AECOM

1255 Broad Street
Suite 201
Clifton, NJ 07013-3309
www.aecom.com

973 883 8500 tel
973 883 8501 fax

December 22, 2017

Mr. Girish Desai
New York State Department of Environmental Conservation
Division of Environmental Remediation
Building 40 – SUNY, Stony Brook
Stony Brook, New York 11790-2356

Re: Groundwater Sampling Results
Operable Units No. 1 and No. 2
Former Columbia Cement Company Facility
Freeport, New York
Site ID No. 130052

Dear Mr. Desai:

The purpose of this letter is to present to the New York State Department of Environmental Conservation (NYSDEC) the results of groundwater sampling conducted in September 2017 at Operable Unit Operable Units No. 1 (OU-1) and No. 2 (OU-2) of the former Columbia Cement Company site (site ID No. 130052) in Freeport, New York, (Site). AECOM (formerly URS) has conducted these activities on behalf of Burmah Castrol Holdings, Inc. (Burmah Castrol).

OU-1 has undergone several rounds of investigation and remediation. In March 2009, NYSDEC issued a Record of Decision (ROD) for OU-1. In the OU-1 ROD, in-situ chemical oxidation (ISCO) was selected to remediate source area soil and groundwater, aerobic bioremediation to treat downgradient groundwater and a sub-slab depressurization system (SSDS) was selected to address vapor intrusion in the Site building. Several rounds of ISCO injections have been conducted in the OU-1 spill area and downgradient Site boundary (loading dock area). The most recent injections took place in October and November 2015.

AECOM conducted a fourth round of ISCO injections in the spill area and a third round in the loading dock area of OU-1 in the fall of 2016. Post-injection sampling was performed through February 2017. A Remedial Action Report for the 2016 injections was submitted to NYSDEC in March 2017.

In March 2016, AECOM submitted a Revised Feasibility Study (FS) Report for OU-2 to NYSDEC. In the Revised FS Report, No Further Action with Groundwater Monitoring (NFA-GW) was recommended as the remedy to manage groundwater impacts in OU-2 resulting from releases at OU-1. In November 2016, NYSDEC published a Proposed Remedial Action Plan (PRAP) for OU-2, naming NFA-GW as the proposed remedy for OU-2. NYSDEC issued a

ROD for OU-2 that was published on March 16, 2017, in which NFA-GW was selected as the OU-2 remedy. In March 2016, one additional monitoring well (MW-17-27S) was installed in OU-2 and 13 wells were sampled. In May 2017, two additional wells (MW-17-28S and MW-17-29D) were installed to replace MW-07-16S and MW-07-17D which were inaccessible.

The Site is underlain by the Upper Glacial deposits, which consists of a sand unit, as well as fill material related to the former use of the area as a municipal landfill, and tidal march deposits (peat). These units extend to a depth of approximately 35 feet. From approximately 35 to 50 feet below grade (fbg), is a gray clay which acts as a lower confining layer. Beneath the clay is the Magothy Aquifer. Well MW-00-11A is a double-cased well screened in the Magothy aquifer. No Site-related VOCs have been detected in MW-00-11A to date, suggesting the lower clay prevents vertical migration of contaminants from the Upper Glacial deposits to the Magothy aquifer.

Groundwater flow at the Site is generally east to west, toward Freeport Creek. Close to Freeport Creek, groundwater flow is influenced by tidal fluctuations in the creak, resulting in cyclical flow reversals adjacent to the creek. Freeport is also along the southern shore of Long Island and subject to salt water encroachment. For these reasons, the water table (Upper Glacial) aquifer at the Site is not utilized for water supply. The Village of Freeport obtains its water supply from 11 supply wells drilled into the Magothy Aquifer, ranging from 550 to 750 feet below grade (ft bg). The wells are at multiple locations in Freeport, the well field closest to the Site being at Lakeview Avenue and Jessie Street, which is located approximately 1.3 miles north (side-gradient) from the Site. Thus, the groundwater constituents do not represent a risk to, nor do they have the potential to impact public water supply

GROUNDWATER SAMPLING

From September 18 to September 22, 2017, AECOM collected groundwater samples from 23 monitoring wells and injection points in OU-1 and from 15 monitoring wells in OU-2. All groundwater samples were analyzed for VOCs by USEPA Method 8260C. At the request of NYSDEC, all OU-1 groundwater samples were also analyzed for 1,4-dioxane by modified Method 8260C SIM. In addition selected OU-1 and OU-2 samples were analyzed for 17 per- and polyfluoroalkyl substances (PFASs) by modified USEPA Method 537. A summary of the sampling program is presented in Table 1. Samples were collected using low-flow methods and were submitted to Eurofins – Lancaster Laboratories (New York Certification # 10670). Wells were purged and sampled using a peristaltic pump with high density polyethylene (HDPE) and silicon tubing. In addition, readings for temperature, pH, conductivity, dissolved oxygen, and redox potential were taken during purging of the wells.

In addition to the samples collected from the monitoring wells, field duplicate samples, field blanks and trip blanks were analyzed for quality control purposes. The field duplicate is a second sample collected from a selected well at the same time as the “parent” sample and submitted to the laboratory “blind” for analysis. The field blank (rinsate) was prepared by passing distilled

water (opened in the field) through disposable polyethylene sample tubing and into laboratory-provided sample containers. Field blanks provide an additional check of possible sources of contamination from ambient air and sampling equipment. A trip blank, which accompanied the cooler to the Site and back to the laboratory, also was analyzed for TCL VOCs for quality control purposes.

For clarity of presentation, the sample results are presented and discussed in three groupings: the OU-1 spill area; the OU-1 Site perimeter (including the loading dock area); and OU-2. The laboratory data packages are presented on CD in Appendix A, and the data validation report is presented as Appendix B.

Regulatory Criteria

The groundwater sampling results are presented in Tables 2 through 4. Volatile organic compound (VOC) results are compared to the NYSDEC Class GA Water Quality Standards (GWQS). No GWQS have been established for 1,4-dioxane and PFASs. The USEPA has established health advisor levels (HAL) for these compounds. The HAL for 1,4-dioxane is 0.35 micrograms per liter (µg/l) and the HAL for combined perfluorooctanoic acid (PFOA) and perfluorooctanesulfide (PFOS) is 70 nanograms per liter (ng/l). The HAL are drinking water criteria and, as stated previously, shallow groundwater at the Site is not utilized for potable use.

Data Quality Review

The laboratory data packages were subject to quality assurance/quality control (QA/QC) review and data usability summary reports (DUSRs) were prepared. The DUSRs are presented in Appendix B. No VOCs, 1,4-dioxane or PFASs were detected at laboratory detection limits in the three field blanks submitted with the samples, indicating that sampling equipment and methods did not introduce contaminants into the samples. Likewise, no VOCs were detected in either of the trip blanks submitted. If QA/QC issues were identified, the results were qualified as estimated; detections are qualified with a "J" and non-detections are qualified with a "UJ." The primary findings of the QA/QC review were:

Samples collected September 18 and 19, 2017

- The surrogate recoveries were outside the acceptable QC limits for the PFAS analyses, so all results were qualified as "estimated". Detections were qualified as estimated "J" and "UJ".
- The percent difference (%D>20) between initial and continuing calibration for several VOCs was high in the two field blanks and the trip blank. The affected results were qualified as estimated "UJ."
- Detections below the Reporting Limit are considered estimated and were flagged "J".
- Field and laboratory duplicate samples yielded acceptable accuracy.

Samples collected September 20 through 22, 2017

- The surrogate recoveries were outside the acceptable QC limits for the PFA analyses, so all results were qualified as "estimated". Results were qualified as estimated "J" and "UJ".
- The internal standard for five samples was outside acceptable control limits for PFA analyses, so results were qualified as estimated "J" and "UJ".
- The field duplicate of sample OW-4 was within acceptable control limits, with the exception of 1,3-dichlorobenzene. The results for these two samples were qualified as estimated "J" and "UJ".
- The field duplicate of sample MW-09-19D was within acceptable control limits, with the exception of the PFA perfluorodecanoic acid. The results for these two samples were qualified as estimated "J".

Overall the data is quality is acceptable with the qualifications stated above. Further details are presented in the DUSRs in Appendix B.

RESULTS

OU-1 Spill Area

Volatile Organic Compounds

The groundwater VOC sampling results for the OU-1 spill area are presented in Table 2 and shown on Figure 3. The primary compounds detected in the spill area are 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA) and chloroethane. Historical reports indicate that 1,1,1-TCA was spilled in the source area in 1988. The compounds 1,1-DCA and chloroethane are degradation products resulting from the attenuation of 1,1,1-TCA.

Two monitoring wells and ten injection points were sampled in the OU-1 spill area. 1,1,1-TCA was detected in seven of twelve samples at concentrations exceeding the GWQS of 5.0 µg/l. The 1,1,1-TCA exceedences in the spill area ranged from 7.0 µg/l to 46 µg/l. 1,1-DCA was detected in 11 of 12 samples in the spill area at concentrations ranging from 1.4 µg/l to 100 µg/l. Concentrations in nine of these samples exceeded the GWQS of 5.0 µg/l. Chloroethane was detected in all 12 samples at concentrations ranging from 6.5 µg/l to 490 µg/l. All of the chloroethane detections in the spill area exceeded the GWQS of 5.0 µg/l.

The spill area wells were most recently sampled in December 2016 and February 2017 as part of performance monitoring for the 2016 ISCO injections. Graphs of VOC concentrations over time are presented in Appendix C. The graphs show that at most locations, VOC concentrations have continued to decrease since the post-ISCO sampling and no significant rebound of concentrations has occurred.

1,4-Dioxane

The 1,4-dioxane results for the spill area are presented in Table 2. 1,4-dioxane was detected in all 12 of the spill area wells/injection points sampled at concentrations ranging from 1.3 µg/l in IP1-4D and IP4-6 to 6.4 µg/l in IP2-8. The USEPA health advisory level for 1,4-dioxane is 0.35 µ/gl. There is no NYSDEC Class GA GWQS for PFASs.

PFAS Compounds

Spill area groundwater samples were analyzed for 17 PFASs in eight spill area wells/injection points. Results are presented in Table 2. Of the 17 compounds analyzed, 15 compounds were detected in at least one spill area sample. Total PFOA and PFOS concentrations ranged from 290 ng/l in IP3-2 to 2,900 ng/l in IP2-8. The USEPA health advisory level for PFOA and PFOS (separately or combined) is 70 n/gl. The health advisory level is a drinking water guidance level and shallow groundwater in the vicinity of the Site is not utilized as a potable water source. There is no NYSDEC Class GA GWQS for PFASs.

Field Measurements

Field measurements made at the conclusion of well purging are presented in Table 2. The purge logs are presented in Appendix D. In spill area groundwater, pH generally ranged from 6.5 to 7.5. The pH in well MW-1D-97 was 10.24, which may be a lingering result of the alkaline activator used during the 2016 ISCO injections. Most samples had dissolved oxygen (DO) measurements less than 1.0 milligram per liter (mg/l) and redox potential measurements less than 0.0 millivolts (mV), several less than -100 mV. These measurements indicate anaerobic, reducing conditions which should promote the continued anaerobic degradation of the residual chlorinated VOCs present in groundwater.

OU-1 Site Perimeter

The OU-1 Site perimeter wells sampled in September include wells MW-98-8S and MW-98-8D, located east of the spill area; wells MW-97-4S and MW-00-12D and MW-97-6S, located in the driveway along the southern boundary of OU-1; loading dock area wells MW-97-1S, MW-98-9D, OW-3 and OW-4; and wells MW-97-2S and MW-98-10D, located at the northwest corner of OU-1. Groundwater sampling results are presented in Table 3.

Volatile Organic Compounds

No VOCs were detected in wells MW-98-8S or MW-98-8D at levels exceeding the GWQS. Chloroethane (0.62 g/l), 1,1-DCE (3.2 µg/l) and vinyl chloride (1.9 µg/l) were detected in MW-98-8S; and 1,1-DCA (3.5 µg/l) was detected in MW-98-8D at levels below their respective GWQS. Along the southern site boundary, chloroethane was detected in wells MW-97-4S, MW-00-12D and MW-97-6S at 33 µg/l, 170 µg/l and 61 µg/l, which exceeds the GWQS of 5 µg/l. In addition, 1,1-DCA was detected in MW-00-12D at 45 µg/l which exceeds the GWQS of 5 ug/l. As shown on Figure 4, these concentrations are lower than when these wells were last sampled in 2014, and significantly lower than historical high concentrations in these wells, suggesting that

the ISCO injections in the source area have, along with natural attenuation, improved downgradient water quality.

The only GWQS exceedences detected in the loading dock area were chloroethane in MW-98-9D at 15 µg/l and chlorobenzene at 13 µg/l in OW-4. As stated previously, chloroethane is a daughter product of 1,1,1-TCA and 1,1-DCA attenuation. The source of chlorobenzene is not known. In the northwest corner of OU-1, chlorobenzene was detected in MW-97-2S at 7.1 µg/l, exceeding the GWQS of 5 µg/l. No spill-related compounds were detected in MW-97-2S or MW-98-10D.

1,4-Dioxane

The 1,4-dioxane results for the Site perimeter wells are presented in Table 3. 1,4-dioxane was detected in all 11 of Site perimeter wells sampled at concentrations ranging from 4.2 µg/l in MW-00-12D to 69 µg/l in MW-98-9D.

PFAS Compounds

All 11 Site perimeter groundwater samples were analyzed for 17 PFAS compounds. Results are presented in Table 3. Of the 17 compounds analyzed, 12 compounds were detected in at least one spill area sample. The combined PFOA and PFOS concentrations ranged from 64 ng/l in MW-97-1S to 3,200 ng/l in MW-98-8D. The USEPA health advisory level for PFOA and PFOS (separately or combined) is 70 ng/l. The health advisory level is a drinking water guidance level and shallow groundwater in the vicinity of the Site is not utilized as a potable water source. There is no NYSDEC Class GA GWQS for PFASs.

Field Measurements

Field measurements made at the conclusion of well purging are presented in Table 3. Site perimeter pH values were all between 6.0 and 7.0. Although the VOC concentrations in the perimeter wells are lower than in the spill area, the DO values are all at or close to 0.0 mg/l and the ORP in all wells on the east and south side of the site were negative. The reducing conditions in these wells is likely a result of the fill material and/or tidal marsh deposits in the subsurface, but should still promote anaerobic attenuation of chlorinated VOCs in groundwater.

OU-2

Volatile Organic Compounds

The OU-2 groundwater VOC sampling results are presented in Table 4 and shown on Figure 5. Samples were collected from 15 OU-2 monitoring wells. Chloroethane was detected in wells MW-05-14S (6.0 µg/l), MW-09-18S (11 µg/l) and MW-09-25D (15 µg/l) at concentrations exceeding the GWQS of 5 µg/l. Chlorobenzene was detected in wells MW-09-19D (5.9 µg/l), MW-09-21D (5.8 µg/l) and MW-09-23D (5.1 µg/l) at concentrations exceeding the GWQS of 5.0 µg/l. No other VOCs were detected at levels over their respective GWQS. The source of the chlorobenzene impacts is unknown.

1,4-Dioxane

OU-2 wells were sampled for 1,4-dioxane in March and May 2017. Samples were not analayzed for 1,4-dioxane in September 2017.

PFAS Compounds

OU-2 groundwater samples were analyzed for PFASs in March and May 2017 and results were submitted to NYSDEC in August 2017. During this sampling event, low-density polyethylene tubing was used instead of the HDPE recommended by NYSDOH for PFAS sampling. To evaluate whether detections of PFASs was related to the tubing used, two OU-2 wells (MW-09-19D and MW-09-21D) were sampled for PFASs in September 2017 using HDPE tubing. The PFAS results for these wells from the two sampling events are compared in Table 5. For well MW-09-19D, the total positively detected compounds from September (633 ng/l) was somewhat higher than from March (567 ng/l), whereas for well MW-09-21D, the total positively detected compounds from September (184 ng/l) was somewhat lower than from March (259 ng/l). The change in tubing may have some impact on sample results, but at OU-2, it appears the impact is negligible and resampling the other OU-2 wells for PFASs is not warranted at this time. If PFAS sampling is conducted at the Site in the future, HDPE tubing will be used to be consistent with NYSDOH guidance.

Field Measurements

Field measurements made at the conclusion of well purging are presented in Table 4. OU-2 pH values were all between 6.0 and 7.0, with the exception of MW-051-5D which was 3.80. The pH in this well was 3.86 in March 2017 and 3.98 in May 2014. The reason for this acidic pH is not known. The conductivity measurements in wells MW-09-25D and MW-17-29D were 17.52 millisiemens per centimeter (mS/cm) and 32.37 mS/cm, respectively, which is much higher than other wells sampled. The reason for the elevated conductivity is not known, but MW-09-25D and MW-17-29D are both located adjacent to Freeport Creek. Other wells along Freeport Creek have exhibited high conductivity values in the past, possibly as a result of groundwater-surface water mixing. DO measurements in OU-2 wells are somewhat higher than in OU-1 wells but the redox potential in most wells was negative. The field measurements in OU-2 wells are likely due, at least in part, to groundwater interaction with Freeport Creek surface water.

CONCLUSIONS AND RECOMMENDATIONS

Groundwater samples were collected from 38 monitoring wells in OU-1 and OU-2 in September 2017. From the results of this sampling event, the following conclusions can be drawn:

- In the OU-1 spill area groundwater VOC concentrations have decreased up to 99% from pre-ISCO concentrations. Although some compounds are still present at concentrations exceeding the GWQS the data trends provided in the Appendix C graphs show a general trend of decreasing concentrations over time.

- The data shows that natural attenuation of 1,1,1-TCA to daughter products 1,1-DCA and further to chloroethane, and presumably to ethane, continues in the spill area. The low DO measurements and negative ORP measurements indicate conditions conducive to continued anaerobic attenuation of the chlorinated VOCs in the spill area.

- Approximately 10 months after the 2016 ISCO injections, no significant rebound was observed in the spill area and VOC concentrations generally continued to decrease suggesting that the ISCO injections have been effective at eliminating the source of dissolved VOCs.

- Groundwater VOC concentrations at the OU-1 Site perimeter wells are generally below pre-ISCO concentrations and near or below the GWQS, suggesting the potential for offsite impacts is low. This is supported by the low concentrations of dissolved VOCs in samples from OU-2 monitoring wells.

- The OU-2 groundwater VOC data shows that VOC concentrations are non-detect to very low throughout OU-2. Detected concentrations are near or below their respective NYSDEC GWQS. All OU-2 properties receive water from Freeport Water, whose supply wells are located over a mile from the Site and are over 500 feet deep in a different aquifer.

- 1,4-dioxane and PFAS compounds were detected in OU-1 and OU-2 wells at levels exceeding their associated health-based criteria. However, as described above, groundwater in the Upper Glacial deposits in the vicinity of the Site is not utilized as a potable water source so there is no likely pathway for ingestion of Site groundwater.

- OU-1 and OU-2 shallow groundwater is encountered in the Upper Glacial deposits, which includes former municipal landfill deposits. Groundwater in this area is also subject to salt water intrusion from nearby tidal creeks and has high levels of dissolved solids. For these reasons shallow groundwater in the area is not utilized for potable or non-potable purposes. The Upper Glacial deposits are separated from the Magothy aquifer by a lower confining clay unit approximately 15 feet thick which prevents migration of groundwater impacts to the Magothy.

Recommendations

On behalf of Burmah Castrol Holdings, Inc., AECOM presents the following recommendations for the Columbia Cement Company site:

1. A significant decrease in VOC concentrations due to the ISCO injections has been seen at the Site. The magnitude of the decreases has diminished with each successive round of injections. Additional source area treatment will not significantly improve groundwater quality and are not warranted at this time. The active soil and groundwater remedy

should be considered complete. Natural attenuation of the chemicals of concern will continue to decrease concentrations over time.

2. AECOM will submit a Site Management Plan (SMP) to NYSDEC for OU-1 and OU-2. The SMP will include an Environmental Easement with a groundwater use restriction for OU-1. The ISCO injections have successfully reduced soil and groundwater VOC concentrations in the spill area and the loading dock area.

3. To coincide with OU-2 monitoring, a semi-annual groundwater VOC monitoring program will be established for OU-1. One or more monitoring well couplets will be installed in the OU-1 spill area to be used as monitoring points rather than the injection points which have been utilized for sampling. The results will be reported in an annual Periodic Review Reports as required by DER-10.

4. Groundwater monitoring in OU-2 should continue as described in the OU-2 ROD. The number of wells sampled should be re-evaluated following the two 2018 sampling rounds.

5. AECOM is requesting in this letter that the Columbia Cement site be reclassified from Class 2 ("the disposal of hazardous waste has been confirmed and the presence of such hazardous waste or its components or breakdown products represents a significant threat to public health or the environment") to Class 4 (site that has been properly closed but that requires continued site management consisting of operation, maintenance and/or monitoring). Justification for this reclassification includes:

    - In the spill area, groundwater VOC concentrations have decreased up to 99 % since the initiation of ISCO injections. After almost one year since the last ISCO injections, concentrations have not rebounded and continue to attenuate naturally. Therefore, the groundwater impacts will be managed through continued monitoring and appropriate institutional controls as defined in the forthcoming SMP.

    - An Environmental Easement will be established for OU-1 which will include a groundwater use restriction. The Upper Glacial deposits are not utilized for water supply near the Site. Around the Site, groundwater is impacted by landfill debris and intrusion of brackish water from Freeport Creek. In the unlikely event that a party wished to utilize shallow groundwater from OU-1, the groundwater use restriction would prevent it, eliminating human health risks.

    - Following the 2016 OU-1 ISCO injections, soil samples were collected in the spill area and five soil samples collected from four soil borings contained concentrations of VOCs exceeding the NYSDEC Part 375 Protection of Groundwater Soil Cleanup Objective (SCO). However, as described in 6 NYCRR 375-6.5, since a groundwater use restriction will be established to prevent future

use of shallow OU-1 groundwater, the part 375 Commercial or Industrial SCOs will then be more applicable for OU-1 soil. None of the February 2017 soil VOC detections exceed the Commercial or Industrial SCOs.

- The Site building is currently unoccupied. As stipulated in the OU-1 ROD, if the building becomes occupied, Burmah Castrol will perform necessary monitoring and/or mitigation measures. Prior to building occupancy, Burmah Castrol will amend the SMP with a Vapor Intrusion Sampling Plan for review by NYSDEC and NYSDOH. After implementation of the sampling plan, the data will be applied to the NYSDOH VI decision matrices. Burmah Castrol will perform the mitigation and/or monitoring necessary to address the VI impacts detected.

- Burmah Castrol has conducted VI sampling at three OU-2 properties and results indicated that OU-1 groundwater impacts did not present a VI risk at these properties. A fourth property (272 Buffalo Avenue) is undergoing renovation and the floor slab has been opened in multiple locations, making meaningful VI sampling impossible. When the floor is repaired, Burmah Castrol will work with the property owner to conduct VI sampling under a NYSDOH-approved work plan and address any findings accordingly.

- In 2009, Burmah Castrol conducted surface water and sediment sampling in Freeport Creek. The results indicated that site-related VOCs detected in OU-2 groundwater had not impacted either surface water or sediment in OU-2. This sampling was conducted soon after the first full-scale ISCO injections at OU-1 and a year before the first loading dock ISCO injections that resulted in OU-2 VOC concentrations decreases. Therefore, the residual impacts at OU-1 do not represent a threat to ecological receptors.

- NYSDEC has not established Groundwater Quality Standards for 1,4-dioxane or PFASs and these compounds are not indicated as chemicals of concern in the RODs for the Site. Groundwater samples in OU-1 and OU-2 contain concentrations of 1,4-dioxane and PFASs exceeding EPA health-based criteria. However, as described above, since OU-1 and OU-2 shallow groundwater is not currently utilized for potable or other purposes, and a groundwater use restriction will be established, these compounds do not present a health-based risk to the public.

Summary

In September 2017, 38 monitoring wells were sampled at OU-1 and OU-2 of the former Columbia Cement Company Site. OU-1 VOC concentrations have been reduced significantly as a result of the multiple ISCO injections and heave not rebounded. 1,4-Dioxane and PFOA and PFOS compounds were also detected in OU-1 groundwater, but no GWQS for these compounds

have not been established to date. Minimal exceedences of the GWQS were detected in OU-2. The OU-1 and OU-2 monitoring wells will be sampled again in March 2018.

AECOM is requesting in this letter that the Columbia Cement site be reclassified from Class 2 to a Class 4 site. With the reclassification of the Site AECOM will prepare a Site Management Plan in accordance with NYSDEC DER-10 including any required institutional and engineering controls.

If you have any comments or questions, please contact me at (973) 883-8696 or by email at mark.becker@aecom.com.

