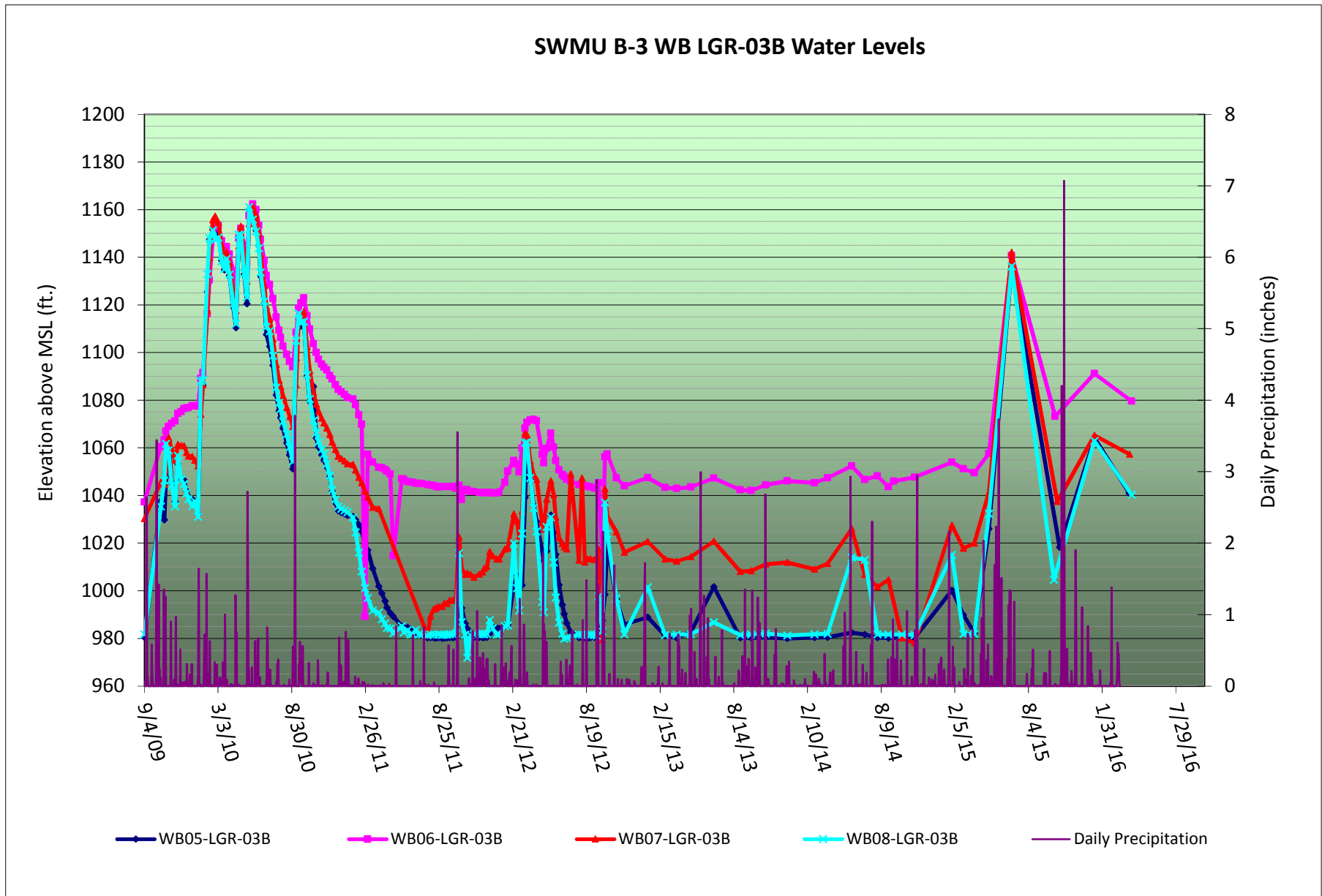


Figure 36.5.2

**Changes in Mole Fraction and Total Molar Concentration at Storage Tank (UIC)
Apr 2015 - Apr 2016**

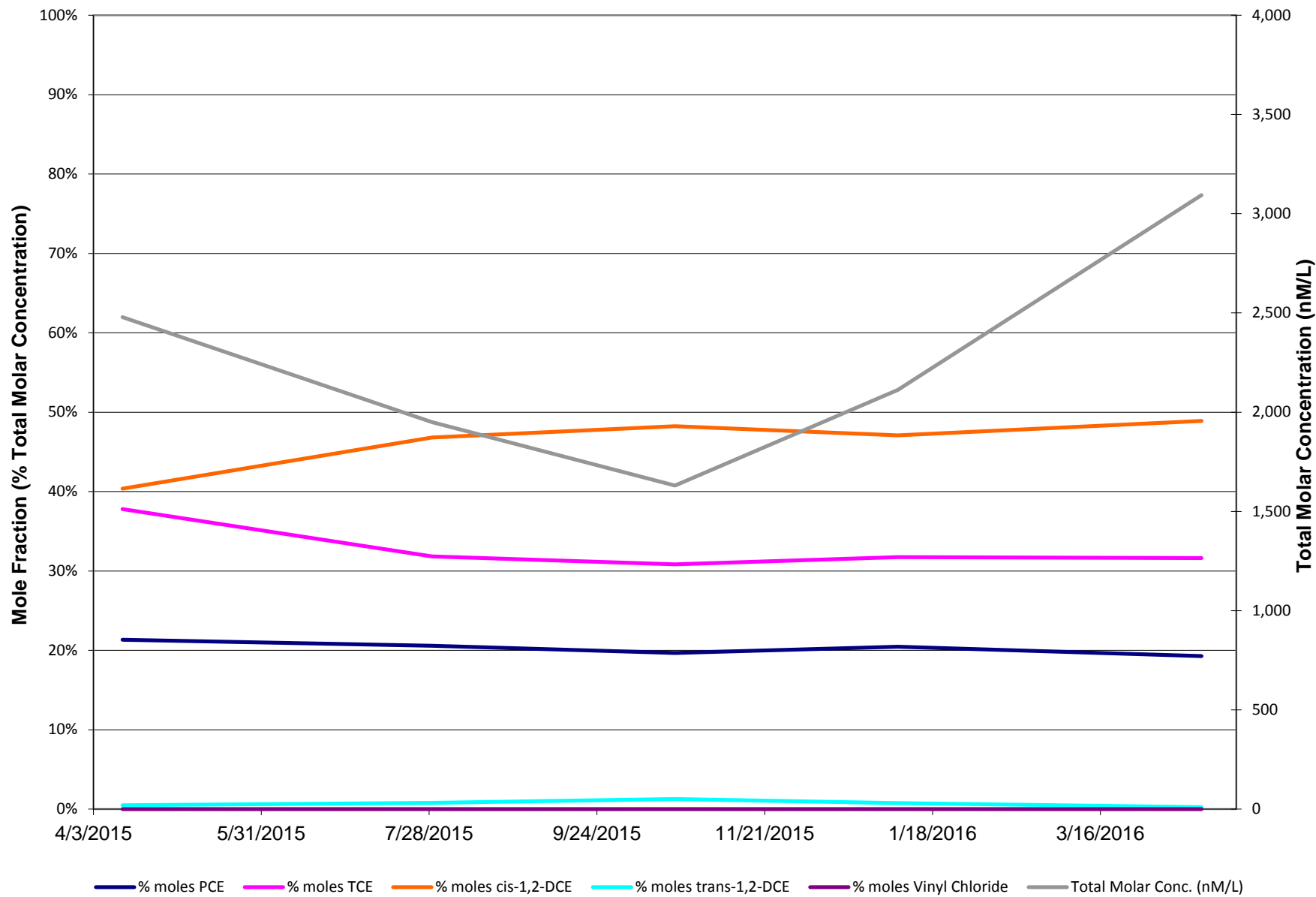


Figure 36.6.2 16-CC