Very truly yours,

AECOM

Mark T. Becker
Senior Geologist

MTB/mtb

cc: Scarlett McLaughlin, NYSDOH

Attachments:

Table 1	Groundwater Sampling Program
Table 2	Summary of Groundwater Analytical Data, September 2017 – Spill Area
Table 3	Summary of Groundwater Analytical Data, September 2017 – Site Perimeter
Table 4	Summary of Groundwater Analytical Data, September 2017 – OU-2
Table 5	Summary of PFAS/PFOSA Data Comparison
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Groundwater VOC Sampling Results –Spill Area
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Appendix A	Laboratory Data Packages
Appendix B	Data Validation Report
Appendix C	Groundwater VOC Concentration Trend Graphs
Appendix D	Groundwater Purge Logs

TABLES

TABLE 1
SAMPLING PROGRAM - SEPTEMBER 2017
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

AREA	WELL ID	PARAMETERS		
		VOCs	1,4-Dioxane	PFASs
SPILL AREA	MW-1S	X	X	X
	MW-1D-97	X	X	X
	IP1-1I	X	X	
	IP1-1D	X	X	
	IP1-4D	X	X	X
	IP1-7I	X	X	X
	IP1-8I	X	X	
	IP1-8D	X	X	X
	IP2-5	X	X	
	IP2-8	X	X	X
	IP3-2	X	X	X
	IP4-6	X	X	X
Sub-Total		12	12	8
LOADING DOCK	MW-97-1S	X	X	X
	MW-98-9D	X	X	X
	OW-3	X	X	X
	OW-4	X	X	X
Sub-Total		4	4	4
SITE PERIMETER	MW-97-2S	X	X	X
	MW-98-10D	X	X	X
	MW-97-6S	X	X	X
	MW-97-4S	X	X	X
	MW-00-12D	X	X	X
	MW-98-8S	X	X	X
	MW-98-8D	X	X	X
Sub-Total		7	7	7
OU-2	MW-03-13S	X		
	MW-05-14S	X		
	MW-05-15D	X		
	MW-09-18S	X		
	MW-09-19D	X		X
	MW-09-20S	X		
	MW-09-21D	X		X
	MW-09-22S	X		
	MW-09-23D	X		
	MW-09-24S	X		
	MW-09-25D	X		
	MW-09-26D	X		
	MW-17-27S	X		
	MW-09-28S	X		
	MW-09-29D	X		
Sub-Total		15	0	2
TOTAL		38	23	21

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SPILL AREA
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	MW-1S 9216693 9/18/2017 µg/l	MW-1D-97 9216692 9/18/2017 µg/l	IP1-1I 9216691 9/18/2017 µg/l	IP1-1D 9216694 9/18/2017 µg/l	IP1-4D 9216702 9/19/2017 µg/l	IP1-7I 9216688 9/18/2017 µg/l
Volatile Organic Compounds							
Acetone	50	6.0 U	30 U	6.0 U	6.0 U	6.0 U	6.0 U
Benzene	1	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone	50	3.0 U	15 U	3.0 U	3.0 U	3.0 U	3.0 U
Carbon Disulfide	NE	1.0 U	9.7 J	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.5 U
Chloroethane	5	**6.5**	**26**	**290**	**23**	**330**	**370**
Chloroform	7	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Cyclohexane	NE	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	5	1.4	**17**	**27**	2.2	**48**	**56**
1,2-Dichloroethane	0.6	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	5	0.50 U	2.5 U	1.9	0.50 U	2.3	2.7
cis-1,2-Dichloroethene	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	1	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Freon 113		2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Hexanone	50	3.0 U	15 U	3.0 U	3.0 U	3.0 U	3.0 U
Isopropylbenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Acetate	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.50 U	2.5 U	0.50 U	0.5 U	0.5 U	0.50 U
4-Methyl-2-pentanone	NE	3.0 U	15 U	3.0 U	3.0 U	3.0 U	3.0 U
Methylcyclohexane	NE	1.0 U	5.0 U	1.3 J	1.0 U	2.1 J	1.8 J
Methylene Chloride	5	0.5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.88 J	0.63 J
1,2,4-Trichlorobenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	0.50 U	2.5 U	**26**	0.50 U	**37**	**46**
1,1,2-Trichloroethane	1	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl Chloride	2	0.50 U	2.5 U	0.97 J	0.50 U	1.1	1.1
Xylene (Total)	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Total Target VOCs	NE	7.9	52.7	347.17	25.2	421.38	478.23
1,4-Dioxane	NE[(1)]	2.2	6.2	1.7	2.2	1.30 J	1.40

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SPILL AREA
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-1S 9216693 9/18/2017 ng/l	MW-1D-97 9216692 9/18/2017 ng/l	IP1-1I 9216691 9/18/2017 ng/l	IP1-1D 9216694 9/18/2017 ng/l	IP1-4D 9216702 9/19/2017 ng/l	IP1-7I 9216688 9/18/2017 ng/l
PFAS							
Perfluorononanoic acid	NE	23 J	27 J	N.A.	N.A.	7.7 J	9.8 J
Perfluorodecanoic acid	NE	22 J	3.0 UJ	N.A.	N.A.	9.3 J	9.4 J
Perfluoroundecanoic acid	NE	2.0 UJ	2.0 UJ	N.A.	N.A.	2.0 UJ	2.0 UJ
Perfluorododecanoic acid	NE	4.2 J	7.5 J	N.A.	N.A.	3.8 J	3.2 J
Perfluorotridecanoic acid	NE	0.50 UJ	2.6 J	N.A.	N.A.	0.50 UJ	0.50 UJ
Perfluorotetradecanoic acid	NE	20 J	41 J	N.A.	N.A.	8.3 J	9.4 J
Perfluorohexanoic acid	NE	49 J	60 J	N.A.	N.A.	17 J	18 J
Perfluoroheptanoic acid	NE	82 J	170 J	N.A.	N.A.	31 J	34 J
Perfluorobutanesulfonate	NE	94 J	97 J	N.A.	N.A.	32 J	36 J
Perfluorohexanesulfonate	NE	160 J	30 J	N.A.	N.A.	47 J	58 J
Perfluorobutanoic Acid	NE	48 J	36 J	N.A.	N.A.	17 J	18 J
Perfluoropentanoic Acid	NE	0.50 UJ	0.50 UJ	N.A.	N.A.	0.5 UJ	0.50 UJ
Perfluoroheptanesulfonate	NE	0.5 UJ	1.1 J	N.A.	N.A.	0.5 UJ	0.5 UJ
Perfluorodecanesulfonate	NE	1.2 J	2.8 J	N.A.	N.A.	1.8 J	1.6 J
Perflourooctanesulfonamide	NE	3.0 UJ	8.3 J	N.A.	N.A.	3.0 UJ	3.0 UJ
Perfluorooctanoic acid (PFOA)	NE	880 J	1,900 J	N.A.	N.A.	350 J	370 J
Perfluorooctanesulfonate (PFOS)	NE	450 J	750 J	N.A.	N.A.	150 J	180 J
Combined PFOA plus PFOS	NE[(2)]	1,330 J	2,650 J	N.A.	N.A.	500 J	550 J
FIELD MEASUREMENTS							
pH (s.u.)	NE	7.01	10.24	6.87	7.27	6.71	6.69
Conductivity (mS/cm)	NE	1.180	4.581	0.510	0.574	0.538	0.550
Dissolved Oxygen (mg/l)	NE	0.92	0.00	0.05	0.00	0.00	0.40
Temperature (°C)	NE	19.07	16.81	20.36	18.36	19.53	19.20
Redox Potential (mV)	NE	-121.3	-108.7	-71.5	-109.2	-110.8	-107.2

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SPILL AREA
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	IP1-8I 9216695 9/18/2017 µg/l	IP1-8D 9216696 9/18/2017 µg/l	IP2-5 9216690 9/18/2017 µg/l	IP2-8 9216689 9/18/2017 µg/l	IP3-2 9216699 9/18/2017 µg/l	IP4-6 9225545 9/20/2017 µg/l
Volatile Organic Compounds							
Acetone	50	6.0 U	6.0 U	6.0 U	6.0 U	60 U	6.0 U
Benzene	1	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.62 J
Bromodichloromethane	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Bromoform	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Bromomethane	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
2-Butanone	50	3.0 U	3.0 U	3.0 U	3.0 U	30 U	3.0 U
Carbon Disulfide	NE	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Carbon Tetrachloride	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Chlorobenzene	5	0.5 U	0.50 U	0.5 U	0.5 U	5.0 U	0.5 U
Chloroethane	5	**230**	**360**	**190**	**30**	**490**	**320**
Chloroform	7	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Chloromethane	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Cyclohexane	NE	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U
Dibromochloromethane	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
1,2-Dibromoethane	NE	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,4-Dichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.2 J
Dichlorodifluoromethane	NE	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
1,1-Dichloroethane	5	0.50 U	**19**	**100**	**25**	**64**	**45**
1,2-Dichloroethane	0.6	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
1,1-Dichloroethene	5	0.50 U	1.5	2.3	0.67 J	5.0 U	1.9
cis-1,2-Dichloroethene	NE	0.50 U	0.51 J	0.50 U	0.68 J	5.0 U	0.50 U
trans-1,2-Dichloroethene	NE	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
1,2-Dichloropropane	1	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Ethylbenzene	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Freon 113		2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U
2-Hexanone	50	3.0 U	3.0 U	3.0 U	3.0 U	30 U	3.0 U
Isopropylbenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Methyl Acetate	NE	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
4-Methyl-2-pentanone	NE	3.0 U	3 U	3.0 U	3.0 U	30 U	3.0 U
Methylcyclohexane	NE	1.0 U	1.7 J	1.0 U	1.0 U	10 U	1.5 J
Methylene Chloride	5	0.5 U	0.50 U	0.5 U	0.5 U	5.0 U	0.5 J
Styrene	5	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Tetrachloroethene	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Toluene	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
1,2,4-Trichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U
1,1,1-Trichloroethane	5	0.50 U	**9.3**	**6.6**	**7.0**	5.0 U	**27**
1,1,2-Trichloroethane	1	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Trichloroethene	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Trichlorofluoromethane	NE	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Vinyl Chloride	2	0.77 J	1.6	0.68 J	0.50 U	5.0 U	1.10
Xylene (Total)	5	0.50 U	0.50 U	0.50 U	0.50 U	5.0 U	0.50 U
Total Target VOCs	NE	230	393.61	299.58	63.35	554	398.82
1,4-Dioxane	NE[(1)]	2.7	2.5	3.6	6.4	16	1.3

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SPILL AREA
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	IP1-8I 9216695 9/18/2017 ng/l	IP1-8D 9216696 9/18/2017 ng/l	IP2-5 9216690 9/18/2017 ng/l	IP2-8 9216689 9/18/2017 ng/l	IP3-2 9216699 9/18/2017 ng/l	IP4-6 9225545 9/20/2017 ng/l
PFAS							
Perfluorononanoic acid	NE	N.A.	5.5 J	N.A.	31 J	7.3 J	11 J
Perfluorodecanoic acid	NE	N.A.	5.9 J	N.A.	26 J	3.0 UJ	12 J
Perfluoroundecanoic acid	NE	N.A.	2.0 UJ	N.A.	2.0 UJ	2.0 UJ	2.0 UJ
Perfluorododecanoic acid	NE	N.A.	3.8 J	N.A.	11 J	2.1 J	4.0 J
Perfluorotridecanoic acid	NE	N.A.	0.50 UJ	N.A.	0.50 UJ	0.50 UJ	0.50 UJ
Perfluorotetradecanoic acid	NE	N.A.	7.10 J	N.A.	43 J	4.9 J	12 J
Perfluorohexanoic acid	NE	N.A.	11 J	N.A.	69 J	14 J	17 J
Perfluoroheptanoic acid	NE	N.A.	20 J	N.A.	120 J	24 J	43 J
Perfluorobutanesulfonate	NE	N.A.	21 J	N.A.	120 J	29 J	36 J
Perfluorohexanesulfonate	NE	N.A.	24 J	N.A.	160 J	59 J	41 J
Perfluorobutanoic Acid	NE	N.A.	9.2 J	N.A.	50 J	20 J	17 J
Perfluoropentanoic Acid	NE	N.A.	0.50 UJ	N.A.	0.50 UJ	0.50 UJ	0.50 UJ
Perfluoroheptanesulfonate	NE	N.A.	0.50 UJ	N.A.	0.50 UJ	0.50 UJ	0.50 UJ
Perfluorodecanesulfonate	NE	N.A.	1.8 J	N.A.	1.0 UJ	1.0 UJ	1.0 J
Perflourooctanesulfonamide	NE	N.A.	3.0 UJ	N.A.	3.7 J	3.0 UJ	3.0 UJ
Perfluorooctanoic acid (PFOA)	NE	N.A.	370 J	N.A.	2,300 J	170 J	500 J
Perfluorooctanesulfonate (PFOS)	NE	N.A.	110 J	N.A.	600 J	120 J	200 J
Combined PFOA plus PFOS	NE[(2)]	N.A.	480 J	N.A.	2,900 J	290 J	700 J
FIELD MEASUREMENTS							
pH (s.u.)	NE	6.65	6.68	7.76	6.90	6.88	6.61
Conductivity (mS/cm)	NE	0.336	0.433	0.004	1.220	2.370	0.657
Dissolved Oxygen (mg/l)	NE	0.00	0.00	1.98	0.10	0.00	0.30
Temperature (°C)	NE	19.76	18.62	24.89	20.72	18.11	20.28
Redox Potential (mV)	NE	-53.1	-93.3	2.0	-88.7	-230.9	30.1

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SPILL AREA
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

NOTES:

U - Indicates compound was analyzed for but not detected
J - Indicates an estimated value due to limitations identified during the Quality Assurance (QA) review.
B - This flag is used when the analyte is found in the associated blank as well as in the sample.
E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis and therefore, are regarded as estimated values.
D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
NS - Not sampled
ND - Not Detected
NE - No existing Groundwater Quality Standard
Total VOCs - This row presents the sum total concentration level of target compound list (TCL) volatile organic compounds (VOCs) reported in the sample.
Total VOC TICs - This row presents the sum total estimated concentration of non-target tentatively identified compounds.
100 (Bold) - Concentration exceeds NYSDEC Class GA Groundwater Quality Standard.
1 - The USEPA health advisory level for 1,1-dioxane is 0.35 µg/l.
2 - The USEPA health advisory level for combined PFOA and PFOS is 70 ng/l.

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SITE PERIMETER
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	MW-98-8S 9216697 9/18/2017 µg/l	MW-98-8D 9216700 9/19/2017 µg/l	MW-97-4S 9216703 9/19/2017 µg/l	MW-00-12D 9216701 9/19/2017 µg/l	MW-97-6S 9216704 9/19/2017 µg/l
Volatile Organic Compounds						
Acetone	50	6.0 U	30 U	6.0 U	30 U	6.0 U
Benzene	1	0.5 U	2.5 U	0.50 U	2.5 U	0.5 U
Bromodichloromethane	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Bromoform	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Bromomethane	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
2-Butanone	50	3.0 U	15 U	3.0 U	23 J	3.0 U
Carbon Disulfide	NE	1.0 U	5.0 U	1.0 U	33	1.0 U
Carbon Tetrachloride	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Chlorobenzene	5	0.5 U	2.5 U	0.50 U	2.5 U	4.9
Chloroethane	5	0.62 J	2.5 U	**33**	**170**	**61**
Chloroform	7	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Chloromethane	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Cyclohexane	NE	2.0 U	10 U	2.0 U	10 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	10 U	2.0 U	10 U	2.0 U
Dibromochloromethane	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
1,2-Dibromoethane	NE	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U
1,4-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 U	5.0 U	1.5 J
Dichlorodifluoromethane	NE	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
1,1-Dichloroethane	5	0.5 U	3.5 J	0.50 U	**45**	0.50 U
1,2-Dichloroethane	0.6	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
1,1-Dichloroethene	5	3.2	2.5 U	0.50 U	2.5 U	0.50 U
cis-1,2-Dichloroethene	NE	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
trans-1,2-Dichloroethene	NE	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
1,2-Dichloropropane	1	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Ethylbenzene	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Freon 113		2.0 U	10.0 U	2.0 U	10 U	2.0 U
2-Hexanone	50	3.0 U	15.0 U	3.0 U	15 U	3.0 U
Isopropylbenzene	NE	1.0 U	5.0 U	1.0 U	5.0 U	1.1 J
Methyl Acetate	NE	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
4-Methyl-2-pentanone	NE	3.0 U	15 U	3.0 U	15 U	3.0 U
Methylcyclohexane	NE	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U
Methylene Chloride	5	0.5 U	2.5 U	0.5 U	2.5 U	0.5 U
Styrene	5	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Tetrachloroethene	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Toluene	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
1,2,4-Trichlorobenzene	NE	1.0 U	5.0 U	1.0 U	5.0 U	1.0 U
1,1,1-Trichloroethane	5	0.5 U	2.5 U	0.50 U	2.9 J	0.50 U
1,1,2-Trichloroethane	1	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Trichloroethene	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Trichlorofluoromethane	NE	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Vinyl Chloride	2	1.9	2.5 U	0.50 U	2.5 U	0.50 U
Xylene (Total)	5	0.5 U	2.5 U	0.50 U	2.5 U	0.50 U
Total Target VOCs	NE	5.72	3.5 J	33	273.9	68.5
1,4-Dioxane	NE[(1)]	26	8.5	11	4.2	60

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SITE PERIMETER
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-98-8S 9216697 9/18/2017 ng/l	MW-98-8D 9216700 9/19/2017 ng/l	MW-97-4S 9216703 9/19/2017 ng/l	MW-00-12D 9216701 9/19/2017 ng/l	MW-97-6S 9216704 9/19/2017 ng/l
PFAS						
Perfluorononanoic acid	NE	21 J	40 J	7.1 J	17 J	4.4 J
Perfluorodecanoic acid	NE	21 J	26 J	9.2 J	29 J	6.7 J
Perfluoroundecanoic acid	NE	2.0 UJ	2.0 UJ	2 UJ	2.0 UJ	2.0 UJ
Perfluorododecanoic acid	NE	9.7 J	4.0 J	2.2 J	2.6 J	0.50 UJ
Perfluorotridecanoic acid	NE	0.50 UJ	0.50 UJ	0.5 UJ	0.50 UJ	0.50 UJ
Perfluorotetradecanoic acid	NE	47 J	40 J	7.6 J	18 J	2.80 J
Perfluorohexanoic acid	NE	63 J	120 J	19 J	35 J	11 J
Perfluoroheptanoic acid	NE	140 J	200 J	28 J	66 J	19 J
Perfluorobutanesulfonate	NE	100 J	130 J	35 J	64 J	29 J
Perfluorohexanesulfonate	NE	120 J	14 J	87 J	78 J	24.0 J
Perfluorobutanoic Acid	NE	37 J	48 J	18 J	35 J	8.6 J
Perfluoropentanoic Acid	NE	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ
Perfluoroheptanesulfonate	NE	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.5 UJ
Perfluorodecanesulfonate	NE	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Perflourooctanesulfonamide	NE	3.2 J	5.1 J	3.0 UJ	3.0 UJ	3.0 UJ
Perfluorooctanoic acid (PFOA)	NE	1,600 J	1,900 J	370 J	720 J	52 J
Perfluorooctanesulfonate (PFOS)	NE	700 J	1300 J	170 J	360 J	110 J
Combined PFOA plus PFOS	NE[(2)]	2,300 J	3,200 J	540 J	1,080 J	162 J
FIELD MEASUREMENTS						
pH (s.u.)	NE	6.74	6.15	6.73	6.10	6.34
Conductivity (mS/cm)	NE	1.524	3.784	1.428	5.413	1.809
Dissolved Oxygen (mg/l)	NE	0.00	0.25	0.00	0.00	0.00
Temperature (°C)	NE	15.64	15.58	16.34	15.81	16.18
Redox Potential (mV)	NE	-56.4	-75.8	-160.8	-100.4	-50.8

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SITE PERIMETER
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	MW-97-1S 9225544 9/20/2017 µg/l	MW-98-9D 9225543 9/20/2017 µg/l	OW-3 9225546 9/20/2017 µg/l	OW-4 9225547 9/20/2017 µg/l	MW-97-2S 9225550 9/20/2017 µg/l	MW-98-10D 9225549 9/20/2017 µg/l
Volatile Organic Compounds							
Acetone	50	6.9 J	30 U	6.0 U	6.0 U	6.0 U	6.0 U
Benzene	1	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone	50	3.0 U	15 U	3.0 U	3.0 U	3.0 U	3.0 U
Carbon Disulfide	NE	1.0 U	26	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	5	2.2	2.6 J	3.8	**13**	**7.1**	3.5
Chloroethane	5	2.7	**15**	0.50 U	1.1	0.50 U	0.5 U
Chloroform	7	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Cyclohexane	NE	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 U	2.9 J	2.6 J	1.6 J
1,4-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 J	2.9 J	2.5 J	1.6 J
Dichlorodifluoromethane	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	5	0.50 U	2.5 U	0.50 U	1.1	0.50 U	0.50 U
1,2-Dichloroethane	0.6	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	1	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Freon 113		2.0 U	10 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Hexanone	50	3.0 U	15 U	3.0 U	3.0 U	3.0 U	3.0 U
Isopropylbenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.1 J	1.0 U
Methyl Acetate	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.50 U	2.5 U	0.50 U	1.3	6.3	7.5
4-Methyl-2-pentanone	NE	3.0 U	15 U	3.0 U	3.0 U	3.0 U	3.0 U
Methylcyclohexane	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	0.5 U	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	5	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	1	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane	NE	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl Chloride	2	0.50 U	2.5 U	0.50 U	0.64 J	0.50 U	0.50 U
Xylene (Total)	5	0.50 U	2.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Total Target VOCs	NE	11.8	43.6	4.8	22.94	19.6	14.20
1,4-Dioxane	NE[(1)]	14	69	7.7	18	4.5	6.9

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SITE PERIMETER
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-97-1S 9225544 9/20/2017 ng/l	MW-98-9D 9225543 9/20/2017 ng/l	OW-3 9225546 9/20/2017 ng/l	OW-4 9225547 9/20/2017 ng/l	MW-97-2S 9225550 9/20/2017 ng/l	MW-98-10D 9225549 9/20/2017 ng/l
PFAS							
Perfluorononanoic acid	NE	0.80 UJ	10 J	10 J	15 J	9.0 J	11 J
Perfluorodecanoic acid	NE	3.0 UJ	18 J	14 J	18 J	20 J	19 J
Perfluoroundecanoic acid	NE	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
Perfluorododecanoic acid	NE	2.0 J	0.90 J	1.0 J	1.0 J	1.0 J	1.0 J
Perfluorotridecanoic acid	NE	0.50 UJ	0.50 UJ	0.50 UJ	0.5 UJ	0.50 UJ	0.50 UJ
Perfluorotetradecanoic acid	NE	2.0 UJ	5.0 J	2.0 UJ	8.0 J	9.0 J	6.0 J
Perfluorohexanoic acid	NE	12 J	32 J	10 J	40 J	28 J	26 J
Perfluoroheptanoic acid	NE	5.0 J	32 J	5.0 J	47 J	33 J	34 J
Perfluorobutanesulfonate	NE	22 J	62 J	12 J	83 J	46 J	56 J
Perfluorohexanesulfonate	NE	12 J	17 J	7.0 J	11 J	5.0 J	6.0 J
Perfluorobutanoic Acid	NE	0.50 UJ	27 J	11 J	31 J	41 J	39.0 J
Perfluoropentanoic Acid	NE	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ
Perfluoroheptanesulfonate	NE	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ
Perfluorodecanesulfonate	NE	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Perflourooctanesulfonamide	NE	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
Perfluorooctanoic acid (PFOA)	NE	20 J	150 J	44 J	290 J	260 J	220 J
Perfluorooctanesulfonate (PFOS)	NE	44 J	260 J	38 J	390 J	200 J	190 J
Combined PFOA plus PFOS	NE[(2)]	64 J	410 J	82 J	680 J	460 J	410 J
FIELD MEASUREMENTS							
pH (s.u.)	NE	6.73	6.21	6.80	6.49	6.62	6.62
Conductivity (mS/cm)	NE	0.736	5.138	5.393	3.596	1.838	2.013
Dissolved Oxygen (mg/l)	NE	0.00	0.00	0.74	0.80	0.44	0.59
Temperature (°C)	NE	17.40	16.43	19.06	18.08	18.99	18.04
Redox Potential (mV)	NE	-37.2	-32.3	1.4	20.1	14.8	69.8

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - SITE PERIMETER
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

NOTES:

U - Indicates compound was analyzed for but not detected
J - Indicates an estimated value due to limitations identified during the Quality Assurance (QA) review.
B - This flag is used when the analyte is found in the associated blank as well as in the sample.
E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis and therefore, are regarded as estimated values.
D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
NS - Not sampled
ND - Not Detected
NE - No existing Groundwater Quality Standard
Total VOCs - This row presents the sum total concentration level of target compound list (TCL) volatile organic compounds (VOCs) reported in the sample.
Total VOC TICs - This row presents the sum total estimated concentration of non-target tentatively identified compounds.
100 (Bold) - Concentration exceeds NYSDEC Class GA Groundwater Quality Standard.
1 - The USEPA health advisory level for 1,1-dioxane is 0.35 µg/l.
2 - The USEPA health advisory level for combined PFOA and PFOS is 70 ng/l.