CS-MW16-CC VOC Summary
Apr 2015 - Apr 2016

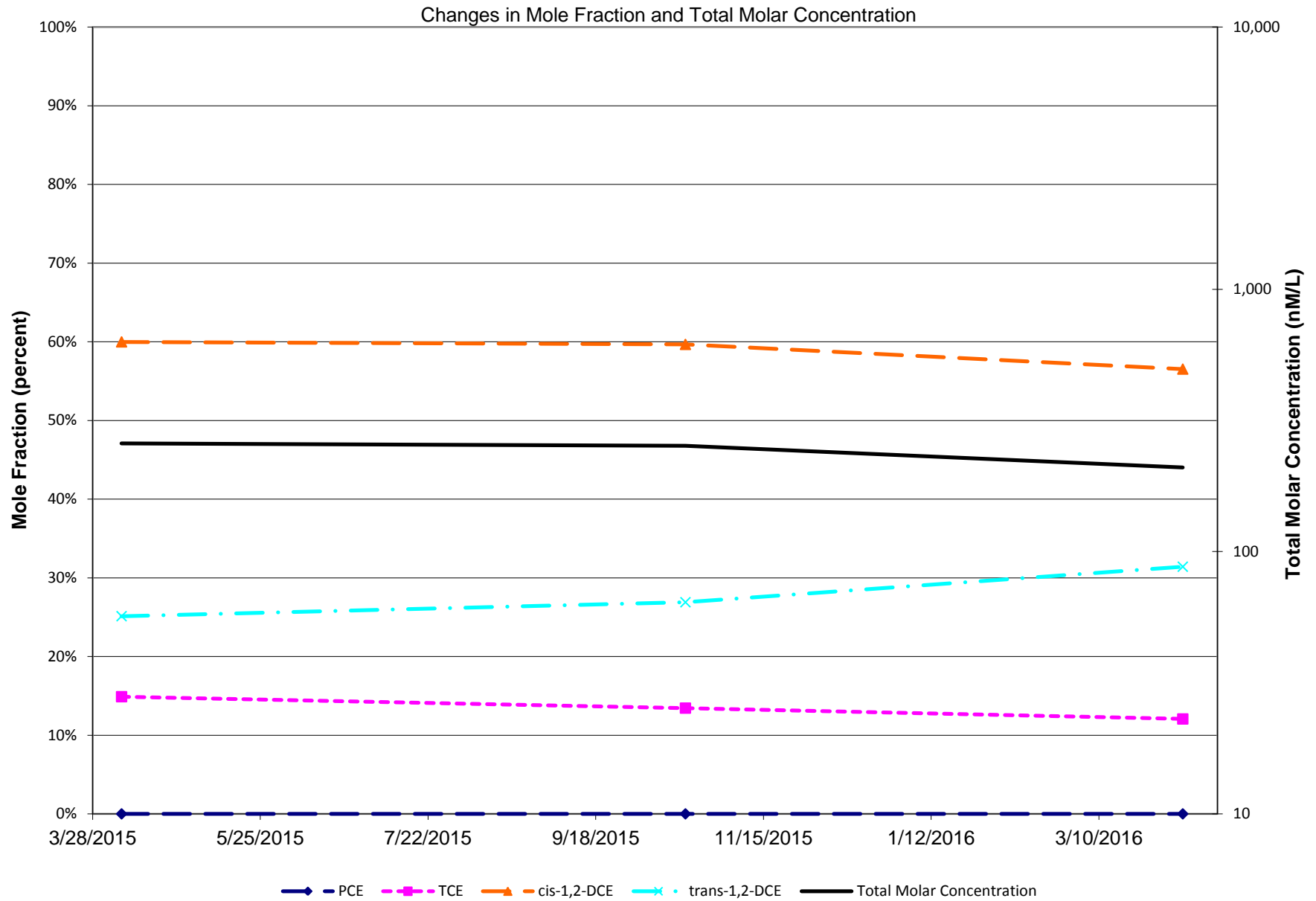


Figure 36.6.2 16-LGR