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	MW-03-13S 9225560 9/21/2017 µg/l	MW-05-14S 9225551 9/20/2017 µg/l	MW-05-15D 9225556 9/21/2017 µg/l	MW-09-18S 9225557 9/21/2017 µg/l	MW-09-19D 9225558 9/21/2017 µg/l
Volatile Organic Compounds						
Acetone	50	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
Benzene	1	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoform	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2-Butanone	50	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Carbon Disulfide	NE	1.0 U	1.0 U	15	1.0 U	1.0 U
Carbon Tetrachloride	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	5	0.50 U	4.6	1.3	1.3	**5.9**
Chloroethane	5	0.50 U	**6.0**	1.2	**11**	3.1
Chloroform	7	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cyclohexane	NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	NE	1.0 U	1 U	1.0 U	1.0 U	1.8 J
Dichlorodifluoromethane	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	0.6	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	1	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethylbenzene	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Freon 113		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Hexanone	50	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Isopropylbenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Acetate	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.99 J	0.50 U	0.50 U	2.0	6.6
4-Methyl-2-pentanone	NE	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Methylcyclohexane	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	1	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl Chloride	2	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Xylene (Total)	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Total Target VOCs	NE	0.99 J	10.6	17.5	14.3	17.4
1,4-Dioxane	NE	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-03-13S 9225560 9/21/2017 ng/l	MW-05-14S 9225551 9/20/2017 ng/l	MW-05-15D 9225556 9/21/2017 ng/l	MW-09-18S 9225557 9/21/2017 ng/l	MW-09-19D 9225558 9/21/2017 ng/l
PFAS						
Perfluorononanoic acid	NE	N.A.	N.A.	N.A.	N.A.	11 J
Perfluorodecanoic acid	NE	N.A.	N.A.	N.A.	N.A.	18 J
Perfluoroundecanoic acid	NE	N.A.	N.A.	N.A.	N.A.	2.0 UJ
Perfluorododecanoic acid	NE	N.A.	N.A.	N.A.	N.A.	1.0 J
Perfluorotridecanoic acid	NE	N.A.	N.A.	N.A.	N.A.	0.50 UJ
Perfluorotetradecanoic acid	NE	N.A.	N.A.	N.A.	N.A.	8.0 J
Perfluorohexanoic acid	NE	N.A.	N.A.	N.A.	N.A.	25 J
Perfluoroheptanoic acid	NE	N.A.	N.A.	N.A.	N.A.	32 J
Perfluorobutanesulfonate	NE	N.A.	N.A.	N.A.	N.A.	49 J
Perfluorohexanesulfonate	NE	N.A.	N.A.	N.A.	N.A.	5.0 J
Perfluorobutanoic Acid	NE	N.A.	N.A.	N.A.	N.A.	34 J
Perfluoropentanoic Acid	NE	N.A.	N.A.	N.A.	N.A.	0.5 UJ
Perfluoroheptanesulfonate	NE	N.A.	N.A.	N.A.	N.A.	0.5 UJ
Perfluorodecanesulfonate	NE	N.A.	N.A.	N.A.	N.A.	1.0 UJ
Perflourooctanesulfonamide	NE	N.A.	N.A.	N.A.	N.A.	3.0 UJ
Perfluorooctanoic acid (PFOA)	NE	N.A.	N.A.	N.A.	N.A.	250 J
Perfluorooctanesulfonate (PFOS)	NE	N.A.	N.A.	N.A.	N.A.	200 J
Combined PFOA plus PFOS	NE	N.A.	N.A.	N.A.	N.A.	450
FIELD MEASUREMENTS						
pH (s.u.)	NE	6.75	6.32	3.80	6.38	6.54
Conductivity (mS/cm)	NE	1.783	4.002	7.382	3.156	3.235
Dissolved Oxygen (mg/l)	NE	0.89	1.10	1.40	0.98	0.93
Temperature (°C)	NE	20.74	20.30	18.61	20.51	17.48
Redox Potential (mV)	NE	-61.3	-26.6	123.8	-0.3	-5.3

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	MW-09-20S 9225555 9/21/2017 µg/l	MW-09-21D 9225554 9/21/2017 µg/l	MW-09-22S 9225564 9/22/2017 µg/l	MW-09-23D 9225565 9/22/2017 µg/l	MW-09-24S 9225562 9/22/2017 µg/l	MW-09-25D 9225563 9/22/2017 µg/l
Volatile Organic Compounds							
Acetone	50	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U
Benzene	1	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Bromodichloromethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Bromoform	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Bromomethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
2-Butanone	50	3.0 U	3.0 U	3.0 U	3 U	3.0 U	3.0 U
Carbon Disulfide	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Chlorobenzene	5	1.3	**5.8**	3.5	**5.1**	3.5	1.9
Chloroethane	5	0.50 U	0.5 U	0.50 U	0.5 U	0.50 U	**15**
Chloroform	7	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Chloromethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Cyclohexane	NE	2.0 U	2.0 U	2.00 U	2.0 U	2.0 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Dibromochloromethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,2-Dibromoethane	NE	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	NE	1 U	1.2 J	1.0 J	1.4 J	1.7 J	1.0 U
Dichlorodifluoromethane	NE	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,1-Dichloroethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,2-Dichloroethane	0.6	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,1-Dichloroethene	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	NE	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	NE	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,2-Dichloropropane	1	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Ethylbenzene	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Freon 113		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Hexanone	50	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Isopropylbenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Acetate	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	2.1
4-Methyl-2-pentanone	NE	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Methylcyclohexane	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	0.50 U	0.50 U	0.50 U	0.5 U	0.5 U	0.5 U
Styrene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Tetrachloroethene	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Toluene	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	NE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
1,1,2-Trichloroethane	1	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Trichloroethene	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Trichlorofluoromethane	NE	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Vinyl Chloride	2	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Xylene (Total)	5	0.50 U	0.50 U	0.50 U	0.5 U	0.50 U	0.50 U
Total Target VOCs	NE	1.3	7.0	4.5	6.5	5.2	19
1,4-Dioxane	NE	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-09-20S 9225555 9/21/2017 ng/l	MW-09-21D 9225554 9/21/2017 ng/l	MW-09-22S 9225564 9/22/2017 ng/l	MW-09-23D 9225565 9/22/2017 ng/l	MW-09-24S 9225562 9/22/2017 ng/l	MW-09-25D 9225563 9/22/2017 ng/l
PFAS							
Perfluorononanoic acid	NE	N.A.	8.0 J	N.A.	N.A.	N.A.	N.A.
Perfluorodecanoic acid	NE	N.A.	6.0 J	N.A.	N.A.	N.A.	N.A.
Perfluoroundecanoic acid	NE	N.A.	2.0 UJ	N.A.	N.A.	N.A.	N.A.
Perfluorododecanoic acid	NE	N.A.	0.60 J	N.A.	N.A.	N.A.	N.A.
Perfluorotridecanoic acid	NE	N.A.	0.50 UJ	N.A.	N.A.	N.A.	N.A.
Perfluorotetradecanoic acid	NE	N.A.	3.0 J	N.A.	N.A.	N.A.	N.A.
Perfluorohexanoic acid	NE	N.A.	8.0 J	N.A.	N.A.	N.A.	N.A.
Perfluoroheptanoic acid	NE	N.A.	11 J	N.A.	N.A.	N.A.	N.A.
Perfluorobutanesulfonate	NE	N.A.	18 J	N.A.	N.A.	N.A.	N.A.
Perfluorohexanesulfonate	NE	N.A.	14 J	N.A.	N.A.	N.A.	N.A.
Perfluorobutanoic Acid	NE	N.A.	9.0 J	N.A.	N.A.	N.A.	N.A.
Perfluoropentanoic Acid	NE	N.A.	0.5 UJ	N.A.	N.A.	N.A.	N.A.
Perfluoroheptanesulfonate	NE	N.A.	0.5 UJ	N.A.	N.A.	N.A.	N.A.
Perfluorodecanesulfonate	NE	N.A.	1.0 UJ	N.A.	N.A.	N.A.	N.A.
Perflourooctanesulfonamide	NE	N.A.	3.0 UJ	N.A.	N.A.	N.A.	N.A.
Perfluorooctanoic acid (PFOA)	NE	N.A.	53 J	N.A.	N.A.	N.A.	N.A.
Perfluorooctanesulfonate (PFOS)	NE	N.A.	53 J	N.A.	N.A.	N.A.	N.A.
Combined PFOA plus PFOS	NE	N.A.	106	N.A.	N.A.	N.A.	N.A.
FIELD MEASUREMENTS							
pH (s.u.)	NE	6.63	6.54	6.41	6.52	6.66	6.50
Conductivity (mS/cm)	NE	1.883	2.045	2.328	4.652	1.730	17.52
Dissolved Oxygen (mg/l)	NE	0.28	0.60	0.81	1.59	0.53	1.60
Temperature (°C)	NE	19.73	19.10	18.15	17.71	18.52	17.55
Redox Potential (mV)	NE	-134.1	-65.1	-175.3	-79.9	-3.3	-13.2

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. µg/l	MW-09-26D 9225553 9/21/2017 µg/l	MW-17-27S 9225552 9/21/2017 µg/l	MW-17-28S 9225566 9/22/2017 µg/l	MW-17-29D 9225567 9/22/2017 µg/l
Volatile Organic Compounds					
Acetone	50	6.0 U	30 U	6.0 U	6.0 U
Benzene	1	0.50 U	2.5 U	0.50 U	0.50 U
Bromodichloromethane	5	0.50 U	2.50 U	0.50 U	0.50 U
Bromoform	5	0.50 U	2.50 U	0.50 U	0.50 U
Bromomethane	5	0.50 U	2.50 U	0.50 U	0.50 U
2-Butanone	50	3.0 U	15.0 U	3.0 U	3.0 U
Carbon Disulfide	NE	1.0 U	5.0 U	1.0 U	1.0 U
Carbon Tetrachloride	5	0.50 U	2.5 U	0.50 U	0.50 U
Chlorobenzene	5	4.5	2.5 U	4.9	0.50 U
Chloroethane	5	0.50 U	2.5 U	0.5 U	0.50 U
Chloroform	7	0.50 U	2.5 U	0.50 U	0.50 U
Chloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U
Cyclohexane	NE	2.0 U	10.0 U	2.0 U	2.0 U
1,2-Dibromo-3-chloropropane	NE	2.0 U	10.0 U	2.0 U	2.0 U
Dibromochloromethane	5	0.50 U	2.5 U	0.50 U	0.50 U
1,2-Dibromoethane	NE	0.50 U	2.5 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.6	1.0 U	5.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	NE	1.4 J	5.0 U	2.1 J	1.0 U
Dichlorodifluoromethane	NE	0.50 U	2.5 U	0.50 U	0.50 U
1,1-Dichloroethane	5	0.50 U	2.5 U	0.50 U	0.50 U
1,2-Dichloroethane	0.6	0.50 U	2.5 U	0.50 U	0.50 U
1,1-Dichloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	NE	0.50 U	2.5 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	NE	0.50 U	2.5 U	0.50 U	0.50 U
1,2-Dichloropropane	1	0.50 U	2.5 U	0.50 U	0.50 U
cis-1,3-Dichloropropene	0.4	0.50 U	2.5 U	0.50 U	0.50 U
trans-1,3-Dichloropropene	0.4	0.50 U	2.5 U	0.50 U	0.50 U
Ethylbenzene	5	0.50 U	2.5 U	0.50 U	0.50 U
Freon 113		2.0 U	10.0 U	2.0 U	2.0 U
2-Hexanone	50	3.0 U	15.0 U	3.0 U	3.0 U
Isopropylbenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U
Methyl Acetate	NE	1.0 U	5.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	NE	0.50 U	2.5 U	0.50 U	0.50 U
4-Methyl-2-pentanone	NE	3.0 U	15.0 U	3.0 U	3.0 U
Methylcyclohexane	NE	1.0 U	5.0 U	1.0 U	1.0 U
Methylene Chloride	5	0.50 U	2.5 U	0.50 U	0.50 U
Styrene	5	1.0 U	5.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	0.50 U	2.5 U	0.50 U	0.50 U
Tetrachloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U
Toluene	5	0.50 U	2.5 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	NE	1.0 U	5.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	0.50 U	2.5 U	0.50 U	0.50 U
1,1,2-Trichloroethane	1	0.50 U	2.5 U	0.50 U	0.50 U
Trichloroethene	5	0.50 U	2.5 U	0.50 U	0.50 U
Trichlorofluoromethane	NE	0.50 U	2.5 U	0.50 U	0.50 U
Vinyl Chloride	2	0.50 U	2.5 U	0.50 U	0.50 U
Xylene (Total)	5	0.50 U	2.5 U	0.50 U	0.50 U
Total Target VOCs	NE	5.9	ND	7.0	ND
1,4-Dioxane	NE	N.A.	N.A.	N.A.	N.A.

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-09-26D 9225553 9/21/2017 ng/l	MW-17-27S 9225552 9/21/2017 ng/l	MW-17-28S 9225566 9/22/2017 ng/l	MW-17-29D 9225567 9/22/2017 ng/l
PFAS					
Perfluorononanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluorodecanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluoroundecanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluorododecanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluorotridecanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluorotetradecanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluorohexanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluoroheptanoic acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluorobutanesulfonate	NE	N.A.	N.A.	N.A.	N.A.
Perfluorohexanesulfonate	NE	N.A.	N.A.	N.A.	N.A.
Perfluorobutanoic Acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluoropentanoic Acid	NE	N.A.	N.A.	N.A.	N.A.
Perfluoroheptanesulfonate	NE	N.A.	N.A.	N.A.	N.A.
Perfluorodecanesulfonate	NE	N.A.	N.A.	N.A.	N.A.
Perflourooctanesulfonamide	NE	N.A.	N.A.	N.A.	N.A.
Perfluorooctanoic acid (PFOA)	NE	N.A.	N.A.	N.A.	N.A.
Perfluorooctanesulfonate (PFOS)	NE	N.A.	N.A.	N.A.	N.A.
Combined PFOA plus PFOS	NE	N.A.	N.A.	N.A.	N.A.
FIELD MEASUREMENTS					
pH (s.u.)	NE	6.42	6.27	6.42	6.62
Conductivity (mS/cm)	NE	2.600	0.996	3.071	32.370
Dissolved Oxygen (mg/l)	NE	0.60	0.02	1.19	0.60
Temperature (°C)	NE	18.12	18.44	17.48	17.20
Redox Potential (mV)	NE	-34.5	-135.1	-54.0	-176.3

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SEPTEMBER 2017 - OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YORK

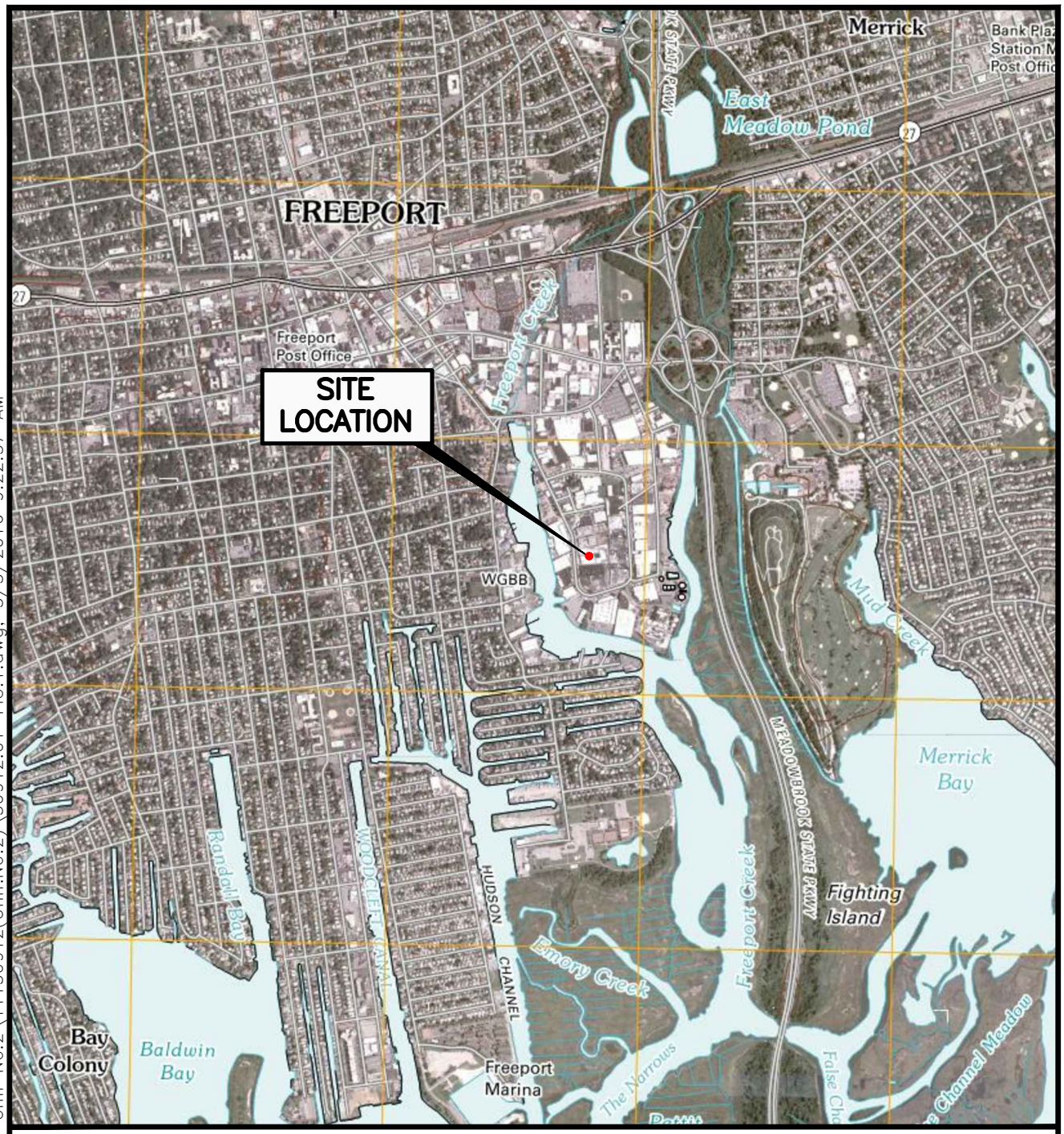
NOTES:

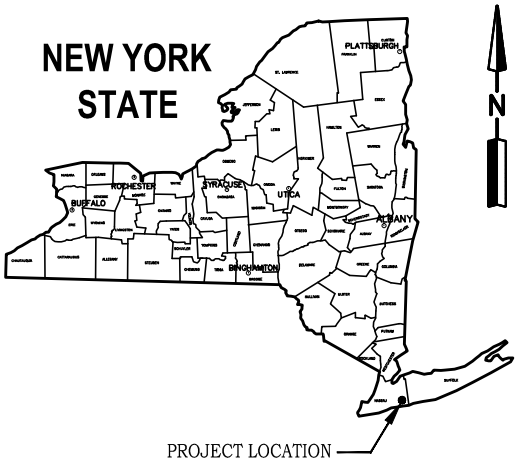
U - Indicates compound was analyzed for but not detected
J - Indicates an estimated value due to limitations identified during the Quality Assurance (QA) review.
B - This flag is used when the analyte is found in the associated blank as well as in the sample.
E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis and therefore, are regarded as estimated values.
D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
NS - Not sampled
ND - Not Detected
NE - No existing Groundwater Quality Standard
Total VOCs - This row presents the sum total concentration level of target compound list (TCL) volatile organic compounds (VOCs) reported in the sample.
Total VOC TICs - This row presents the sum total estimated concentration of non-target tentatively identified compounds.
100 (Bold) - Concentration exceeds NYSDEC Class GA Groundwater Quality Standard.
1 - The USEPA health advisory level for 1,1-dioxane is 0.35 µg/l.
2 - The USEPA health advisory level for combined PFOA and PFOS is 70 ng/l.

TABLE 5
SUMMARY OF PFOA/PFOS DATA COMPARISON
OPERABLE UNIT NO.2
COLUMBIA CEMENT SITE
FREEPORT, NEW YOUR

SAMPLE ID LAB SAMPLE ID SAMPLE DATE UNITS	NYSDEC CLASS GA WATER QUAL. STD. ng/l	MW-09-19D 8915847 3/30/2017 ng/l	MW-09-19D 9225558 9/21/2017 ng/l	MW-09-21D 8915849 3/30/2017 ng/l	MW-09-21D 9225554 9/21/2017 ng/l
PFAS					
Perfluorononanoic acid	NE	5.6 J	11 J	23 J	8.0 J
Perfluorodecanoic acid	NE	1.7 J	18 J	0.50 UJ	6.0 J
Perfluoroundecanoic acid	NE	1.0 UJ	2.0 UJ	1.0 UJ	2.0 UJ
Perfluorododecanoic acid	NE	0.50 UJ	1.0 J	0.50 UJ	0.60 J
Perfluorotridecanoic acid	NE	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ
Perfluorotetradecanoic acid	NE	0.50 UJ	8.0 J	0.50 UJ	3.0 J
Perfluorohexanoic acid	NE	44 J	25 J	28 J	8.0 J
Perfluoroheptanoic acid	NE	26 J	32 J	12 J	11 J
Perfluorobutanesulfonate	NE	12 J	49 J	4.4 J	18 J
Perfluorohexanesulfonate	NE	31 J	5.0 J	17 J	14 J
Perfluorobutanoic Acid	NE	3.0 UJ	34 J	8.9 J	9.0 J
Perfluoropentanoic Acid	NE	30 J	0.5 UJ	12 J	0.5 UJ
Perfluoroheptanesulfonate	NE	6.6 J	0.5 UJ	3.5 J	0.5 UJ
Perfluorodecanesulfonate	NE	2.0 UJ	1.0 UJ	2.0 UJ	1.0 UJ
Perflourooctanesulfonamide	NE	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
Perfluorooctanoic acid (PFOA)	NE	210 J	250 J	78 J	53 J
Perfluorooctanesulfonate (PFOS)	NE	200 J	200 J	72 J	53 J
Combined PFOA plus PFOS	NE	410	450	150	106

FIGURES





N

0 2000 4000

SCALE IN FEET

REFERENCE:
U.S.G.S. 7.5 MINUTE QUADRANGLE:
FREEPORT, NY (2010)

SITE LOCATION MAP
FORMER COLUMBIA CEMENT COMPANY, INC.
SITE NO. 130052
159 HANSE AVENUE
FREEPORT, NEW YORK

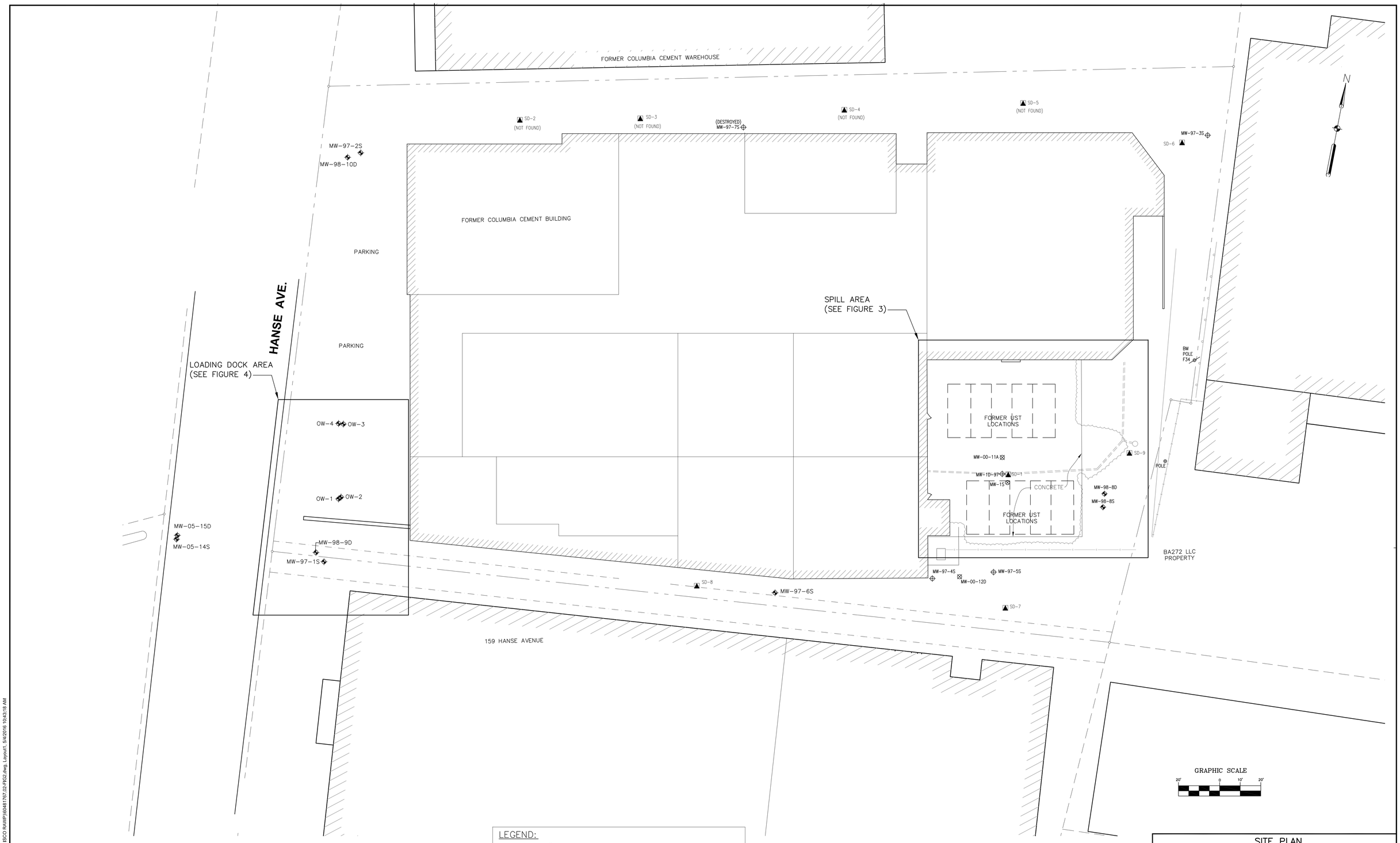
AECOM
1255 Broad Street
Clifton, New Jersey 07013
PHONE: (973) 883-8500
FAX: (973) 883-8501

DATE: 01/23/15

JOB: 11130912

FIGURE 1

K:\Cadd\Columbia Cement\Columbia Cement-Unit No.2\11130912(Unit.No.2)\30912.01-FIG.1.dwg, 5/5/2016 9:22:57 AM



LEGEND:

MW-1S	⊗	1988 MONITORING WELL LOCATION
MW-97-5S	⊕	1997 MONITORING WELL LOCATION
MW-98-9D	◆	1998 MONITORING WELL LOCATION
MW-00-11A	⊠	2000 MONITORING WELL LOCATION
MW-05-15D	▣	2005 OFFSITE MONITORING WELL LOCATION
SD-1	▲	STORM DRAIN LOCATION

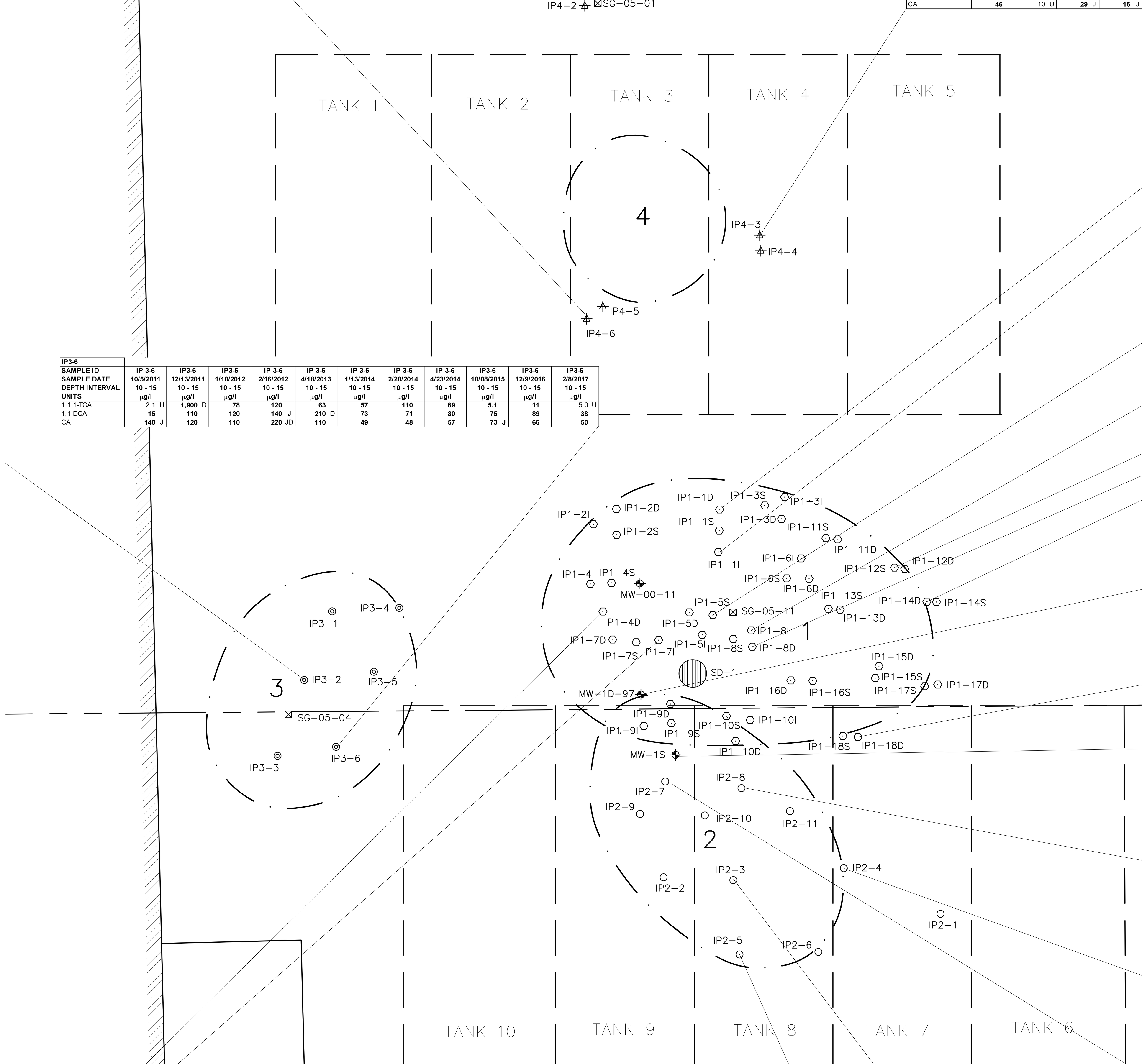
NOTE:
BASE MAP PROVIDED BY DELAWARE ENGINEERING, P.C.

SITE PLAN
OPERABLE UNIT NO. 1
FORMER COLUMBIA CEMENT COMPANY, INC.
FREEPORT, NEW YORK

AECOM
CLIFTON, NEW JERSEY

DR. BY	ET	SCALE	AS SHOWN	DWG. NO. 60481767.02-FIG2	PROJ. NO. 60481767
CK'D. BY	AP	DATE	MAY, 2016	FIG. NO.	2

K:\Cadd\Columbia Cement\60481767\2016 ISCO RAWP\60481767.02-FIG2.dwg, Layout1, 5/4/2016 10:43:18 AM



IP3-2												
SAMPLE ID	IP 3-2	IP3-2	IP3-2	IP 3-2	IP 3-2	IP 3-2	IP 3-2	IP 3-2	IP3-2	IP3-2	IP3-2	IP3-2
SAMPLE DATE	10/5/2011	12/13/2011	1/10/2012	2/16/2012	4/18/2013	1/13/2014	2/20/2014	4/23/2014	10/08/2015	12/8/2016	2/8/2017	9/18/2017
DEPTH INTERVAL	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	2.1 U	260	300	170	6.9 J	490 D	360	340	3.3 U	25 U	34 J	5.0 U
1,1-DCA	160 D	830	1,100	500	36	510 D	240	390	68	700	440	64
1,1-DCE	6.8 J	25 U	25 U	10 U	2.5 U	6.2 J	10 U	10 U	1.2 U	25 U	25 U	5.0 U
Benzene	1.8 J	16 U	16 U	6.4 U	1.6 U	1.6 U	6.4 U	6.4 U	1.6 U	25 U	25 U	5.0 U
CA	89 JD	1,300	1,100	250	19	160	110	220	86 J	290 J	460	490
Vinyl chloride	2.6 J	23 UJ	23 U	9.2 U	2.3 U	2.7 J	9.2 U	9.2 U	3.6 U	25 U	25 U	5.0 U
Methylene Chloride	1.3 U	13 U	13 U	5.2 U	1.3 U	5.9 J	5.2 U	5.2 U	1.8 U	100 U	25 U	5.0 U

IP1-1D												
SAMPLE ID	IP1-1D	IP1-1D	IP1-1D	IP1-1D	IP1-1D	IP 1-1D	IP 1-1D	IP 1-1D	IP 1-1D	IP 1-1D	IP1-ID	IP1-ID
SAMPLE DATE	10/13/2009	12/16/2009	10/7/2011	12/13/2011	1/10/2012	2/15/2012	4/16/2013	1/13/2014	2/20/2014	12/8/2016	2/8/2017	9/18/2017
DEPTH INTERVAL	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	1,000 D	530	2.1 U	1,600	590	390	2.1 U	500 D	570	2.5 U	2.5 U	0.50 U
1,1-DCA	970 D	1,900	190	360	280	460	1.7 U	160	170	42	37	2.2
1,1-DCE	58 D	28 J	2.5 U	25 U	13 U	13 U	1.2 U	2.5 U	10 U	2.5 U	2.5 U	0.50 U
Benzene	3.8 JD	5.4 U	1.9 J	16 U	8 U	8 U	1.6 U	1.6 U	6.4 U	2.5 U	2.5 U	0.50 U
CA	320 D	280	2,900 JD	650	210	120	85	240 D	290	61	38	23
Methylene Chloride	22 JD	4.6 U	1.4 J	19 J	6.5 U	6.5 U	1.3 U	1.6 J	5.2 U	10 U	10 U	0.50 U
Toluene	940 D	320	1.6 U	16 U	8 U	8 U	170	1.6 U	6.4 U	2.5 U	2.5 U	0.50 U
Vinyl Chloride	3.8 UD	7.6 U	8.5 J	23 U	12 U	12 U	2.3 U	2.5 J	9.2 U	2.5 U	2.5 U	0.50 U

IP1-1I												
SAMPLE ID	IP1-1I	IP1-1I	IP1-1I	IP 1-1I	IP 1-1I	IP 1-1I	IP 1-1I	IP 1-1I	IP1-1I	IP 1-1I	IP1-1I	IP1-1I
SAMPLE DATE	10/6/2011	12/13/2011	1/10/2012	2/15/2012	4/16/2013	1/13/2014	2/19/2014	4/22/2014	10/07/2015	12/8/2016	2/2/2017	9/18/2017
DEPTH INTERVAL	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	78	5,400	3,000 D	3,800	470	860	530	360	16	56	6.8	26
1,1-DCA	1,000 D	500	960	1,400	1,600	160	130	89	51	98	15	27
Benzene	2.2 J	64 U	16 U	32 U	16 U	8 U	8 U	8 U	2.1 U	0.50 U	0.50 U	0.50 U
CA	7,900 JD	260 J	330	270	930	85 J	150	78	480 J	130	11 J	290
Methylene Chloride	3.8 J	52 U	13 J	26 U	13 U	6.5 U	6.5 U	6.5 U	2.2 U	2.0 U	2.0 U	0.50 U
Vinyl Chloride	29	92 U	23 U	46 U	23 U	12 U	12 U	12 U	4.5 U	0.77	0.50 U	0.97 J

IP1-5S													
SAMPLE ID	IP1-5S	IP1-5S	IP1-5S	IP1-5S	IP1-5S	IP 1-5S	IP 1-5S	IP 1-5S	IP 1-5S	IP 1-5S	IPI-5S	IPI-5S	IPI-5S
SAMPLE DATE	10/13/2009	12/16/2009	10/7/2011	12/12/2011	1/10/2012	2/15/2012	4/17/2013	1/13/2014	2/20/2014	4/23/2014	10/09/2015	12/9/2016	2/7/2017
DEPTH INTERVAL	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12	7 - 12
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	34,000 D	22,000	1,600 D	2,100 J	2,600	2,200	520	370	38	290 D	40	44	0.50 U
1,1-DCA	8,200 D	3,200	4,400 D	270 J	500	440	660	17 J	1.9 J	52	65	23	0.50 U
1,1-DCE	620 D	270 J	14	50 UJ	50 U	50 U	13 U	5 U	2.5 U	3.4 J	3.8 J	0.52 J	0.50 U
CA	690 D	500 U	12,000 JD	200 J	190 J	170 J	37 J	5.3 J	2.5 U	21	620 J	21	0.50 U
Methylene Chloride	170 D	92 U	13	26 UJ	26 U	26 U	7.9 J	2.6 U	1.3 U	5.4 J	4.4 U	2.0 U	2.0 U
Toluene	120 D	62 U	8.3 J	32 UJ	32 U	32 U	8 U	3.2 U	1.6 U	1.6 U	5.1 U	0.50 U	0.50 U
TCE	14 JD	120 U	3.3 J	38 UJ	38 U	38 UJ	9.5 U	3.8 U	1.9 U	1.9 U	4.6 U	0.50 U	0.50 U
Vinyl chloride	6.1 JD	150 U	33	46 UJ	46 U	46 U	12 U	4.6 U	2.3 U	2.3 U	9.0 U	0.50 U	0.50 U
Xylenes, Total	12 JD	160 U	6.8 J	16 UJ	16 U	16 U	4.1 U	1.6 U	0.82 U	0.82 U	6.6 U	0.50 U	0.50 U

IP4-6													
SAMPLE ID	IP 4-6	IP 4-6	IP4-6	IP4-6	IP 4-6	IP 4-6	IP 4-6	IP 4-6	IP 4-6	IP4-6	IP4-6	IP4-6	IP4-6
SAMPLE DATE	12/22/2009	10/21/2011	12/14/2011	1/10/2012	2/16/2012	4/15/2013	1/13/2014	2/19/2014	4/23/2014	10/07/2015	12/8/2016	2/8/2017	9/20/2017
DEPTH INTERVAL	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	2.6 U	9 J	33 J	25 J	8.4 U	2.1 U	61	37	13	0.82 U	24	150	27
1,1-DCA	52	8.8 J	33 J	38 J	25 J	3.2 J	22	28	17	59	76	200	45
Benzene	3 J	6.4 U	6.4 U	6.4 U	6.4 U	1.6 U	1.6 U	1.6 U	1.6 U	0.74 J	5.0 U	0.54 J	1.9
CA	320	65	79 D	60	120 J	19	9.3 J	35	39	760 D	66	220	320

IP4-3									
SAMPLE ID	IP 4-3	IP 4-3	IP4-3	IP4-3	IP 4-3	IP 4-3	IP 4-3	IP 4-3	IP 4-3
SAMPLE DATE	12/22/2009	10/21/2011	12/14/2011	1/10/2012	2/16/2012	4/16/2013	1/13/2014	2/19/2014	4/23/2014
DEPTH INTERVAL	18 - 23	18 - 23	18 - 23	18 - 23	18 - 23	18 - 23	18 - 23	18 - 23	18 - 23
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	12	8.4 U	8.4 U	8.4 U	8.4 U	2.1 U	2.1 U	2.1 U	2.1 U
1,1-DCA	90	6.8 U	26 J	15 J	12 J	1.7 U	1.7 U	1.7 U	1.7 U
Benzene	1.4 J	6.4 U	6.4 U	6.4 U	6.4 U	1.6 U	1.6 U	1.6 U	1.6 U
Chlorobenzene	27	6.4 U	23 J	6.4 U	27 J	11	15	13	13
CA	46	10 U	29 J	16 J	10 UJ	2.5 U	2.5 U	2.5 U	2.5 U

IP1-8I								
SAMPLE ID	IP1-8I	IP1-8I	IP1-8I	IP1-8I	IP1-8I	IP1-8I	IP1-8I	IP1-8I
SAMPLE DATE	4/17/2013	1/14/2014	2/20/2014	4/23/2014	10/07/2015	12/9/2016	2/7/2017	9/18/2017
DEPTH INTERVAL	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	650	980	1400	620	12 J	35 J	57	0.50 U
1,1-DCA	1,800	170	180	130	68 J	91 J	140	0.50 U
1,1-DCE	25 U	20 U	20 U	20 U	2.3 U	0.89 J	0.86 J	0.50 U
Benzene	16 U	13 U	13 U	13 U	3.3 U	0.50 U	0.50 U	0.50 U
CA	110	58 J	65 J	68 J	570 J	150 J	100	230
Methylene Chloride	13 U	10 U	10 U	10 U	3.5 U	2.0 U	2.0 U	0.50 U
Vinyl Chloride	23 U	18 U	18 U	18 U	7.2 U	0.73 J	0.5 U	0.5 U

IP1-12S				
SAMPLE ID	IP1-12S	IP1-12S	IP1-12S	IP1-12S
SAMPLE DATE	4/16/2013	1/13/2014	2/19/2014	4/23/2014
DEPTH INTERVAL	9 - 14	9 - 14	9 - 14	9 - 14
UNITS	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	4.2 U	4.2 U	4.2 U	4.2 U
1,1-DCA	11 J	55	41	59
1,1-DCE	5 U	5.0 U	5.0 U	5.0 U
CA	5 U	17 J	9.2 J	27
Methylene Chloride	2.6 U	2.6 U	2.6 U	2.6 U

IP1-8D								
SAMPLE ID	IP1-8D	IP1-8D	IP1-8D	IP1-8D	IP1-8D	IP1-8D	IP1-8D	IP1-8D
SAMPLE DATE	4/17/2013	1/14/2014	2/20/2014	4/23/2014	10/07/2015	12/9/2016	2/7/2017	9/18/2017
DEPTH INTERVAL	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	170	360	930 D	650	24	57	130	9.3
1,1-DCA	1,800	67	160	130	100	330	620	19
1,1-DCE	25 U	10 U	10 U	13 U	1.5 U	2.0 U	2.9	1.5
CA	420	27 J	46	66	780 D	630 D	570 D	360
Methylene Chloride	13 U	5.2 U	5.2 U	6.5 U	2.2 U	2.1 J	2.2 J	0.50 U
Vinyl Chloride	8.2 U	9.2 U	9.2 U	12 U	4.5 U	3.2	2.1	1.6

IP1-14D											
SAMPLE ID	IP1-14I	IP1-14I	IP1-14I	IP 1-14I	IP1-14D	IP1-14D	IP1-14D	IP1-14D	IP1-14D	IP1-14D	IP1-14D
SAMPLE DATE	10/18/2011	12/13/2011	1/9/2012	2/15/2012	4/17/2013	1/14/2014	2/20/2014	4/23/2014	10/08/2015	12/8/2016	2/7/2017
DEPTH INTERVAL	9 - 14	9 - 14	9 - 14	9 - 14	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	8.4 U	270	120	87	2.1 U	12	15	2.1 U	0.82 U	0.50 U	0.50 U
1,1-DCA	160	310	190	190	54	53	38	19	5.0	27	21
CA	3,200	120	51 J	110 J	69	10	10	2.5 U	87 J	24	13
Vinyl chloride	12 J	4.6 U	2.3 U	4.6 U	2.3 U	2.3 U	2.3 U	2.3 U	0.90 U	0.50 U	0.50 U

IP3-6											
SAMPLE ID	IP 3-6	IP3-6	IP3-6	IP 3-6	IP 3-6	IP 3-6	IP 3-6	IP 3-6	IP3-6	IP3-6	IP3-6
SAMPLE DATE	10/5/2011	12/13/2011	1/10/2012	2/16/2012	4/18/2013	1/13/2014	2/20/2014	4/23/2014	10/08/2015	12/9/2016	2/8/2017
DEPTH INTERVAL	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	2.1 U	1,900 D	78	120	63	57	110	69	5.1	11	5.0 U
1,1-DCA	15	110	120	140 J	210 D	73	71	80	75	89	38
CA	140 J	120	110	220 JD	110	49	48	57	73 J	66	50

MW-1D-97																
SAMPLE ID	MW-1D-97	MW-1D-97	MW-1D-97	MW-97-1D	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97	MW-1D-97
SAMPLE DATE	7/16/2009	10/15/2009	12/21/2009	3/3/2010	10/4/2011	12/13/2011	1/10/2012	2/15/2012	4/18/2013	1/15/2014	2/19/2014	4/22/2014	10/08/2015	12/8/2016	2/8/2017	9/18/2017
DEPTH INTERVAL	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35	25 - 35
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	8.8 J	7,400 D	6,500 D	7,800	67	1,900 D	2,700 D	2,400 D	250	85 J	300	380	8.2 U	120 U	60	2.5 U
1,1-DCA	3.9 J	4,800 D	5,000 D	6,000	2,100 D	640	860	1,000	1,600	110	130	120	220	91	120	17
1,1-DCE	0.44 U	760 D	510	360 J	4 J	250	200	200	25 U	25 U	25 U	25 U	6.6 J	10 U	10 U	2.5 U
2-Butanone (MEK)	1.7 J	180 D	100 J	120 U	1.5 U	87	57 J	40 J	15 U	41 J	23 J	29 J	13 U	60 U	60 U	15 U
Acetone	0.64 U	3.2 UD	130 J	32 U	4.4 J	550	210	200	19 U	600 J	340	430	30 U	180 J	160 J	30 U
Benzene	3.3 J	4.8 JD	11 U	27 U	1.9 J	13 U	13 U	16 U	16 U	16 U	16 U	16 U	4.1 U	10 U	10 U	2.5 U
CA	690 D	880 D	650	350 J	6,400 JD	620	750	680	340	86 J	140	190	12 J	110	79 J	26 J
Methylene Chloride	0.46 U	250 D	150 J	52 J	5.9 J	87	63 J	47 J	19 J	13 U	13 U	13 U	4.4 U	40 U	40 U	2.5 U
Toluene	0.31 U	56 D	44 J	15 U	1.6 U	13 U	13 U	16 U	16 U	16 U	16 U	16 U	5.1 U	10 U	10 U	2.5 U
Vinyl Chloride	0.76 U	5.6 JD	15 U	38 U	21	18 U	18 U	23 U	23 U	23 U	23 U	23 U	9.0 U	10 U	10.0 U	2.5 U

IP1-18D											
SAMPLE ID	IP1-18I	IP1-18I	IP1-18I	IP 1-18I	IP1-18D	IP1-18D	IP1-18D	IP1-18D	IP1-18D	IP1-18D	IP1-18D
SAMPLE DATE	10/18/2011	12/12/2011	1/9/2012	2/15/2012	4/17/2013	1/14/2014	2/19/2014	4/22/2014	10/08/2015	12/8/2016	2/7/2017
DEPTH INTERVAL	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	850 E	5,500 DJ	2,800	600	71	1200 D	430	110	6.6 U	0.50 U	0.50 U
1,1-DCA	3,400	630 J	440	260	640 D	190	71 J	26 J	3.0 U	1.3	0.50 U
1,1-DCE	24 J	61 J	50 U	13 U	2.5 U	10 U	20 U	20 U	2.3 U	0.50 U	0.50 U
CA	590	270 J	200 J	130	42	80	38 J	20 U	190 J	0.50 U	15

MW-1S																
SAMPLE ID	MW-1S	MW-1S	MW 1-S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S	MW-1S
SAMPLE DATE	7/16/2009	10/15/2009	12/21/2009	3/3/2010	10/4/2011	12/13/2011	1/9/2012	2/16/2012	4/18/2013	1/15/2014	2/20/2014	4/22/2014	10/09/2015	12/8/2016	2/7/2017	9/18/2017
DEPTH INTERVAL	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20	10 - 20
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	9,800 D	240 D	1,000	290	2.1 U	97	43	39	11	100	76	8.3 J	3.7	2.9	19	0.50 U
1,1-DCA	2,000 D	570 D	440	140	52	28	17	20	17	10	19	3.6 J	4.1	13	24	1.4
1,1-DCE	130	6 JD	5.5 J	6.7 J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.49 J	0.50 U	0.50 U	0.50 U
1,2-DCA	1.2 J	4.2 UD	8.3 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.21 U	0.50 U	0.50 U	0.50 U
Benzene	3.2 J	2.7 UD	5.4 U	0.54 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	0.41 U	0.50 U	0.50 U	0.50 U
CA	3,900 D	66 D	71 J	25	310 JD	5.1 J	6.2 J	4.3 J	3.7 J	5.5 J	10	2.5 U	60 J	11 J	12	6.5
Methylene Chloride	55 B	2.3 UD	4.6 U	0.46 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	0.44 U	2.0 U	2.0 U	0.50 U
Toluene	5.1 J	1.5 UD	3.1 U	0.54 J	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	0.51 U	0.50 U	0.50 U	0.50 U
Vinyl Chloride	9.6 J	3.8 UD	7.6 U	0.76 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	0.90 U	0.50 U	0.50 U	0.50 U

IP2-8														
SAMPLE ID	IP2-8	IP 2-8	IP2-8	IP2-8	IP2-8	IP 2-8	IP 2-8	IP 2-8	IP 2-8	IP 2-8	IP2-8	IP2-8	IP2-8	IP2-8
SAMPLE DATE	10/14/2009	12/21/2009	10/6/2011	12/12/2011	1/9/2012	2/16/2012	4/17/2013	1/14/2014	2/20/2014	4/22/2014	10/07/2015	12/8/2016	2/8/2017	9/18/2017
DEPTH INTERVAL	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	4,600 D	2100	4 J	2,300 JD	1,800	1,100	13	630 D	210	340	3.8	0.87 J	15	7.0
1,1-DCA	730 D	290	14	410 JD	300	230	46	140	42 J	100	21	5.5	150	25
1,1-DCE	76 JD	15 J	2.5 U	24 J	25 U	25 UJ	25 U	5.1 J	13 U	25 U	0.29 U	0.50 U	0.93 J	0.67 J
CA	290 JD	150 J	6.8 J	800 D	84 J	31 J	7.8 J	130 J	50	57 J	25 J	5.5	140 J	30

IP2-4											
SAMPLE ID	IP2-4	IP2-4	IP2-4	IP 2-4	IP 2-4	IP 2-4	IP 2-4	IP 2-4	IP2-4	IP2-4	IP2-4
SAMPLE DATE	10/18/2011	12/12/2011	1/9/2012	2/16/2012	4/17/2013	1/14/2014	2/20/2014	4/22/2014	10/07/2015	12/8/1997	2/7/2017
DEPTH INTERVAL	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	600	1,400 J	1,400 D	130	310	1500	1500	870	130	190	57
1,1-DCA	1,200	210 J	290	34 J	110	610	360	270	390	150	49
1,1-DCE	10 U	20 J	23 J	20 U	5 U	25 U	25 U	25 U	2.9 U	3.0	0.85 J
CA	330	57 J	55	20 UJ	48	130 J	91 J	140	100	20	12

IP2-7													
SAMPLE ID	IP2-7	IP 2-7	IP2-7	IP2-7	IP2-7	IP 2-7	IP 2-7	IP 2-7	IP 2-7	IP 2-7	IP2-7	IP2-7	IP2-7
SAMPLE DATE	10/14/2009	12/21/2009	10/7/2011	12/12/2011	1/9/2012	2/16/2012	4/17/2013	1/14/2014	2/20/2014	4/22/2014	10/08/2015	12/8/2016	2/7/2017
DEPTH INTERVAL	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	360 D	160	3.3 J	140 J	200 D	180	12	31	44	15	6.7	1.9	7.1
1,1-DCA	150 D	61	18	140 J	290 D	270	40	57	40	25	4.0	6.0	9.9
1,1-DCE	5.6 JD	1.7 J	2.5 U	2.5 UJ	3.5 J	5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.29 U	0.50 U	0.50 U
CA	72 D	9.6 J	57 J	22 J	47	22	6.9 J	11 J	3.9 J	3.8 J	20 J	2.7	29

IP1-7I														
SAMPLE ID	IP1-7I	IP1-7I	IP1-7I	IP1-7I	IP1-7I	IP 1-7I	IP 1-7I	IP 1-7I	IP 1-7I	IP 1-7I	IP1-7I	IP1-7I	IP1-7I	IP1-7I
SAMPLE DATE	10/13/2009	12/16/2009	10/6/2011	12/13/2011	1/10/2012	2/15/2012	4/16/2013	1/14/2014	2/19/2014	4/23/2014	10/07/2015	12/8/1997	2/8/2017	9/18/2017
DEPTH INTERVAL	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18	13 - 18
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	2,500 D	800	230 JD	1,900 D	1,200 D	750	730	860	650	530	19	150	190	46
1,1-DCA	4,100 D	1,900	810 D	320	390	490	890	140	160	140	79	160	230	56
1,1-DCE	80 D	24 J	2.5 U	15 J	10 U	13 U	20 U	20 U	20 U	20 U	2.3 U	1.7	1.7	2.7
Benzene	2.9 JD	5.4 U	2.3 J	6.4 U	6.4 U	8 U	13 U	13 U	13 U	13 U	3.3 U	0.50 U	0.50 U	0.50 U
CA	530 D	270	5,400 JD	450	300	230	340	96	120	130	630 J	180	220 J	370 J
Methylene Chloride	30 JD	4.6 U	2 J	11 J	8.1 J	6.5 U	4.7 U	10 U	10 U	10 U	3.5 U	2.0 U	2.0 U	0.50 U
Vinyl Chloride	4.8 JD	7.6 U	14	9.2 U	9.2 U	12 U	18 U	18 U	18 U	18 U	7.2 U	0.50 U	0.82 J	1.1

IP1-4D														
SAMPLE ID	IP1-4D	IP1-4D	IP1-4D	IP1-4D	IP1-4D	IP 1-4D	IP 1-4D	IP 1-4D	IP 1-4D	IP 1-4D	IP1-4D	IP1-4D	IP1-4D	IP1-4D
SAMPLE DATE	10/13/2009	12/16/2009	10/6/2011	12/14/2011	1/10/2012	2/15/2012	4/17/2013	1/13/2014	2/20/2014	4/23/2014	10/09/2015	12/9/2016	2/7/2017	9/19/2017
DEPTH INTERVAL	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24	19 - 24
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	1,500 D	530	54	1,500	820	430	71	600	870 D	490	15	93	170	37
1,1-DCA	3,600 D	1,600	150	290	350	350	260	170	140	140	48	130	160	48
CA	580 D	390	2,000 JD	390	240	200	410	140	81	120	1,300 J	130 J	210	330
Vinyl Chloride	4.8 JD	7.6 U	4.5 J	23 U	12 U	9.2 U	9.2 U	9.2 U	9.2 U	18 U	7.2 U	2.5 U	0.66 J	1.1

IP2-3											
SAMPLE ID	IP2-3	IP2-3	IP2-3	IP2-3	IP2-3	IP2-3	IP 2-3	IP 2-3	IP 2-3	IP 2-3	IP 2-3
SAMPLE DATE	7/16/2009	10/14/2009	12/16/2009	10/6/2011	12/12/2011	1/9/2012	2/16/2012	4/17/2013	1/14/2014	2/19/2014	4/22/2014
DEPTH INTERVAL	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	14	540 D	170	2.1 U	790 J	2,000 D	2,400	1,900	310	16 J	5.7 J
1,1-DCA	76	220 D	360	14	590 J	790	770	760	130	21	15 J
1,1-DCE	0.44 U	15 JD	5 J	2.5 U	20 UJ	24 J	50 U	25 U	5.0 U	5.0 U	5.0 U
CA	590 D	550 D	470	710 JD	430 J	610	370	150	150 J	54	59
Methylene Chloride	0.46 U	6.3 JD	1.8 U	1.3 U	10 UJ	10 U	26 U	13 U	2.6 U	2.6 U	2.6 U

IP2-5														
SAMPLE ID	IP2-5	IP 2-5	IP2-5	IP2-5	IP2-5	IP 2-5	IP 2-5	IP 2-5	IP 2-5	IP 2-5	IP2-5	IP2-5	IP2-5	IP2-5
SAMPLE DATE	10/14/2009	12/21/2009	10/7/2011	12/12/2011	1/9/2012	2/16/2012	4/17/2013	1/14/2014	2/19/2014	4/22/2014	10/07/2015	12/8/2016	2/7/2017	9/18/2017
DEPTH INTERVAL	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
UNITS	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
1,1,1-TCA	190 D	11 J	2.1 U	36 J	37	22 J	140	78	14 J	4.2 U	1.9 J	470	5.7	6.6
1,1-DCA	420 D	370	28	65 J	76	64	190 D	75	94	74	80	450	17	100
1,1-DCE	5.1 JD	2.4 J	2.5 U	13 UJ	2.5 U	13 U	2.5 U	5 U	5 U	5 U	1.4 J	8	0.56 J	2.3
CA	490 D	260	1,400 JD	100 J	68 J	140 J	120	62 J	78	140	220 D	110	73	190

LEGEND:

IP1-4	INJECTION POINTS IN AREA 1
IP2-4	INJECTION POINTS IN AREA 2
IP3-3	INJECTION POINTS IN AREA 3
IP4-1	INJECTION POINTS IN AREA 4
MW-00-11A	MONITORING WELL LOCATION
SG-05-11	SOIL GAS MONITORING POINT
SD-1	STORM DRAIN
	FORMER UST LOCATION
	RESIDUAL SOURCE AREA

NOTES:

1. BASEMAP PROVIDED BY JOHN P. FERRANTELLO P.C., MAP OF MONITORING WELL LOCATIONS, DATED 12-1-2009.
2. HORIZONTAL DATUM OF THE MAP IS NORTH AMERICAN DATUM OF 1983(NAD83 NEW YORK STATE PLANE COORDINATES LONG ISLAND ZONE 3104); VERTICAL DATM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) US SURVEY FEET.