CS-MW16-LGR VOC Summary Apr 2015 - Apr 2016

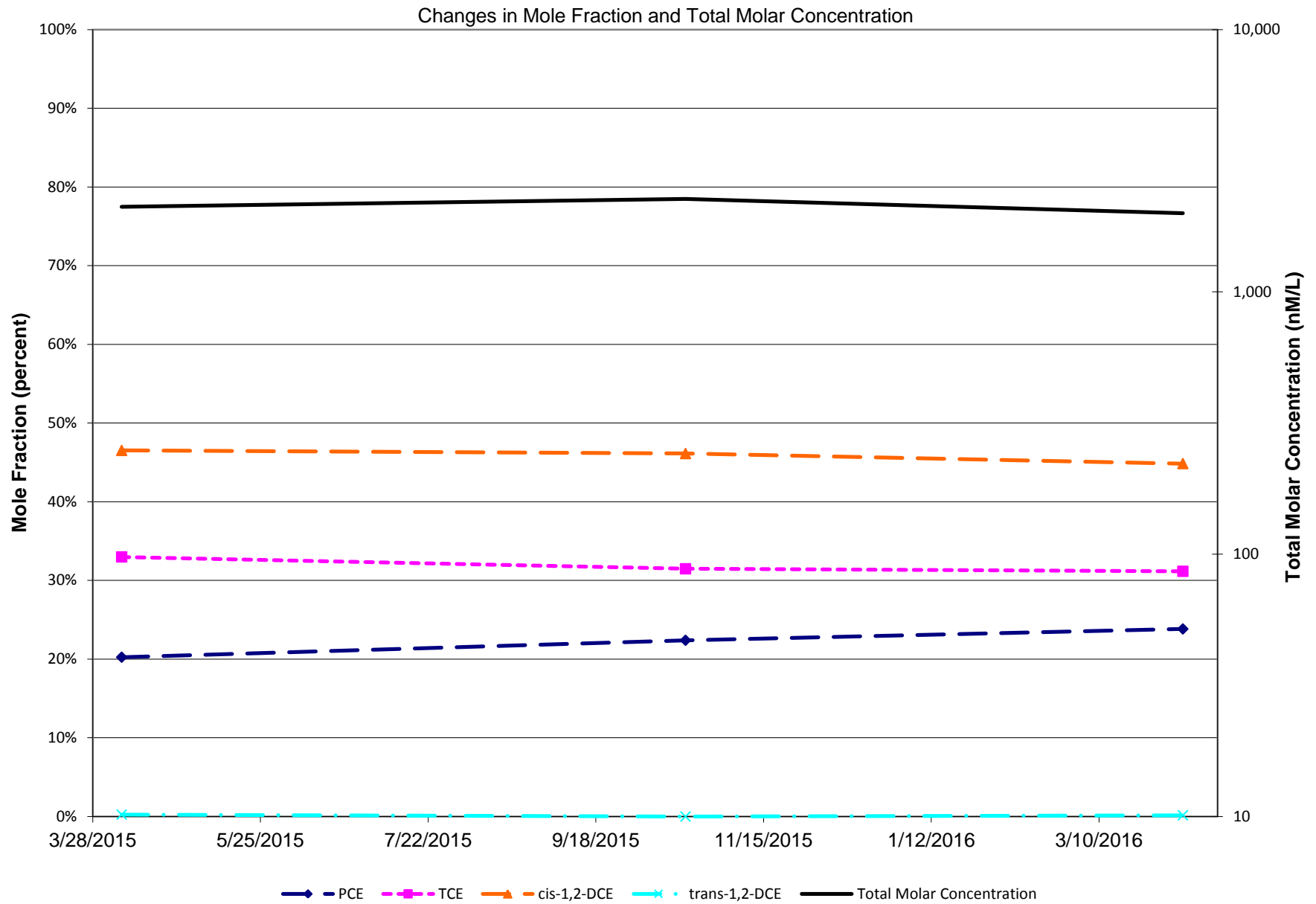


Figure 36.6.2 EXW01