Notes:

µg/l	:	Micrograms per liter
U	:	Not detected at stated detection limit.
J	:	Estimated value.
BOLD	:	Above NYSDEC class GA Groundwater Standards

GRAPHIC SCALE

5 0 2.5 5

GROUNDWATER SAMPLING LOCATIONS AND RESULTS-SPILL AREA (2009-2017)
FORMER COLUMBIA CEMENT COMPANY, INC.
FREEPORT, NEW YORK

AECOM
CLIFTON, NEW JERSEY

DR. BY	ET	SCALE AS SHOWN	DWG. NO.60481767-02-FIG3	PROJ. NO. 60481767	
CK'D. BY	MB	DATE	MARCH, 2017	FIG. NO.	3

File Name: K:\Cadd\Columbia Cement\60481767(2017Post- ISCO)\60481767-02-FIG3.dwg User:Eva.Tucewicz Dec 15, 2017 - 2:41pm

MW-98-10D	Sept-09	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
Chloroethane	ND	ND	ND	ND	ND	ND
Methylene Chloride	NA	ND	ND	ND	ND	ND
Chlorobenzene	5 J	3.5 J	ND	**9.3**	**12**	3.5

MW-97-2S	Sept-09	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
Chloroethane	ND	ND	ND	ND	ND	ND
Chlorobenzene	**15**	**16**	**13**	**11**	**10**	**7.1**
Acetone	NA	ND	ND	ND	ND	ND
Benzene	NA	ND	ND	ND	ND	ND
Carbon Disulfide	NA	ND	ND	ND	ND	ND
Isopropylbenzene	NA	2.0 J	3.4	1.3	1.8	1.1 J
1,4-Dichlorobenzene	NA	2.5 J	2.6	2.3	2.6	2.5 J
Methylene Chloride	NA	ND	ND	ND	ND	ND
Ethylbenzene	NA	ND	ND	ND	ND	ND
Xylenes	NA	ND	ND	ND	ND	ND

MW-97-3S	Sept-10
Chloroethane	ND
Acetone	ND
Carbon Disulfide	ND
Chlorobenzene	ND
Chloroform	ND
Methylene Chloride	ND

N

SD-2
SD-3
SD-4
SD-5
SD-6
SD-9

MW-97-7S
(DESTROYED)

MW-97-3S
(DESTROYED)

MW-97-2S
MW-98-10D

MW-09-18S
MW-09-19D
SEE FIGURE 5

FORMER COLUMBIA CEMENT BUILDING

159 HANSE AVENUE

OW-4	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11	Dec-11	Jan-12	May-13	Apr-14	Oct-15	Dec-16	Feb-17	Sept-17
1,1-DCA	**9.7**	ND	ND	ND	**6.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1
Chloroethane	**2,500**	**2,800**	**600**	**1,000**	**160**	ND	ND	ND	ND	ND	ND	ND	ND	2.1	1.1
Chlorobenzene	**22**	ND	ND	ND	**20**	ND	ND	ND	ND	ND	ND	**15**	**13**	**22**	**13**
Acetone	ND	**120**	19	32	ND	9.6	**230**	44	28	ND	ND	ND	ND	ND	ND

OW-3	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11	Dec-11	Jan-12	May-13	Apr-14	Oct-15	Dec-16	Feb-17	Sept-17
Chloroethane	3.8	**36**	**16**	**18**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	**8**	**7**	ND	**5.7**	**5.6**	ND	ND	ND	ND	ND	ND	ND	3.7	**5.1**	**3.8**
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

OW-4
OW-3

OW-2	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11	Dec-11	Jan-12	May-13	Apr-14	Oct-15	Dec-16	Feb-17
Chloroethane	**3,400**	**4,900**	**3,100**	**3,800**	**1,600**	**190**	**110**	**110**	**87**	ND	ND	ND	3.7	2.7
Chlorobenzene	4.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	**21**	0.45	**5.7**	**6.2**
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**47**

OW-1
OW-2

OW-1	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11	Dec-11	Jan-12	May-13	Apr-14	Oct-15	Dec-16	Feb-17
Chloroethane	**74**	**120**	**61**	**100**	**33**	ND	ND	ND	ND	ND	**21**	**8.9**	**9.1**	3.2
Chlorobenzene	**13**	**5.4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	**6.1**	6.6

MW-05-15D
SEE FIGURE 5
MW-05-14S

MW-98-9D
MW-97-1S

MW-97-6S	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
1,1,1-TCA	ND	ND	ND	ND	ND
Chloroethane	**120**	**160**	**23**	**86**	**61**
Benzene	ND	ND	ND	ND	
Toluene	ND	ND	ND	ND	
Xylene	ND	ND	ND	ND	
Acetone	ND	2.7	ND	ND	
Carbon Disulfide	ND	ND	ND	ND	
Chlorobenzene	2.4 J	ND	ND	ND	4.9

MW-97-6S

MW-97-1S	Sept-09	Oct-09	Nov-09	Feb-10	Mar-10	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11A	Nov-11B	Dec-11	May -13	Apr-14	Oct-15	Dec-16	Feb-17	Sept-17
Chloroethane	**87**	**54**	**68**	**250**	**98**	**73**	**260**	**10**	ND	ND	**360**	**51**	**38**	**17**	ND	ND	**40**	**33**	**47**	2.7
Chlorobenzene	2.9	3.4	3.5	3.3	3.1	3.5	2.2	ND	ND	ND	ND	3.5	ND	ND	**8.7**	**39**	**7.2**	**6.5**	**3.5**	2.2

MW-98-9D	Sept-09	Oct-09	Nov-09	Feb-10	Mar-10	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11	Dec-11	Jan-12	May-13	Apr-14	Oct-15	Dec-16	Feb-17	Sept-17
1,1-DCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**91**	**5.7**	ND	1.5	ND
Chloroethane	**3000**	**330**	**880**	**2900**	**970**	**790**	**470**	**250**	**350**	**300**	**41**	**47**	**62**	**59**	ND	ND	ND	ND	0.68	**15**
Chlorobenzene	**8.5**	4.2	**6.0**	**7.0**	**6.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.9	5.3	4.6	2.6 J
Carbon Disulfide	ND	ND	ND	ND	ND	ND	64	77	43	13	ND	170	130	92	ND	9.7	ND	83	35	26
Acetone	ND	ND	ND	ND	ND	ND	**370**	**160**	**140**	7.8	**98**	**220**	**130**	**95**	ND	ND	ND	48	23	ND

MW-00-11A	Sept-10	Oct-11	Apr-13	Apr-14
All Compounds	ND	ND	ND	ND

MW-98-8D	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
1,1,1-TCA	**200**	ND	ND	ND	ND
1,1-DCA	**1400**	**500**	2.3	ND	3.2
1,1-DCE	**21**	ND	ND	ND	ND
Chloroethane	**230**	**720**	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	ND	ND
Vinyl Chloride	3.3	**6.5**	ND	ND	1.9

MW-98-8S	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
Chloroethane	ND	4.3	ND	ND	0.62
1,1-DCE	ND	ND	ND	ND	3.2
Vinyl Chloride	ND	ND	ND	ND	1.9

MW-00-11
MW-1D-97
MW-1S
SD-1
MW-98-8D
MW-98-8S
SEE FIGURE 3

MW-97-5S	Sept-10	Oct-11	Apr-13	Apr-14
Chloroethane	ND	ND	ND	ND
1,1-DCA	ND	ND	ND	ND
Benzene	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
Chlorobenzene	**16**	ND	ND	ND

MW-00-12D	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
1,1,1- TCA	**120**	**310**	ND	**28**	2.9 J
1,1-DCA	**1,600**	**2900**	**140**	**150**	**45**
1,1-DCE	**71**	**53**	ND	ND	ND
Chloroethane	**400**	**180**	**250**	**260**	**170**
Benzene	ND	ND	ND	ND	ND
Methylene Chloride	ND	4.4	ND	ND	ND
Toluene	ND	**5.4**	ND	ND	ND
Vinyl Chloride	ND	**2.8**	ND	ND	ND

MW-97-4S
MW-00-12D
MW-97-5S

MW-97-4S	Sept-10	Oct-11	Apr-13	Apr-14	Sept-17
1,1,1-TCA	ND	ND	ND	ND	ND
1,1-DCA	**110**	**17**	**78**	1.7	ND
Chloroethane	**380**	**350**	**50**	**36**	**33**
Benzene	ND	ND	ND	ND	ND
Xylene	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND

MW-03-13S
APPROX. 330' SOUTH

MW-03-13S
SEE FIGURE 5

Notes:

µg/l : Micrograms per liter

ND : Compound not detected at.

BOLD : Concentration exceeds NYSDEC Ambient Water Quality Standard

LEGEND:

MW-00-11 MONITORING WELL LOCATION

SD-1 STORM DRAIN

GRAPHIC SCALE

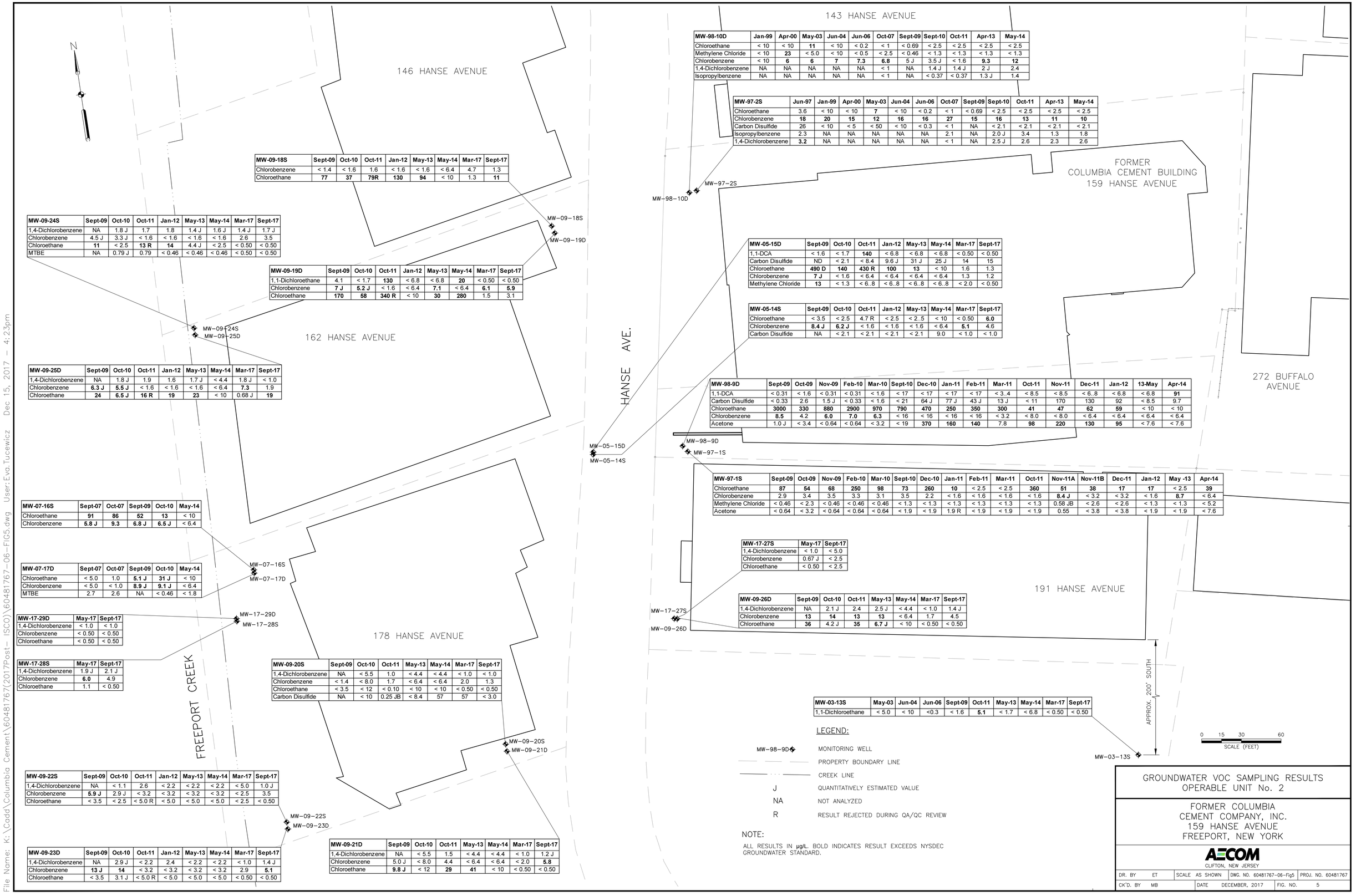
20 0 10 20

GROUNDWATER VOC SAMPLING RESULTS (2009-2017)
OU-1 SITE PERIMETER
FORMER COLUMBIA CEMENT COMPANY, INC.
FREEPORT, NEW YORK

AECOM
CLIFTON, NEW JERSEY

DR. BY ET	SCALE 1"=20'	DWG. NO. 60481767-05-FIG4	PROJ. NO. 60481767
CK'D. BY MB	DATE DECEMBER, 2017	FIG. NO. 4	

File Name: K:\Cadd\Columbia Cement\60481767\2017Post — ISCO\60481767-05-FIG4.dwg User:Eva.Tucewicz Dec 15, 2017 — 2:53pm



MW-98-10D	Jan-99	Apr-00	May-03	Jun-04	Jun-06	Oct-07	Sept-09	Sept-10	Oct-11	Apr-13	May-14
Chloroethane	< 10	< 10	**11**	< 10	< 0.2	< 1	< 0.69	< 2.5	< 2.5	< 2.5	< 2.5
Methylene Chloride	< 10	**23**	< 5.0	< 10	< 0.5	< 2.5	< 0.46	< 1.3	< 1.3	< 1.3	< 1.3
Chlorobenzene	< 10	**6**	**6**	**7**	**7.3**	**6.8**	5 J	3.5 J	< 1.6	**9.3**	**12**
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	< 1	NA	1.4 J	1.4 J	2 J	2.4
Isopropylbenzene	NA	NA	NA	NA	NA	< 1	NA	< 0.37	< 0.37	1.3 J	1.4

MW-97-2S	Jun-97	Jan-99	Apr-00	May-03	Jun-04	Jun-06	Oct-07	Sept-09	Sept-10	Oct-11	Apr-13	May-14
Chloroethane	3.6	< 10	< 10	**7**	< 10	< 0.2	< 1	< 0.69	< 2.5	< 2.5	< 2.5	< 2.5
Chlorobenzene	**18**	**20**	**15**	**12**	**16**	**16**	**27**	**15**	**16**	**13**	**11**	**10**
Carbon Disulfide	26	< 10	< 5	< 50	< 10	< 0.3	< 1	NA	< 2.1	< 2.1	< 2.1	< 2.1
Isopropylbenzene	2.3	NA	NA	NA	NA	NA	2.1	NA	2.0 J	3.4	1.3	1.8
1,4-Dichlorobenzene	**3.2**	NA	NA	NA	NA	NA	< 1	NA	2.5 J	2.6	2.3	2.6

MW-09-18S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
Chlorobenzene	< 1.4	< 1.6	1.6	< 1.6	< 1.6	< 6.4	4.7	1.3
Chloroethane	**77**	**37**	**79R**	**130**	**94**	< 10	1.3	**11**

MW-09-24S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
1,4-Dichlorobenzene	NA	1.8 J	1.7	1.8	1.4 J	1.6 J	1.4 J	1.7 J
Chlorobenzene	4.5 J	3.3 J	< 1.6	< 1.6	< 1.6	< 1.6	2.6	3.5
Chloroethane	**11**	< 2.5	**13 R**	**14**	4.4 J	< 2.5	< 0.50	< 0.50
MTBE	NA	0.79 J	0.79	< 0.46	< 0.46	< 0.46	< 0.50	< 0.50

MW-09-19D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
1,1-Dichloroethane	4.1	< 1.7	**130**	< 6.8	< 6.8	**20**	< 0.50	< 0.50
Chlorobenzene	**7 J**	**5.2 J**	< 1.6	< 6.4	**7.1**	< 6.4	**6.1**	**5.9**
Chloroethane	**170**	**58**	**340 R**	< 10	**30**	**280**	1.5	3.1

MW-05-15D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
1,1-DCA	< 1.6	< 1.7	**140**	< 6.8	< 6.8	< 6.8	< 0.50	< 0.50
Carbon Disulfide	ND	< 2.1	< 8.4	9.6 J	31 J	25 J	14	15
Chloroethane	**490 D**	**140**	**430 R**	**100**	**13**	< 10	1.6	1.3
Chlorobenzene	**7 J**	< 1.6	< 6.4	< 6.4	< 6.4	< 6.4	1.3	1.2
Methylene Chloride	**13**	< 1.3	< 6..8	< 6..8	< 6..8	< 6..8	< 2.0	< 0.50

MW-05-14S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
Chloroethane	< 3.5	< 2.5	4.7 R	< 2.5	< 2.5	< 10	< 0.50	**6.0**
Chlorobenzene	**8.4 J**	**6.2 J**	< 1.6	< 1.6	< 1.6	< 6.4	**5.1**	4.6
Carbon Disulfide	NA	< 2.1	< 2.1	< 2.1	< 2.1	9.0	< 1.0	< 1.0

MW-98-9D	Sept-09	Oct-09	Nov-09	Feb-10	Mar-10	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11	Dec-11	Jan-12	13-May	Apr-14
1,1-DCA	< 0.31	< 1.6	< 0.31	< 0.31	< 1.6	< 17	< 17	< 17	< 17	< 3..4	< 8.5	< 8.5	< 6..8	< 6.8	< 6.8	**91**
Carbon Disulfide	< 0.33	2.6	1.5 J	< 0.33	< 1.6	< 21	64 J	77 J	43 J	13 J	< 11	170	130	92	< 8.5	9.7
Chloroethane	**3000**	**330**	**880**	**2900**	**970**	**790**	**470**	**250**	**350**	**300**	**41**	**47**	**62**	**59**	< 10	< 10
Chlorobenzene	**8.5**	4.2	**6.0**	**7.0**	**6.3**	< 16	< 16	< 16	< 16	< 3.2	< 8.0	< 8.0	< 6.4	< 6.4	< 6.4	< 6.4
Acetone	1.0 J	< 3.4	< 0.64	< 0.64	< 3.2	< 19	**370**	**160**	**140**	7.8	**98**	**220**	**130**	**95**	< 7.6	< 7.6

MW-97-1S	Sept-09	Oct-09	Nov-09	Feb-10	Mar-10	Sept-10	Dec-10	Jan-11	Feb-11	Mar-11	Oct-11	Nov-11A	Nov-11B	Dec-11	Jan-12	May -13	Apr-14
Chloroethane	**87**	**54**	**68**	**250**	**98**	**73**	**260**	**10**	< 2.5	< 2.5	**360**	**51**	**38**	**17**	**17**	< 2.5	**39**
Chlorobenzene	2.9	3.4	3.5	3.3	3.1	3.5	2.2	< 1.6	< 1.6	< 1.6	< 1.6	**8.4 J**	< 3.2	< 3.2	< 1.6	**8.7**	< 6.4
Methylene Chloride	< 0.46	< 2.3	< 0.46	< 0.46	< 0.46	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	0.58 JB	< 2.6	< 2.6	< 1.3	< 1.3	< 5.2
Acetone	< 0.64	< 3.2	< 0.64	< 0.64	< 0.64	< 1.9	< 1.9	1.9 R	< 1.9	< 1.9	< 1.9	0.55	< 3.8	< 3.8	< 1.9	< 1.9	< 7.6

MW-17-27S	May-17	Sept-17
1,4-Dichlorobenzene	< 1.0	< 5.0
Chlorobenzene	0.67 J	< 2.5
Chloroethane	< 0.50	< 2.5

MW-09-26D	Sept-09	Oct-10	Oct-11	May-13	May-14	Mar-17	Sept-17
1,4-Dichlorobenzene	NA	2.1 J	2.4	2.5 J	< 4.4	< 1.0	1.4 J
Chlorobenzene	**13**	**14**	**13**	**13**	< 6.4	1.7	4.5
Chloroethane	**36**	4.2 J	**35**	**6.7 J**	< 10	< 0.50	< 0.50

MW-03-13S	May-03	Jun-04	Jun-06	Sept-09	Oct-11	May-13	May-14	Mar-17	Sept-17
1,1-Dichloroethane	< 5.0	< 10	<0.3	< 1.6	**5.1**	< 1.7	< 6.8	< 0.50	< 0.50

MW-07-16S	Sept-07	Oct-07	Sept-09	Oct-10	May-14
Chloroethane	**91**	**86**	**52**	**13**	< 10
Chlorobenzene	**5.8 J**	**9.3**	**6.8 J**	**6.5 J**	< 6.4

MW-07-17D	Sept-07	Oct-07	Sept-09	Oct-10	May-14
Chloroethane	< 5.0	1.0	**5.1 J**	**31 J**	< 10
Chlorobenzene	< 5.0	< 1.0	**8.9 J**	**9.1 J**	< 6.4
MTBE	2.7	2.6	NA	< 0.46	< 1.8

MW-17-29D	May-17	Sept-17
1,4-Dichlorobenzene	< 1.0	< 1.0
Chlorobenzene	< 0.50	< 0.50
Chloroethane	< 0.50	< 0.50

MW-17-28S	May-17	Sept-17
1,4-Dichlorobenzene	1.9 J	2.1 J
Chlorobenzene	**6.0**	4.9
Chloroethane	1.1	< 0.50

MW-09-20S	Sept-09	Oct-10	Oct-11	May-13	May-14	Mar-17	Sept-17
1,4-Dichlorobenzene	NA	< 5.5	1.0	< 4.4	< 4.4	< 1.0	< 1.0
Chlorobenzene	< 1.4	< 8.0	1.7	< 6.4	< 6.4	2.0	1.3
Chloroethane	< 3.5	< 12	< 0.10	< 10	< 10	< 0.50	< 0.50
Carbon Disulfide	NA	< 10	0.25 JB	< 8.4	57	57	< 3.0

MW-09-22S	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
1,4-Dichlorobenzene	NA	< 1.1	2.6	< 2.2	< 2.2	< 2.2	< 5.0	1.0 J
Chlorobenzene	**5.9 J**	2.9 J	< 3.2	< 3.2	< 3.2	< 3.2	< 2.5	3.5
Chloroethane	< 3.5	< 2.5	< 5.0 R	< 5.0	< 5.0	< 5.0	< 2.5	< 0.50

MW-09-23D	Sept-09	Oct-10	Oct-11	Jan-12	May-13	May-14	Mar-17	Sept-17
1,4-Dichlorobenzene	NA	2.9 J	< 2.2	2.4	< 2.2	< 2.2	< 1.0	1.4 J
Chlorobenzene	**13 J**	**14**	< 3.2	< 3.2	< 3.2	< 3.2	2.9	**5.1**
Chloroethane	< 3.5	3.1 J	< 5.0 R	< 5.0	< 5.0	< 5.0	< 0.50	< 0.50

MW-09-21D	Sept-09	Oct-10	Oct-11	May-13	May-14	Mar-17	Sept-17
1,4-Dichlorobenzene	NA	< 5.5	1.5	< 4.4	< 4.4	< 1.0	1.2 J
Chlorobenzene	5.0 J	< 8.0	4.4	< 6.4	< 6.4	< 2.0	**5.8**
Chloroethane	**9.8 J**	< 12	**29**	**41**	< 10	< 0.50	< 0.50

LEGEND:

MW-98-9D	MONITORING WELL
	PROPERTY BOUNDARY LINE
	CREEK LINE
J	QUANTITATIVELY ESTIMATED VALUE
NA	NOT ANALYZED
R	RESULT REJECTED DURING QA/QC REVIEW

NOTE:

ALL RESULTS IN **µg/L**. BOLD INDICATES RESULT EXCEEDS NYSDEC GROUNDWATER STANDARD.

GROUNDWATER VOC SAMPLING RESULTS OPERABLE UNIT No. 2

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSE AVENUE
FREEPORT, NEW YORK

AECOM
CLIFTON, NEW JERSEY

DR. BY ET	SCALE AS SHOWN	DWG. NO. 60481767-06-Fig5	PROJ. NO. 60481767
CK'D. BY MB	DATE DECEMBER, 2017	FIG. NO. 5	

File Name: K:\Cadd\Columbia Cement\60481767(2017Post- ISCO)\60481767-06-FIG5.dwg User:Eva.Tucewicz Dec 15, 2017 - 4:23pm

APPENDIX A
LABORATORY DATA PACKAGES (ON CD)

APPENDIX B
DATA VALIDATION REPORTS

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: SEPTEMBER 18 THROUGH 19, 2017
JOB NO.: 60481767

LAB REPORT NO. 9216688-9216706

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the standard operating procedures for the validation of USEPA Low/Medium Volatile Data Validation, SOP No. HW-33, Revision 3, dated March 2013; and PFA Method USEPA 537 Rev 1.1. The quality assurance review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with New York State Department of Environmental Conservation (NYSDEC) ASP Category B deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. A total of 16 water samples, 2 field blank samples and 1 trip blank sample were collected by AECOM, Clifton, New Jersey, office personnel and submitted to Eurofins Lancaster Laboratories Environmental (NYSDEC Certification No. 10670). Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The groundwater samples were analyzed following USEPA CLP and Standard Methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

* Hold Times
* Blank Contamination
* GC/MS Performance Check (Tuning) Summaries
  System Monitoring Compound (Surrogate) Recoveries
  Internal Standard Area Performance
  Initial and Continuing Calibration Results
  Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
* Target Compound Identification and Quantitation

*All criteria were met for this parameter

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Lab Report No. 9216688-9216706

Sample ID	Lab ID	Date Collected	Test Requested
IP1-7I	9216688	9/18/17	VOA, 1,4-dioxane, PFAs
IP2-8	9216689	9/18/17	VOA, 1,4-dioxane, PFAs
IP2-5	9216690	9/18/17	VOA, 1,4-dioxane
IP1-1I	9216691	9/18/17	VOA, 1,4-dioxane
MW-1D-97	9216692	9/18/17	VOA, 1,4-dioxane, PFAs
MW-1S	9216693	9/18/17	VOA, 1,4-dioxane, PFAs
IP1-1D	9216694	9/18/17	VOA, 1,4-dioxane
IP1-8I	9216695	9/18/17	VOA, 1,4-dioxane
IP1-8D	9216696	9/18/17	VOA, 1,4-dioxane, PFAs
MW-98-8S	9216697	9/18/17	VOA, 1,4-dioxane, PFAs
FB091817	9216698	9/18/17	VOA, 1,4-dioxane, PFAs
IP3-2	9216699	9/19/17	VOA, 1,4-dioxane, PFAs
MW-98-8D	9216700	9/19/17	VOA, 1,4-dioxane, PFAs
MW-00-12D	9216701	9/19/17	VOA, 1,4-dioxane, PFAs
IP1-4D	9216702	9/19/17	VOA, 1,4-dioxane, PFAs
MW-97-4S	9216703	9/19/17	VOA, 1,4-dioxane, PFAs
MW-97-6S	9216704	9/19/17	VOA, 1,4-dioxane, PFAs
FB091917	9216705	9/19/17	VOA, 1,4-dioxane, PFAs
Trip Blank	9216706	9/19/17	VOA, 1,4-dioxane

Legend:

VOA	=	Analyzed following USEPA SW846 8260C.
1,4-dioxane	=	Analyzed following USEPA SW846 8260C SIM.
PFAs	=	Analyzed following USEPA 537 Rev 1.1.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies, for the most part, do not impact data usability.

- The laboratory did not include the internal chain-of-custody (COC) as required under NYSDEC ASP Category B Data Deliverable format requirements.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- All samples were analyzed within the required hold time for all analyses. Additionally, the laboratory cooler receipt temperature associated with the reviewed project samples fell within the 4°C (±2° C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by inadequate decontamination of sampling equipment. Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during each stage of shipment, storage and analysis. The trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during the transportation and sample handling processes.

- No VOA/PFA contaminants were identified in the laboratory method/trip/field blanks associated with the groundwater samples received and reviewed. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification, and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but which are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy.

- The TCL VOA surrogate recoveries fell within control limits for the project samples received and reviewed. No qualifier is required.

- The surrogate recoveries were outside acceptable QC limits in the PFA analyses for all the samples. The laboratory stated that the QC limits are advisory only. However, Method 537 suggests QC limits of 70-130%. The data should be qualified as estimated "J" and "UJ".

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the volatile analysis.

- The volatile internal standard area counts and retention times fell within control limits for the project samples received and reviewed for TCL VOA analyses. No qualifier is required.

- The PFA analyses reported one internal standard area outside acceptable QC limits, bias low, in samples MW-1D-97 and IP3-2. The samples were reanalyzed and similar results were reported. The detected and non-detected PFA results reported for these samples are qualified estimated "J" and "UJ".

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- Due to the high percent difference (%D>20) between the initial and continuing calibration response factors of the VOA compounds listed below, the non-detected results reported for these compounds in samples FB091817, FB091917 and Trip Blank are qualified estimated "UJ". The affected compounds are:

Dichlorodifluoromethane	trichlorofluoromethane
Freon 113	chloroform
1,1,1-trichloroethane	carbon tetrachloride
1,2-dichloroethane	bromodichloromethane
4-methyl-2-pentanone	2-hexanone

- All other TCL VOC target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD), and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

- All PFA target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD), and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes (BS) are blank samples fortified (spiked) with known concentrations of analytes of interest. The blank spike percent recoveries results are used to assess extraction efficiencies, and overall analytical accuracy and precision.

Field duplicate samples are taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. Therefore, results may have more variability than laboratory duplicates, which measure only laboratory performance.

- The lab control sample MS/MSD was outside acceptable QC limits for the VOA compound 1,2-dichloroethane, bias high. Since all 1,2-dichloroethane results were non-detected in the samples, no qualifier is required.

- The other VOA MS/MSD results (recoveries and Relative Percent Difference or RPD) associated with the reviewed project samples fell within control limits, providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

- The PFA MS/MSD results (recoveries and Relative Percent Difference or RPD) associated with the reviewed project samples fell within control limits, providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

Target Compound Identification Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- The GC and GC/MS raw data (quantitation reports, chromatograms and GC/MS mass-spectra) were provided for review. No laboratory calculation errors were noted for the reviewed project samples. No further action is required from the laboratory.

- Samples IP1-7I, IP1-8D and IP1-4D for VOA were analyzed at a further dilution of 1:10 for chloroethane since it exceeded the calibration range. The results on the Form 1 are a hybrid of both dilutions. No qualifier is required.

- Samples MW-1D-97, MW-00-12D and MW-98-8D were analyzed at a 1:5 dilution due to foaming in the samples. No qualifier is required.

- Sample IP3-2 was analyzed at a 1:10 dilution due to foaming in the sample. No qualifier is required.

- The following samples for 1,4-dioxane were analyzed at dilutions due to high concentrations. No qualifier is required. The affected samples are:

  MW-1D-97, IP3-2, MW-98-8D, MW-00-12D, IP1-4D, MW-97-4S (1:5)
  MW-98-8S (1:2)
  MW-97-6S (1:10)

- Samples IP2-8, MW-1D-97 and MW-98-8S were analyzed at a further dilution of 1:10 for PFA compound perfluoro-octanesulfonate since it exceeded the calibration range. The results on the Form 1 are a hybrid of both dilutions. No qualifier is required.

- Sample MW-98-8D was analyzed at a further dilution of 1:10 for PFA compounds perfluoro-octanesulfonate and perfluoro-octanoic acid since they exceeded the calibration range. The results on the Form 1 are a hybrid of both dilutions. No qualifier is required.

Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. Except where noted, the laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP B Data Deliverable Format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: SEPTEMBER 20 THROUGH 22, 2017
JOB NO.: 60481767

LAB REPORT NO. 9225543-9225568

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the standard operating procedures for the validation of USEPA Low/Medium Volatile Data Validation, SOP No. HW-33, Revision 3, dated March 2013; and PFA Method USEPA 537 Rev 1.1. The quality assurance review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with New York State Department of Environmental Conservation (NYSDEC) ASP Category B deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. A total of 22 water samples, 2 field duplicate samples, 1 field blank sample and 1 trip blank sample were collected by AECOM, Clifton, New Jersey, office personnel and submitted to Eurofins Lancaster Laboratories Environmental (NYSDEC Certification No. 10670). Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The groundwater samples were analyzed following USEPA CLP and Standard Methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

* Hold Times
* Blank Contamination
* GC/MS Performance Check (Tuning) Summaries
  System Monitoring Compound (Surrogate) Recoveries
  Internal Standard Area Performance
* Initial and Continuing Calibration Results
  Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
* Target Compound Identification and Quantitation

*All criteria were met for this parameter

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Lab Report No. 9225543-9225568

Sample ID	Lab ID	Date Collected	Test Requested
MW-98-9D	9225543	9/20/17	VOA, 1,4-dioxane, PFAs
MW-97-1S	9225544	9/20/17	VOA, 1,4-dioxane, PFAs
IP4-6	9225545	9/20/17	VOA, 1,4-dioxane, PFAs
OW-3	9225546	9/20/17	VOA, 1,4-dioxane, PFAs
OW-4	9225547	9/20/17	VOA, 1,4-dioxane, PFAs
DUP092017	9225548	9/20/17	VOA, 1,4-dioxane, PFAs
MW-98-10D	9225549	9/20/17	VOA, 1,4-dioxane, PFAs
MW-97-2S	9225550	9/20/17	VOA, 1,4-dioxane, PFAs
MW-05-14S	9225551	9/20/17	VOA
MW-17-27S	9225552	9/21/17	VOA
MW-09-26D	9225553	9/21/17	VOA
MW-09-21D	9225554	9/21/17	VOA, PFAs
MW-09-20S	9225555	9/21/17	VOA
MW-05-15D	9225556	9/21/17	VOA
MW-09-18S	9225557	9/21/17	VOA
MW-09-19D	9225558	9/21/17	VOA, PFAs
DUP092117	9225559	9/21/17	VOA, PFAs
MW-03-13S	9225560	9/21/17	VOA
FB092117	9225561	9/21/17	VOA, 1,4-dioxane, PFAs
MW-09-24S	9225562	9/22/17	VOA
MW-09-25D	9225563	9/22/17	VOA
MW-09-22S	9225564	9/22/17	VOA
MW-09-23D	9225565	9/22/17	VOA
MW-17-28S	9225566	9/22/17	VOA
MW-17-29D	9225567	9/22/17	VOA
Trip Blank	9225568	9/22/17	VOA, 1,4-dioxane

Legend:

VOA	=	Analyzed following USEPA SW846 8260C.
1,4-dioxane	=	Analyzed following USEPA SW846 8260C SIM.
PFAs	=	Analyzed following USEPA 537 Rev 1.1.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies, for the most part, do not impact data usability.

- The laboratory did not include the internal chain-of-custody (COC) as required under NYSDEC ASP Category B Data Deliverable format requirements.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- All samples were analyzed within the required hold time for all analyses. Additionally, the laboratory cooler receipt temperature associated with the reviewed project samples fell within the 4°C (±2° C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by inadequate decontamination of sampling equipment. Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during each stage of shipment, storage and analysis. The trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during the transportation and sample handling processes.

- No VOA/PFA contaminants were identified in the laboratory method/trip/field blanks associated with the groundwater samples received and reviewed. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification, and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but which are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy.

- The TCL VOA surrogate recoveries fell within control limits for the project samples received and reviewed. No qualifier is required.

- The surrogate recoveries were outside acceptable QC limits in the PFA analyses for all the samples. The laboratory stated that the QC limits are advisory only. However, Method 537 suggests QC limits of 70-130%. The data should be qualified as estimated "J" and "UJ".

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the volatile analysis.

- The volatile internal standard area counts and retention times fell within control limits for the project samples received and reviewed for TCL VOA analyses. No qualifier is required.

- The PFA analyses reported one internal standard area outside acceptable QC limits, bias low, in samples MW-97-1S, MW-98-9D, MW-09-19D, DUP092017 and DUP092117. The detected and non-detected PFA results reported for these samples are qualified estimated "J" and "UJ".

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- All TCL VOC target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD), and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

- All PFA target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD), and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes (BS) are blank samples fortified (spiked) with known concentrations of analytes of interest. The blank spike percent recoveries results are used to assess extraction efficiencies, and overall analytical accuracy and precision.

Field duplicate samples are taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. Therefore, results may have more variability than laboratory duplicates, which measure only laboratory performance.

- The VOA MS/MSD results (recoveries and Relative Percent Difference or RPD) associated with the reviewed project samples fell within control limits, providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

- The PFA MS/MSD results (recoveries and Relative Percent Difference or RPD) associated with the reviewed project samples fell within control limits, providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

- Sample DUP092117 was collected as a field sample of MW-09-19D. The results fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with the VOA analyses. No qualifier is required.

- Sample DUP092017 was collected as a field sample of OW-4. The results fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with the 1,4-dioxane analyses. No qualifier is required.

- Sample DUP092017 was collected as a field sample of OW-4. The results fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with the VOA analyses with the exception of 1,3-dichlorobenzene. The detected and non-detected 1,3-dichlorobenzene results reported for these two samples are qualified as estimated "J" and "UJ".

- Sample DUP092117 was collected as a field sample of MW-09-19D. The results fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with the PFA analyses with the exception of perfluorodecanoic acid. The detected perfluorodecanoic acid concentrations reported for these two samples are qualified as estimated "J".

- Sample DUP092017 was collected as a field sample of OW-4. The results fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with the PFA analyses. No qualifier is required.

Target Compound Identification Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- The GC and GC/MS raw data (quantitation reports, chromatograms and GC/MS mass-spectra) were provided for review. No laboratory calculation errors were noted for the reviewed project samples. No further action is required from the laboratory.

- Sample IP4-6 for VOA was analyzed at a further dilution of 1:10 for chloroethane since it exceeded the calibration range. The results on the Form 1 are a hybrid of both dilutions. No qualifier is required.

- Sample MW-17-27S for VOA was analyzed at a 1:5 dilution due to foaming in the sample. No qualifier is required.

- Sample MW-98-9D was analyzed at a 1:10 dilution for 1,4-dioxane due to high concentration in the sample. No qualifier is required.

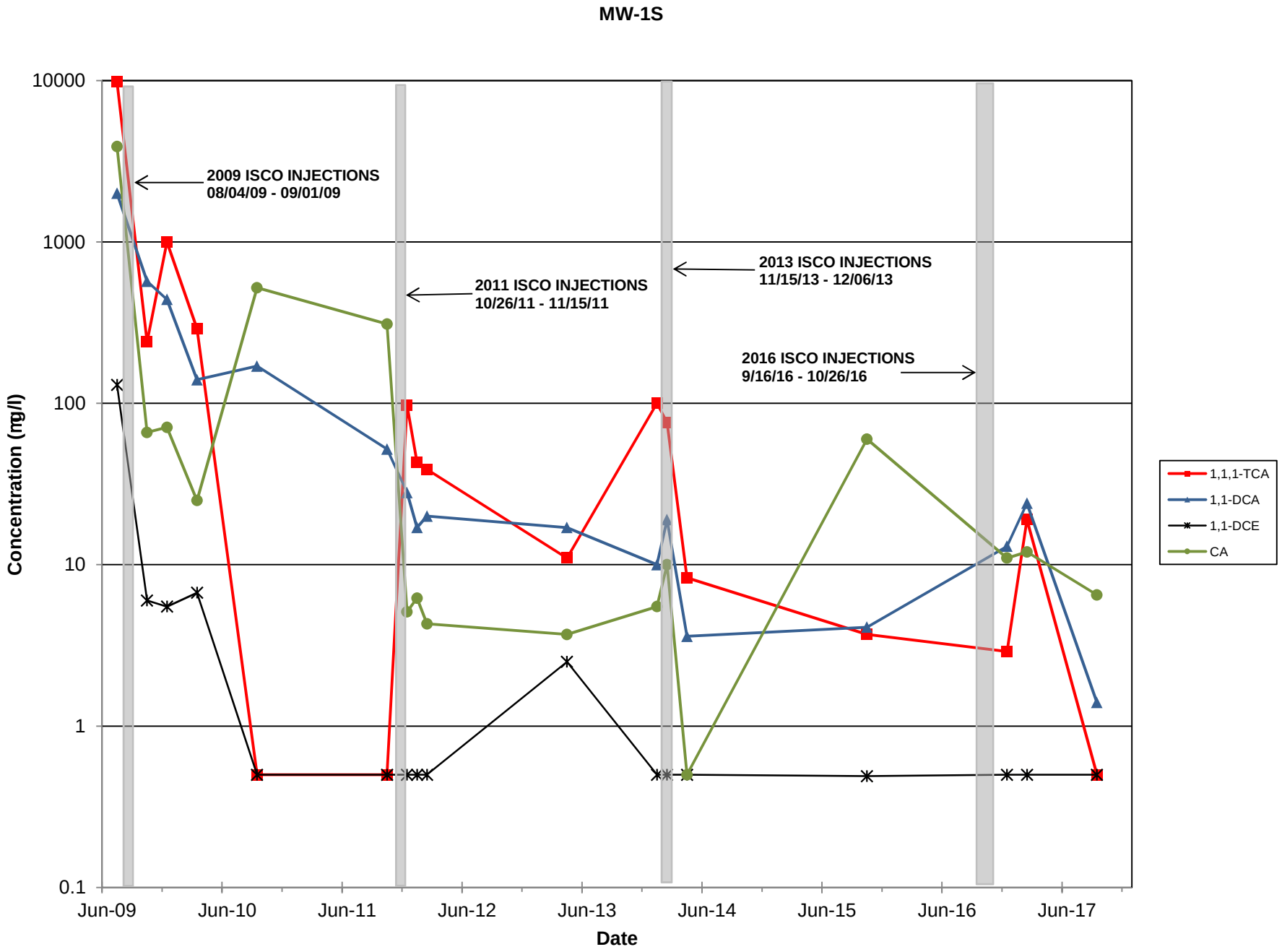
Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

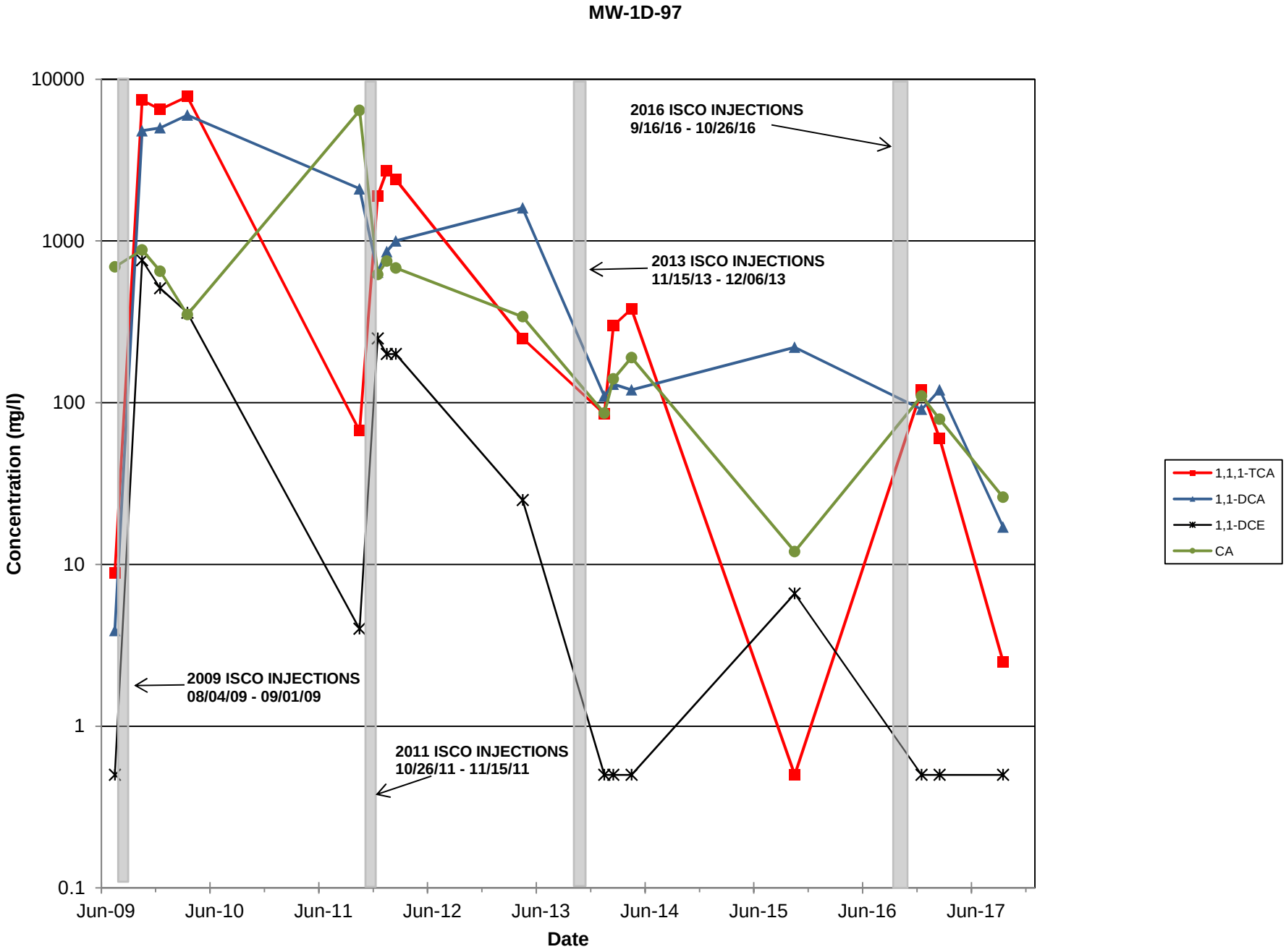
4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. Except where noted, the laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP B Data Deliverable Format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

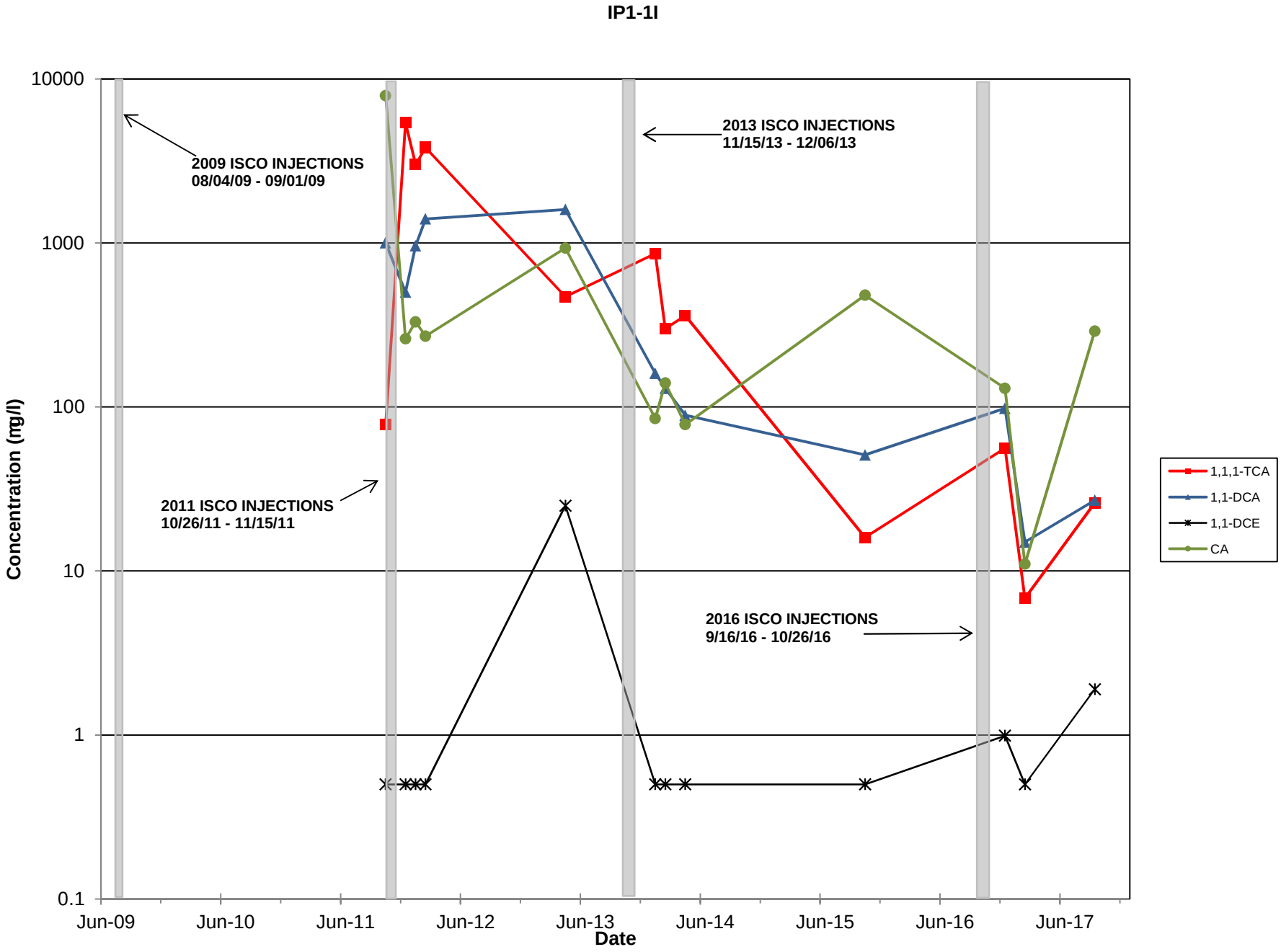
APPENDIX C
GROUNDWATER VOC CONCENTRATION TREND GRAPHS



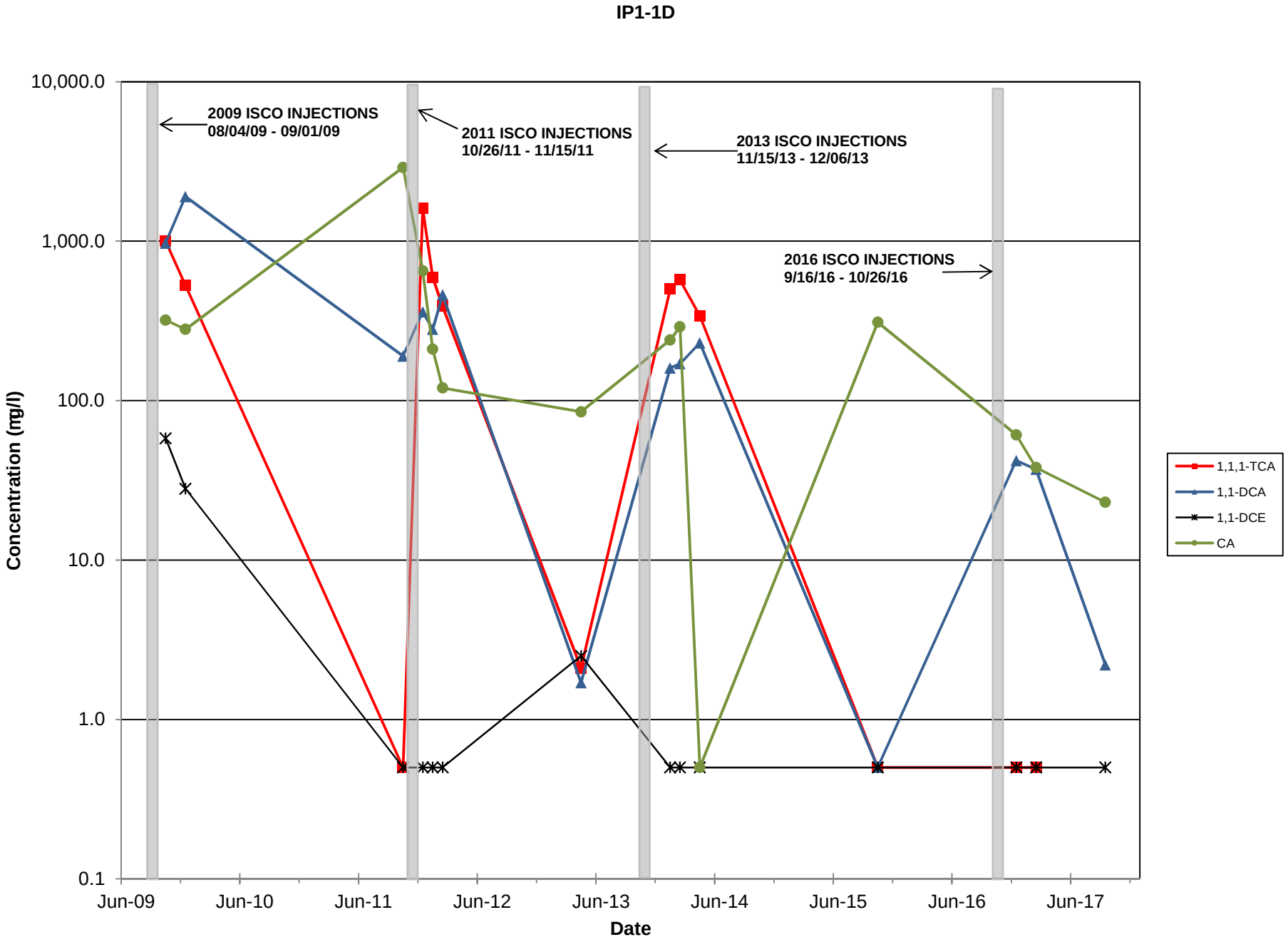
VOC CONCENTRATIONS IN WELL MW-1S (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