B3-EXW01 VOC Summary Apr 2015 - Apr 2016

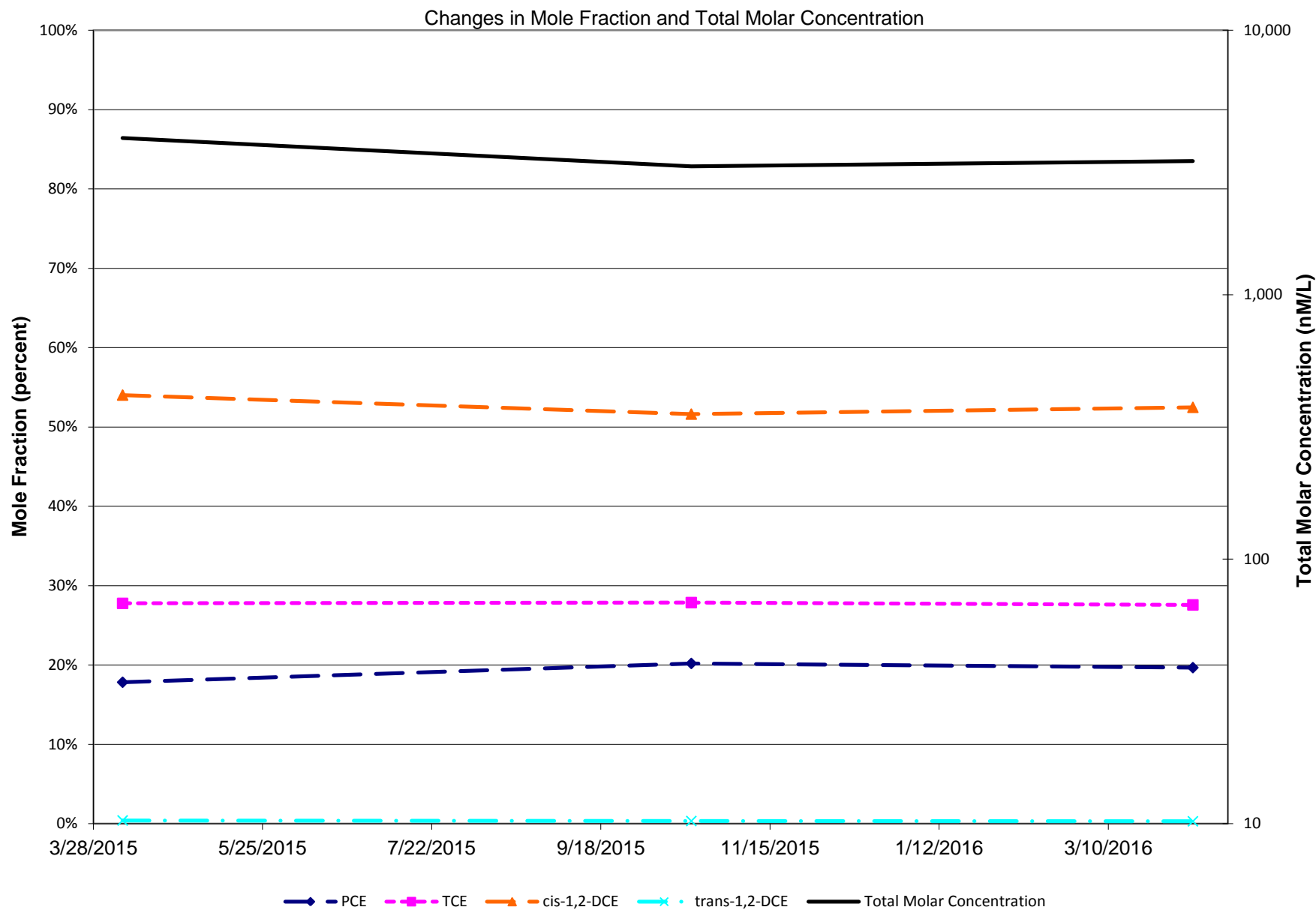


Figure 36.6.2 EXW02

B3-EXW02 VOC Summary Apr 2015 - Apr 2016

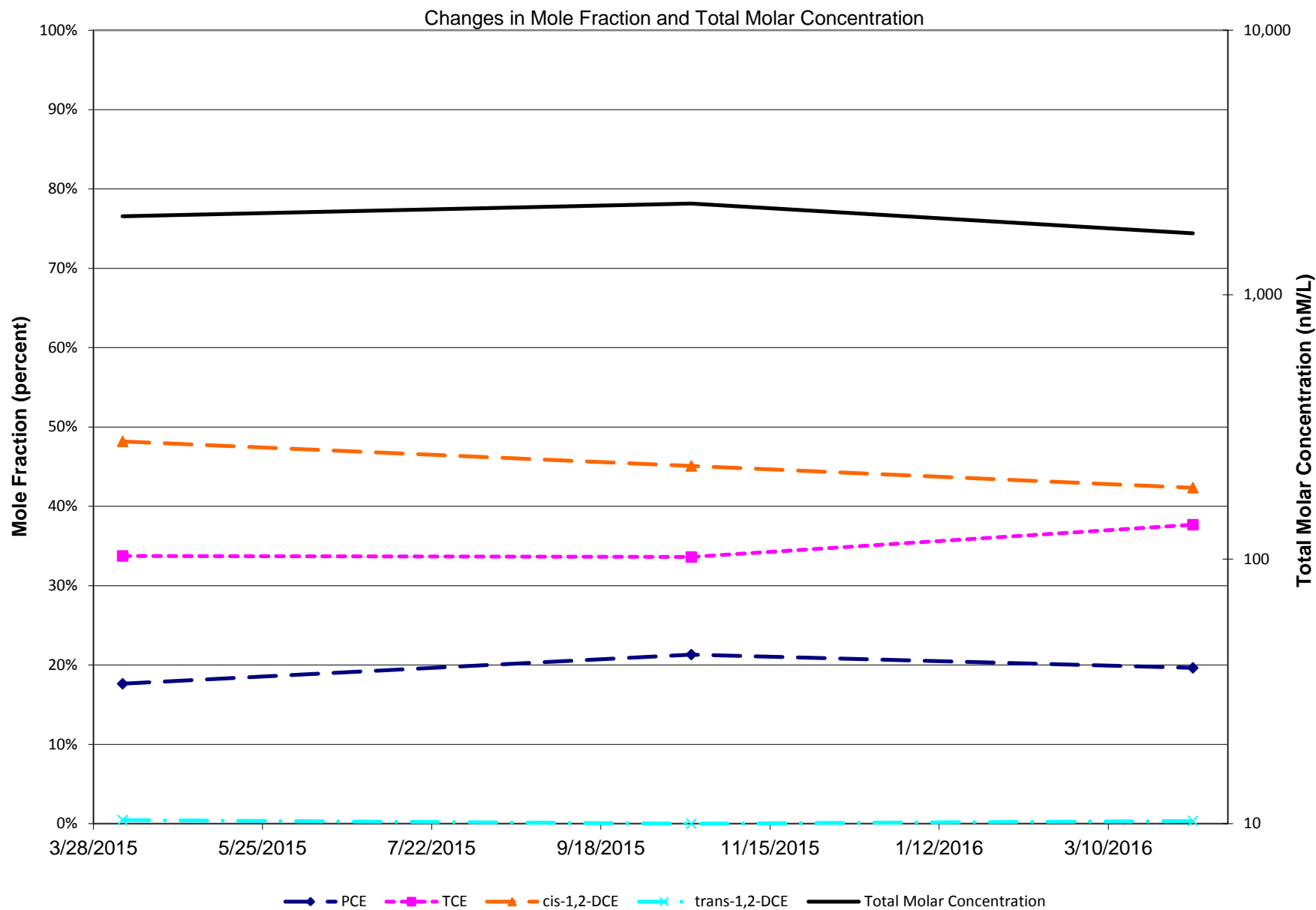


Figure 36.6.2 EXW03

B3-EXW03 VOC Summary Apr 2015 - Apr 2016