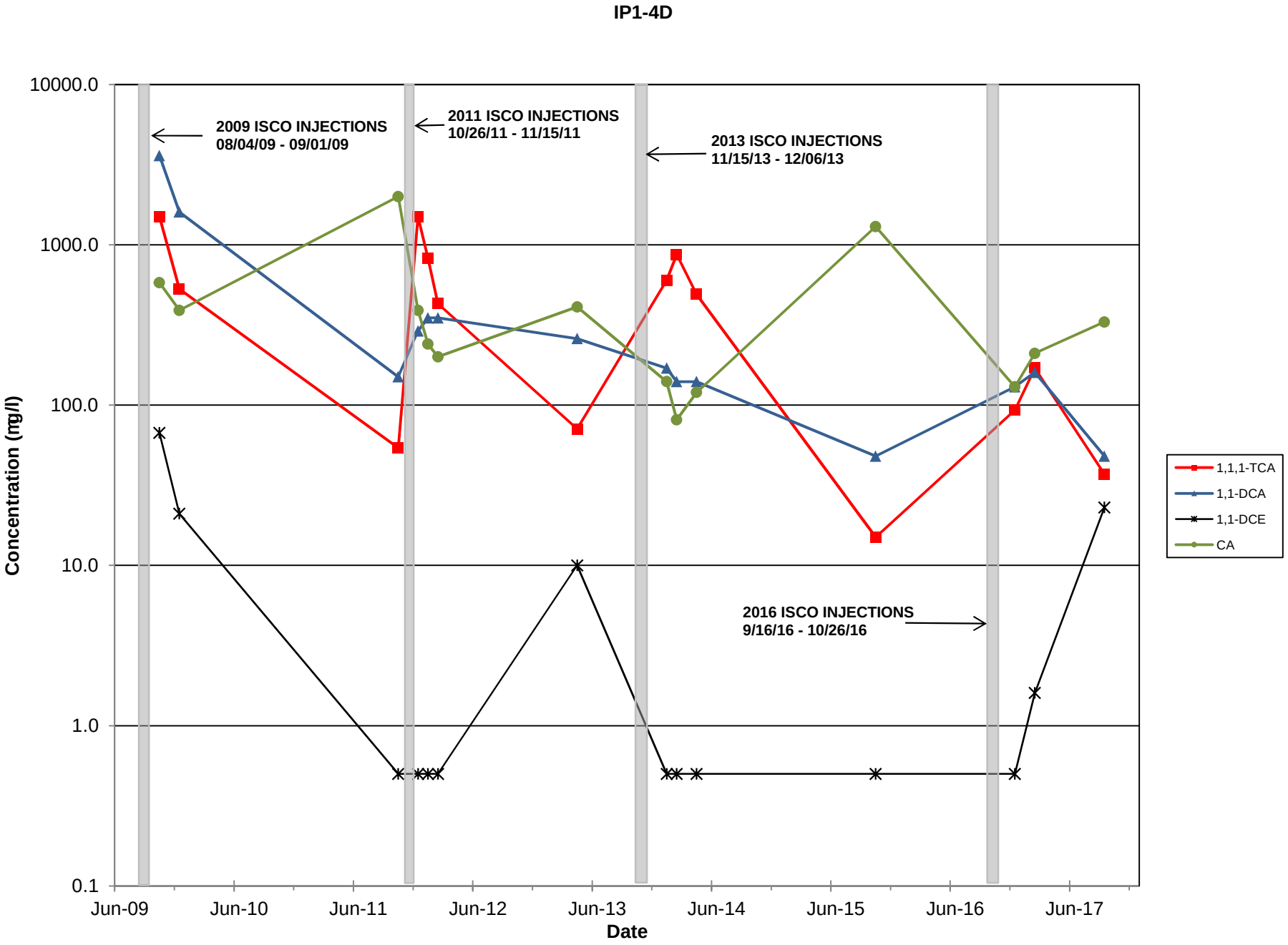
VOC CONCENTRATIONS IN WELL MW-1D-97 (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



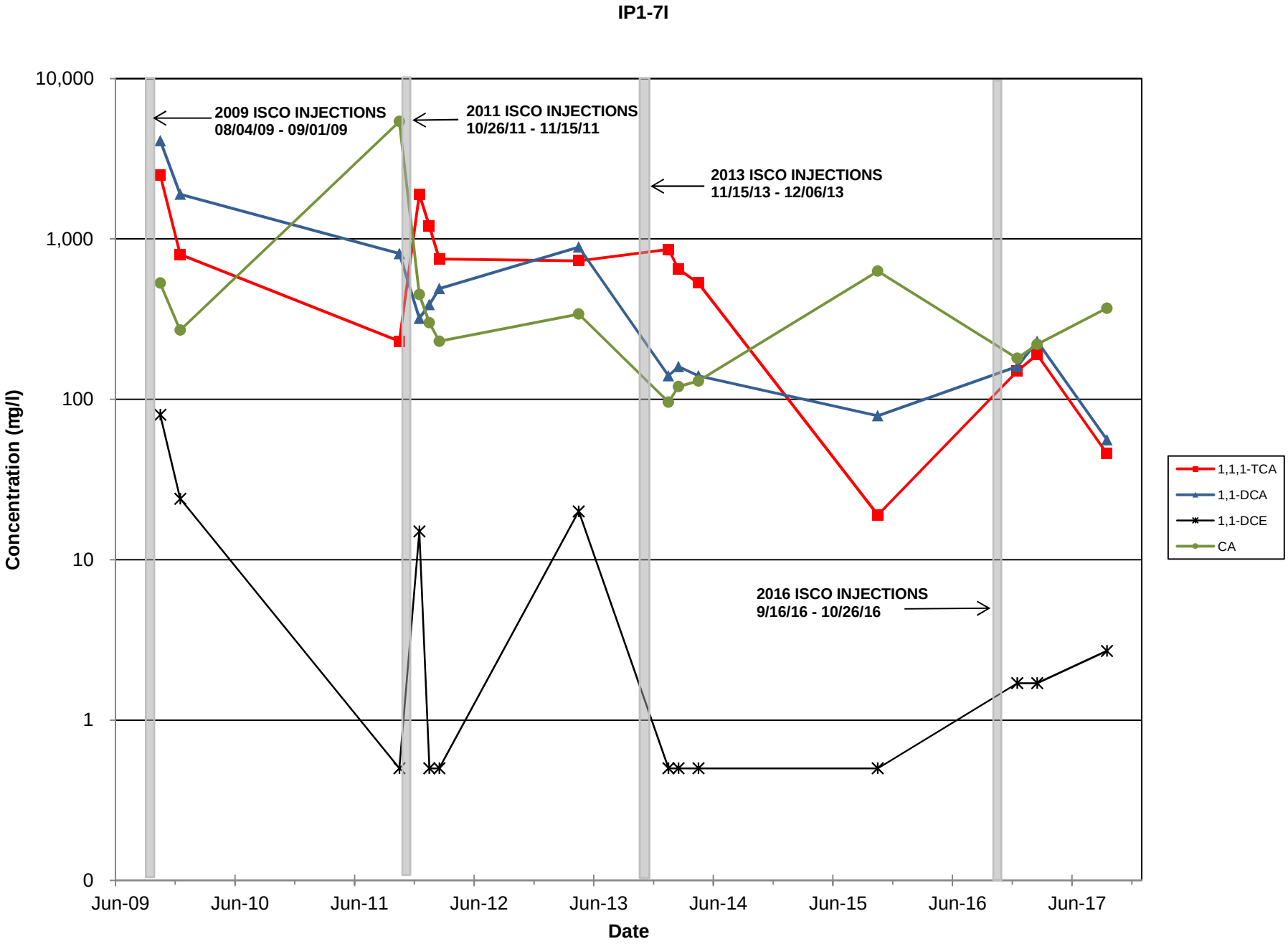
VOC CONCENTRATIONS IN WELL IP1-1I (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



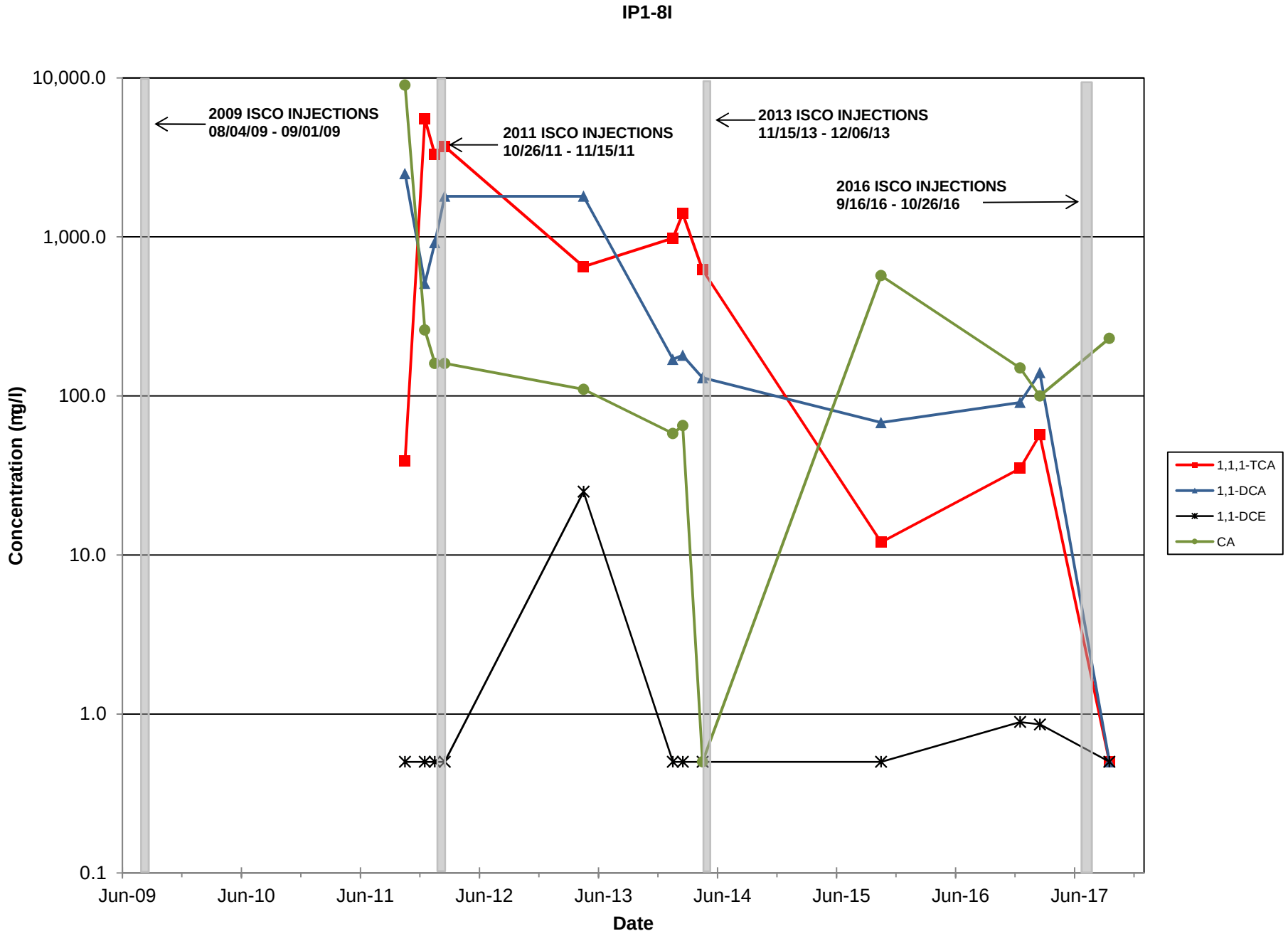
VOC CONCENTRATIONS IN WELL IP1-1D (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



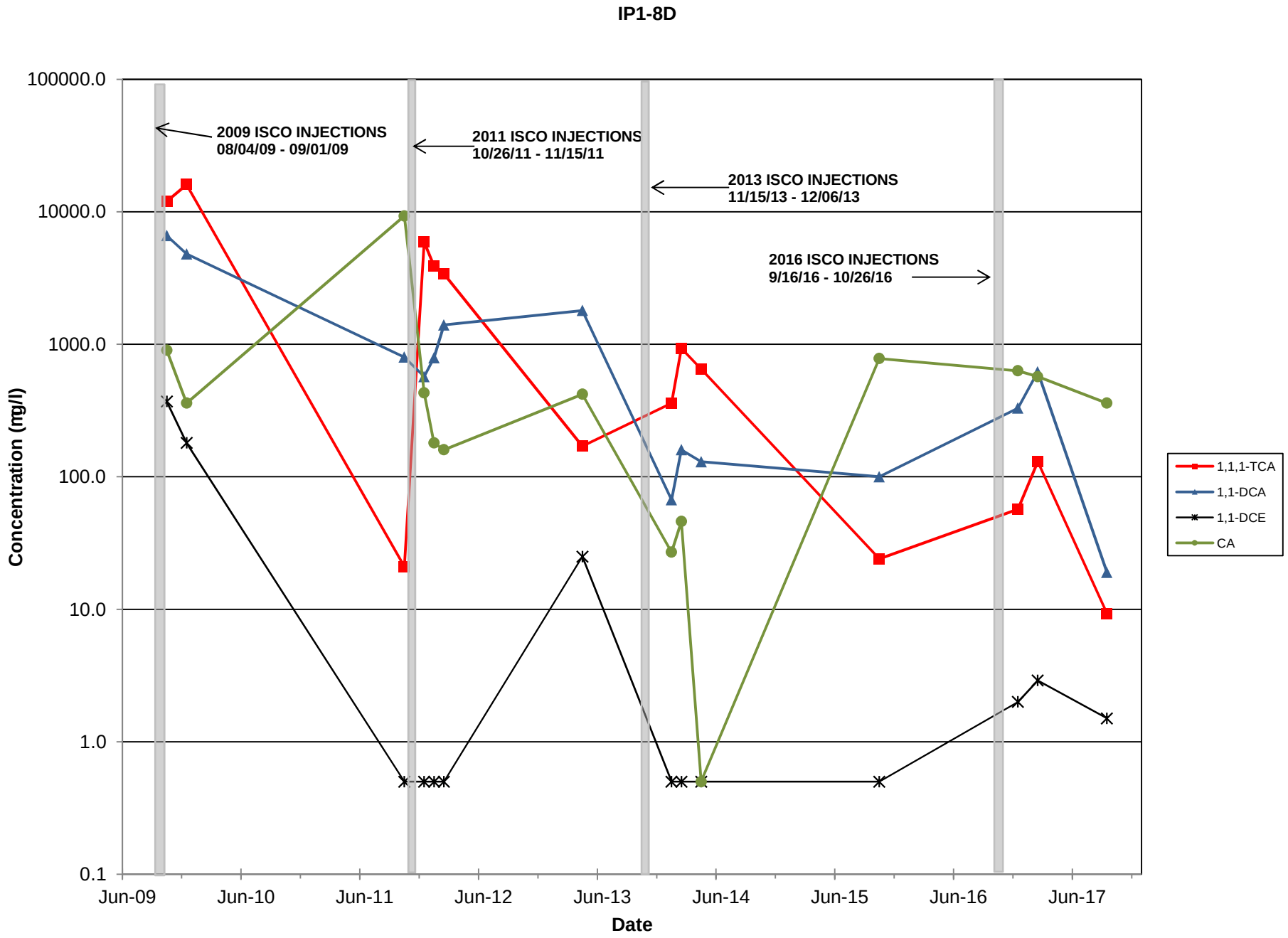
VOC CONCENTRATIONS IN WELL IP1-4D (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



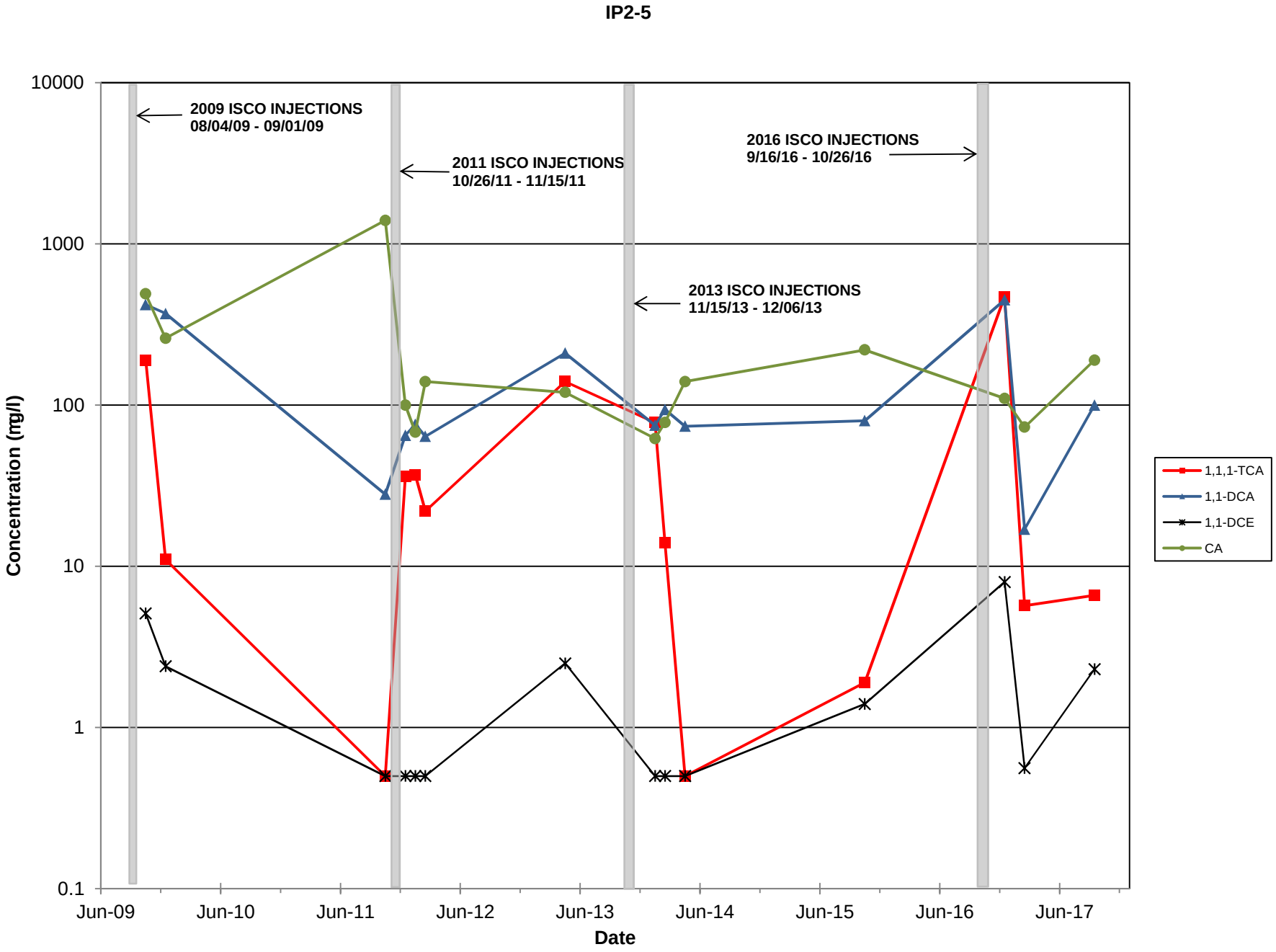
VOC CONCENTRATIONS IN WELL IP1-7I (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



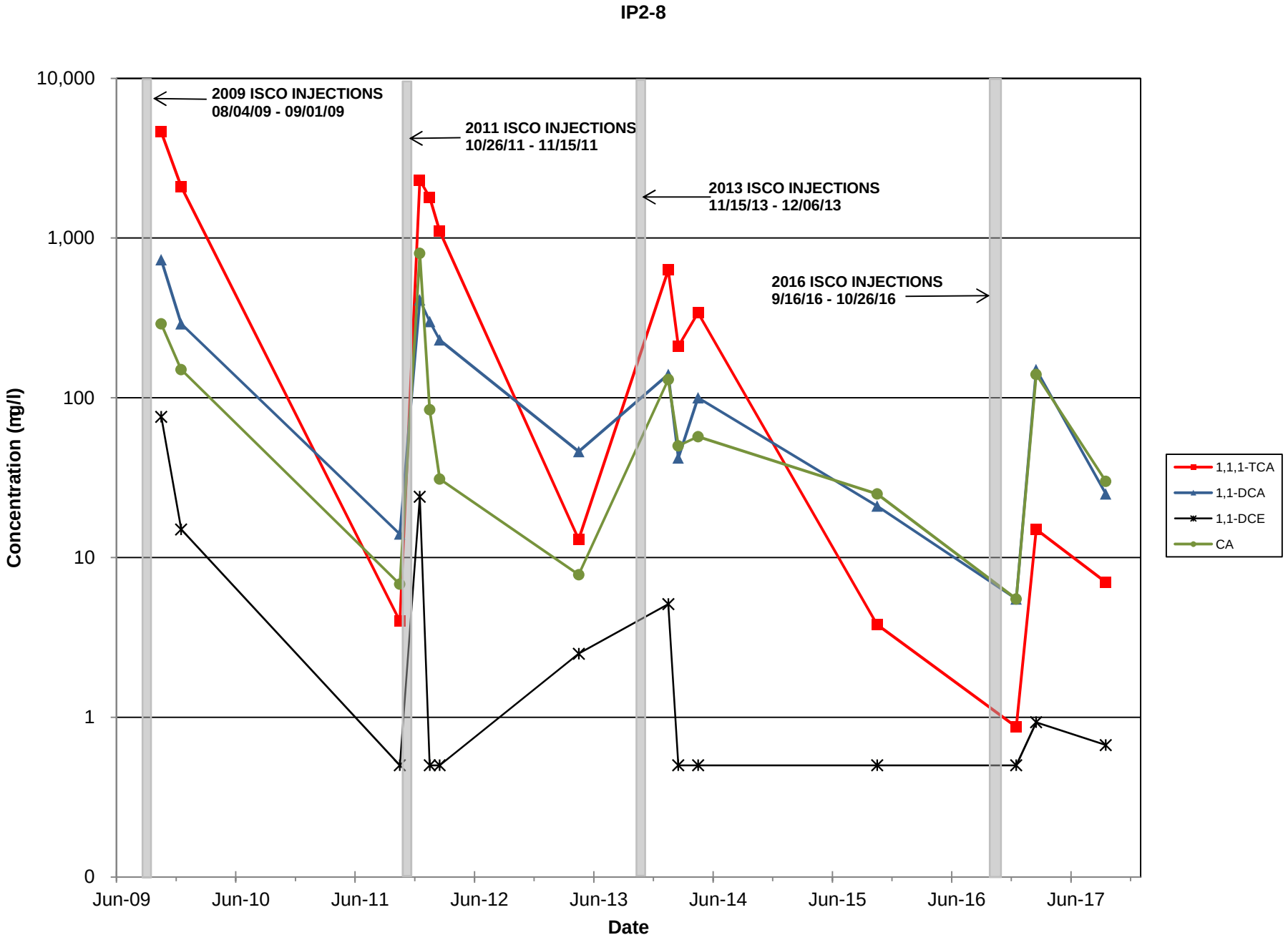
VOC CONCENTRATIONS IN WELL IP1-8I (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



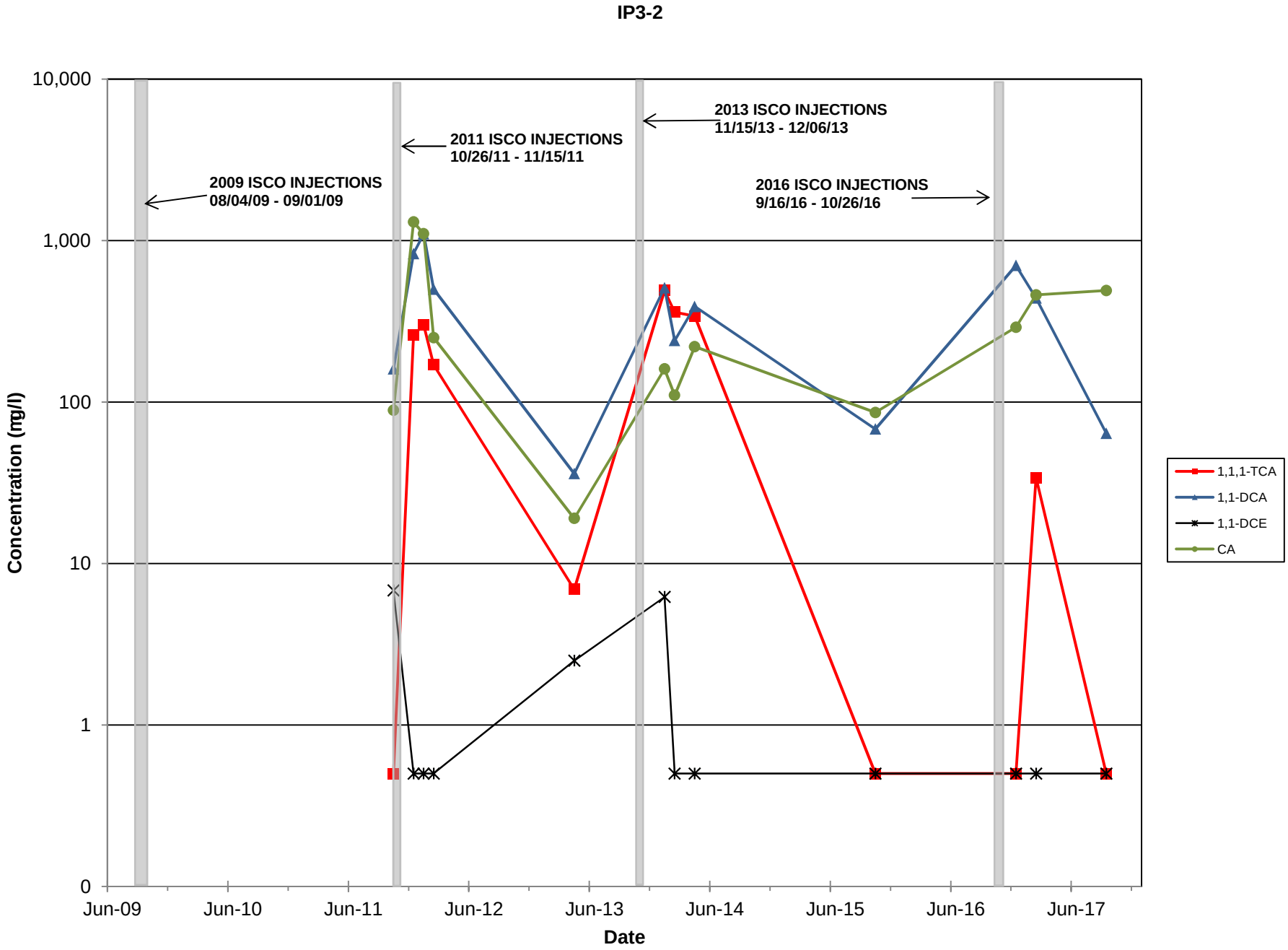
VOC CONCENTRATIONS IN WELL IP1-8D (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