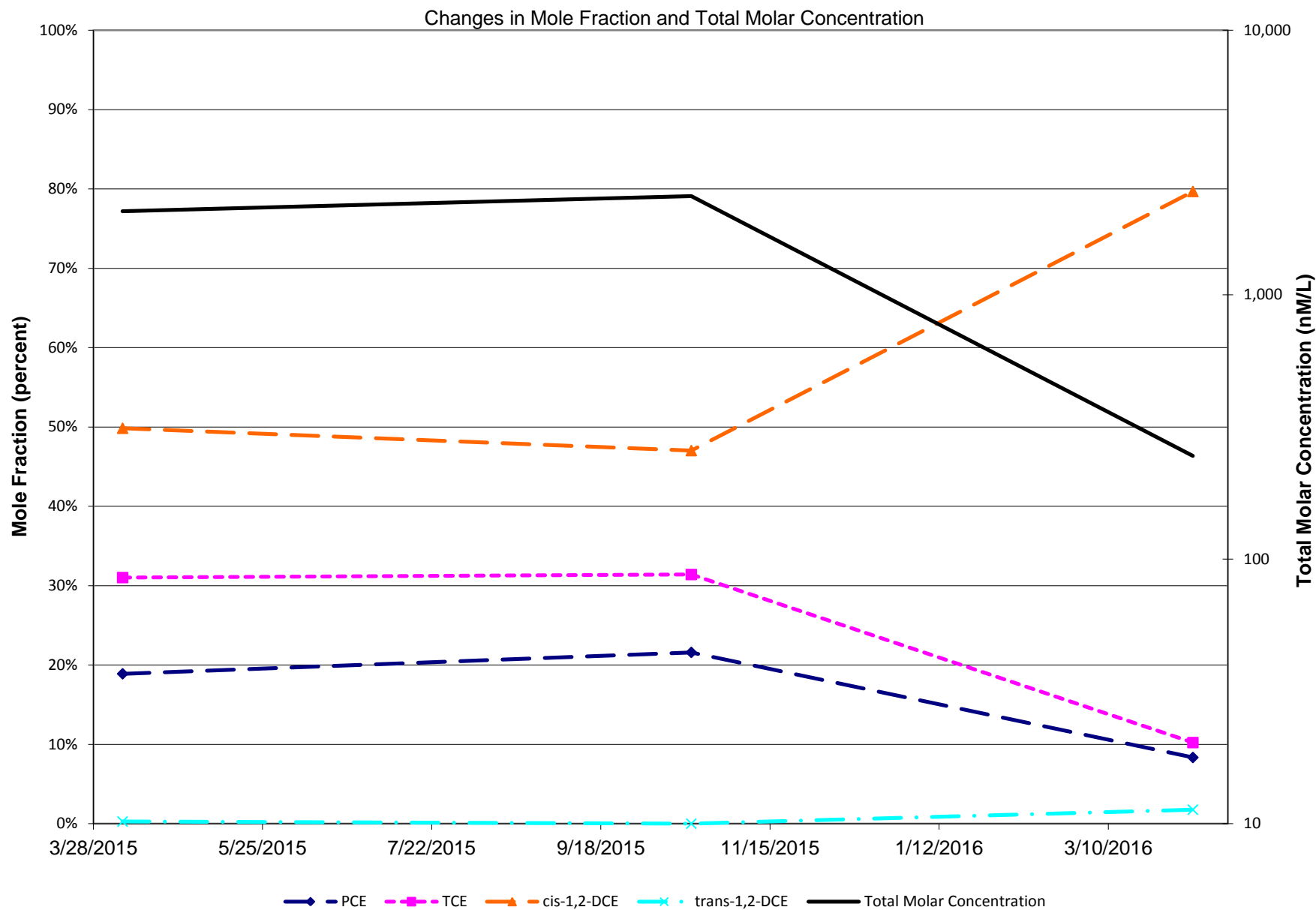


Figure 36.6.2 EXW04

B3-EXW04 VOC Summary Apr 2015 - Apr 2016

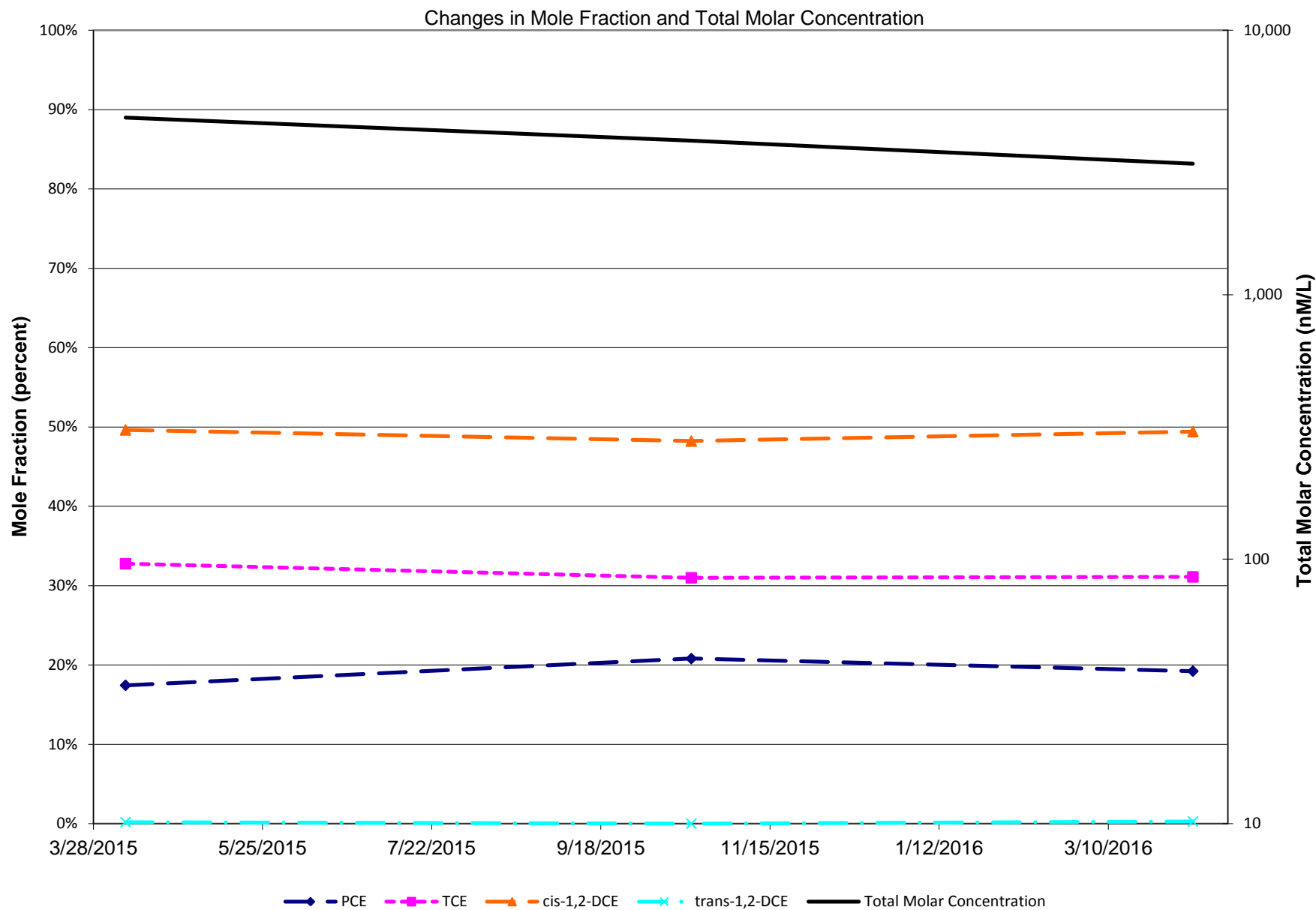


Figure 36.6.2 EXW05

B3-EXW05 VOC Summary
Apr 2015 - Apr 2016