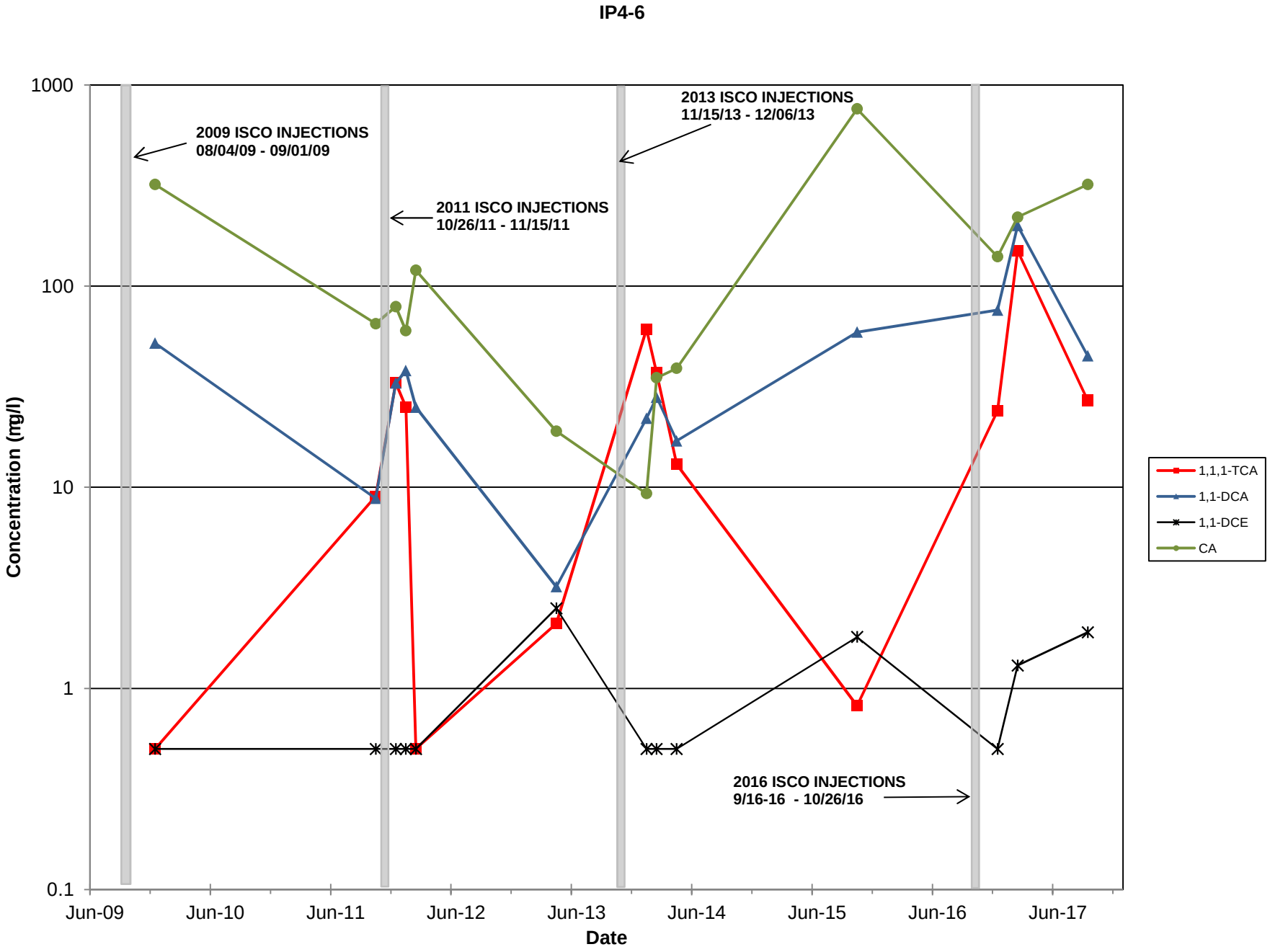
VOC CONCENTRATIONS IN WELL IP2-5 (LOGSCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



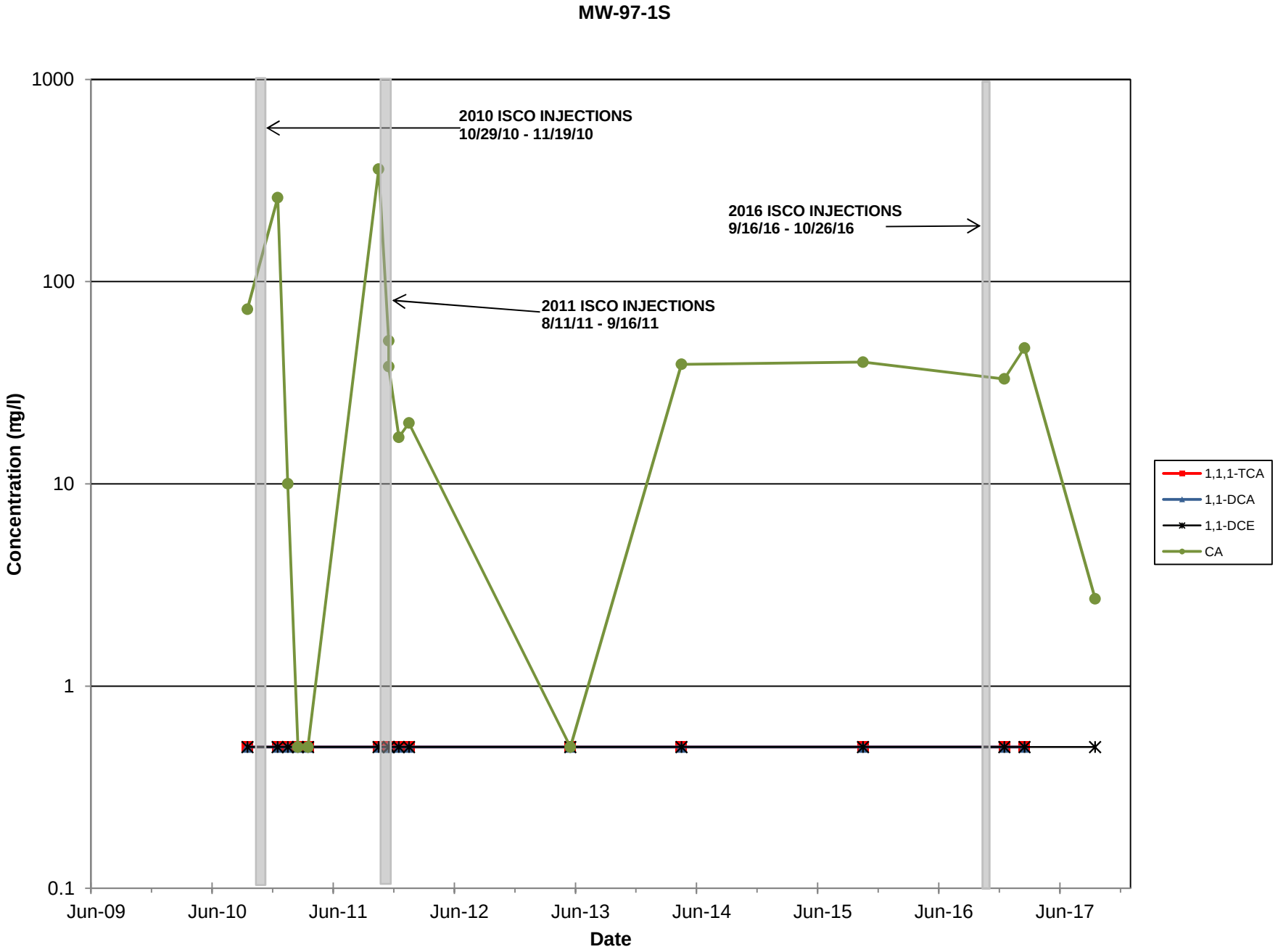
VOC CONCENTRATIONS IN WELL IP2-8 (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



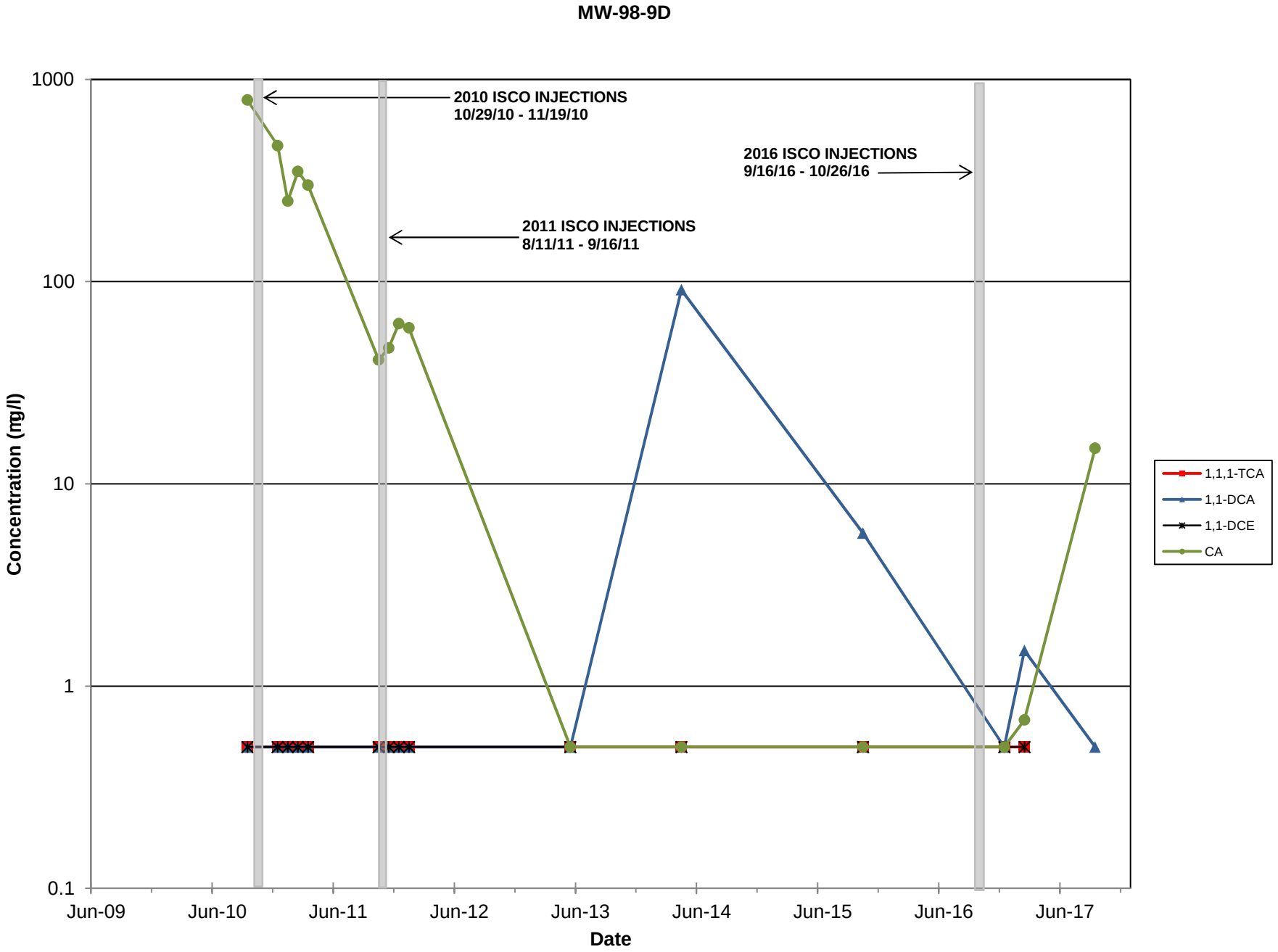
VOC CONCENTRATIONS IN WELL IP3-2 (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



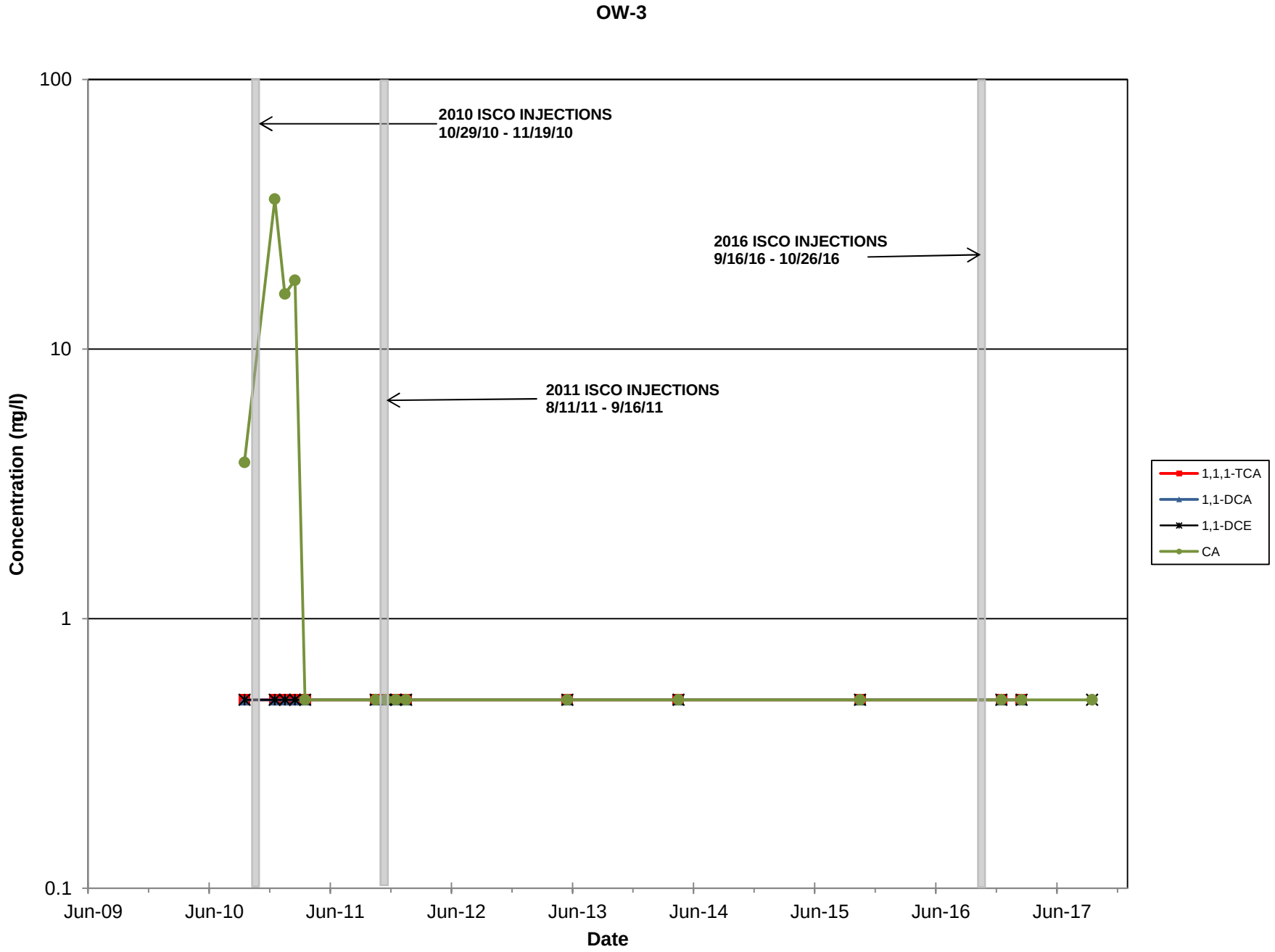
VOC CONCENTRATIONS IN WELL IP4-6 (LOG SCALE)
FORMER COLUMBIA COMPANTY FACILITY
FREEPORT, NEW YORK



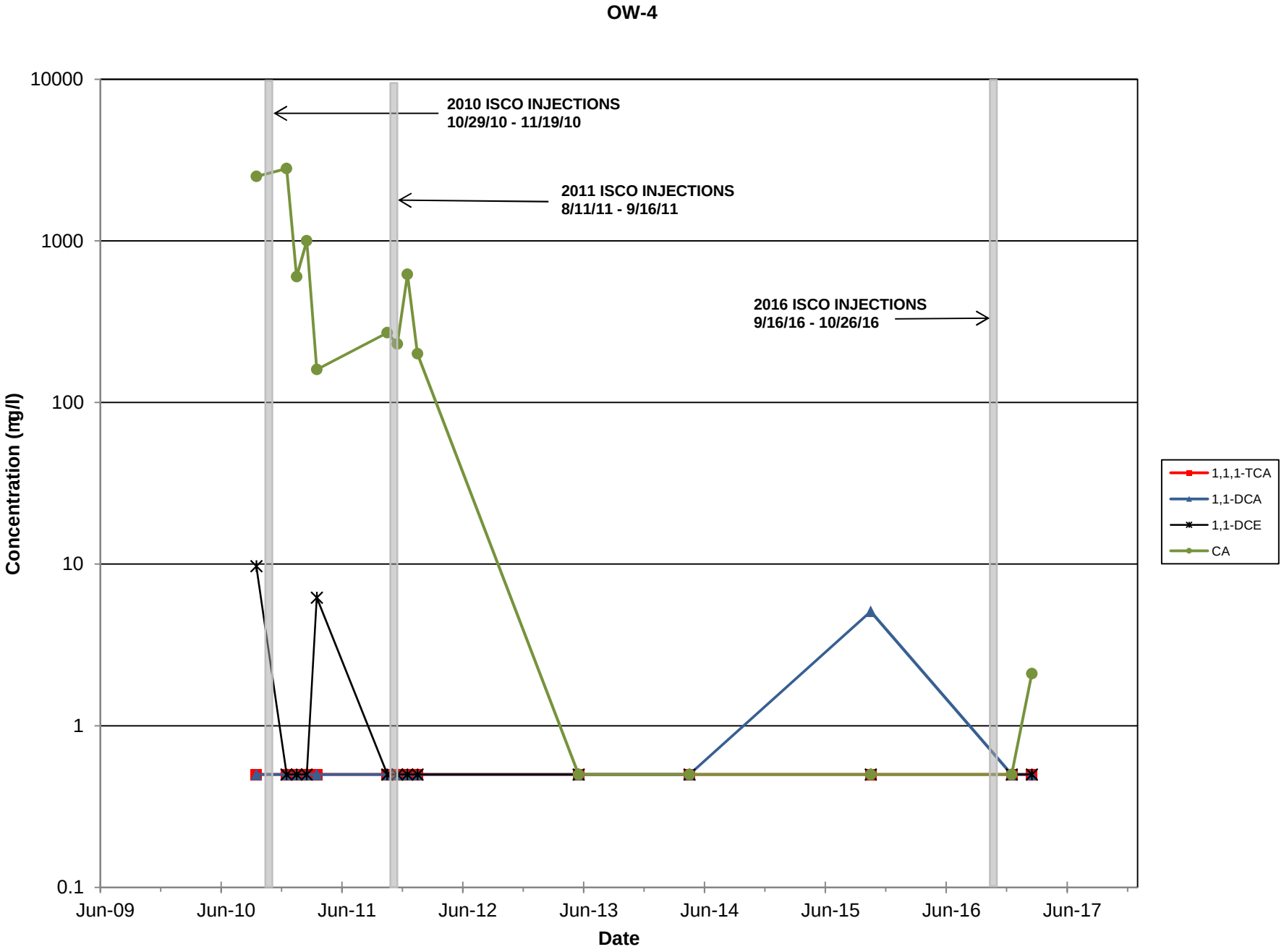
VOC CONCENTRATIONS IN WELL MW-97-1S (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



VOC CONCENTRATIONS IN WELL MW-98-9D (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



VOC CONCENTRATIONS IN WELL OW-3 (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK



VOC CONCENTRATIONS IN WELL OW-4 (LOG SCALE)
FORMER COLUMBIA COMPANY FACILITY
FREEPORT, NEW YORK

APPENDIX D
GROUNDWATER PURGE LOGS

9/18

Project No.:		Site: C-C	Columbia Cement Company	Well No:	IP-7I	Date: 9/18	
Well Depth:		Screen length:		Well Dia.:	1 inch	Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.22		
Measuring Point:		Sampling Personnel:	JP/JS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
9:00	7.32	0.498		4.31	19.42	183	5.22
9:05	6.55	0.550		3.5	19.09	-36.5	
9:10	6.61	0.546		0.19	19.09	-70.5	
9:15	6.68	0.545		0.41	19.15	-94.1	
9:20	6.70	0.550		0.43	19.15	-99.3	
9:25	6.69	0.550		0.40	19.20	-102	

Sample Time: 9:30

Purge Volume:

9/18

IP2-8

Project No.:		Site:	Columbia Cement Company	Well No:	IP2-8	Date: 9/18	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:			
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
930	6.77	1.134		0.38	21.00	140	
9:35	6.86	1.220		0.04	20.72	-63.8	
9:40	6.88	1.221		0.2	20.73	-76.8	
9:45	6.89	1.221		0.1	20.73	-88.5	
9:50	6.89	1.220		0.1	20.73	-88.1	
955	6.90	1.226		0.1	20.72	-88.7	

Sample Time: 1000

Purge Volume:

9/18

IP 2-5

Project No.:		Site: C.C	Columbia Cement Company	Well No:	IP2-5	Date:	9/18
Well Depth:		Screen length:		Well Dia.:	1	Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.25		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1000	7.72	0.004		2.10	24.22	190.0	5.25
1005	7.73	0.004		2.06	24.48	193.2	
1010	7.74	0.004		2.03	24.66	198.3	
1015	7.74	0.004		2.01	24.82	198.5	
1020	7.75	0.004		2.00	24.84	200.1	
1025	7.76	0.004		1.98	24.88	2.00	

Sample Time: 1030

Purge Volume:

Only VOA's & 1,4 Dioxane

9/18

IP1-1I

Project No.:		Site: C.C	Columbia Cement Company	Well No:	IP1-1I	Date:	9/18
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.02		
Measuring Point:		Sampling Personnel:	J.P/SS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1030	7.48	0.552		0.08	20.87	51.9	5.02
1035	7.27	0.546		0.04	20.65	17.8	
1040	6.98	0.515		0.06	20.47	+52.3	
1045	6.90	0.514		0.08	20.40	-60.4	
1050	6.86	0.510		0.06	20.38	-66.4	
1055	6.87	0.510		0.05	20.36	-71.5	

Sample Time: 1100

Purge Volume:

9/18

MW-1D-9

Project No.:		Site: C.C	Columbia Cement Company	Well No:	MW-1D	Date: 9/7	
Well Depth:		Screen length:		Well Dia.:	2	Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.19		
Measuring Point:		Sampling Personnel:	JP/SS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1100	8.32	1.373		0.12	18.24	139	5.19
1105	8.92	1.897		0.03	17.06	25.9	
1110	9.62	2.625		0.02	17.01	-7.8	
1115	9.84	3.987		0.00	16.96	-30.8	
1120	10.16	4.588		0.00	16.84	-89.2	
1125	10.23	4.581		0.00	16.80	-99.1	
1130	10.24	4.591		0.00	16.81	-108.7	

Sample Time: 1130

Purge Volume:

Yellowish - Brown

(Effluent)

MW-15

9/18

Project No.:		Site: C.C	Columbia Cement Company	Well No:	MW-15	Date: 9/18	
Well Depth:		Screen length:		Well Dia.:	4	Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:			
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1130	7.51	1.336	-	0.31	19.57	-79.3	5.32
1135	7.36	1.324		0.44	19.34	-96.8	
1140	7.05	1.233		0.92	19.06	-119.3	
1145	7.01	1.211		0.96	19.09	-129.5	
1150	7.00	1.186		0.93	19.10	-119.0	
1155	7.00	1.181		0.93	19.08	-120.4	
1200	7.01	1.180		0.92	19.07	-121.3	

Sample Time: 1200

Purge Volume:

Blank Study material

9/18

IP1-1D

Project No.:		Site:	Columbia Cement Company	Well No:		Date:	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5-30		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1200	7.27	0.674		0.12	19.89	9	5-30
1205	7.27	0.687		0.08	18.82	29.6	
1210	7.29	0.653		0.06	18.55	-44.5	
1215	7.29	0.627		0.03	18.43	-74.7	
1220	7.28	0.589		0.00	18.37	-99.5	
1225	7.28	0.577		0.00	18.37	-105.2	
1230	7.27	0.574		0.00	18.38	-109.2	

Sample Time: 1238

Purge Volume:

IP1-8

Project No.:		Site: C.C	Columbia Cement Company	Well No:		Date:	9/18
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.25		
Measuring Point:		Sampling Personnel:	J.P/SS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1230	6.90	0.249		0.10	20.38	77.4	5.25
1235	6.73	0.309		0.05	20.01	14.0	
1240	6.66	0.334		0.03	19.76	-23.3	
1245	6.65	0.338		0.04	19.66	< 31.2	
1250	6.65	0.337		0.00	19.69	-44.0	
1255	6.65	0.336		0.00	19.67	-53.1	
~~1300~~							

Sample Time: 1300

Purge Volume:

9/18

IP1-8D

Project No.:		Site: 9/18	Columbia Cement Company	Well No:		Date:	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.30		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1300	6.65	0.342		0.00	19.66	-60.5	5.30
1305	6.66	0.360		0.00	19.53	-59.1	
1310	6.66	0.377		0.00	19.06	-67.3	
1315	6.66	0.409		0.00	18.86	-73.9	
1320	6.68	0.432		0.00	18.63	-91.7	
1325	6.69	0.430		0.00	18.60	-92.2	
1330	6.68	0.433		0.00	18.82	-93.3	

Sample Time: 1300 1330

Purge Volume:

C

9/18

MW-98-85

Project No.:		Site:	Columbia Cement Company	Well No:	MW-98-85	Date: 9/18	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	6.32		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1400	6.63	1.632		0.00	15.77	50.6	6.32
1405	6.67	1.579		0.00	15.72	-14.2	
1410	6.73	1.516		0.00	15.65	-40.5	
1415	6.73	1.524		0.00	15.65	-45.2	
1420	6.74	1.526		0.00	15.65	-53.2	
1425	6.73	1.525		0.00	15.64	-55.5	
1430	6.74	1.524		0.00	15.64	-56.4	

Sample Time: 1430

Purge Volume:

IP3-2 9/19 Rain

Project No.:		Site: CC	Columbia Cement Company	Well No:	IP3-2	Date:	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	6.30		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
730	7.12	4.243		0.00	17.8	-109.9	6.30
735	7.04	2.727		0.89	17.98	-214	
740	6.93	2.448		0.00	17.97	-219.2	
745	6.90	2.403		0.00	18.06	-224.2	
750	6.89	2.376		0.00	18.10	-225.7	
755	6.88	2.372		0.00	18.11	-228.3	
800	6.88	2.370		0.00	18.11	-230.9	

Sample Time: 8:00

Purge Volume:

Dark Brown water
Strong odor

9/19 Rain

MW-98-8D

Project No.:		Site:	Columbia Cement Company	Well No:	MW-98-8D	Date: 9/19	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	6.18		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
800	5.44	8.00)		0.31	15.65	68.1	6.18
805	5.07	6.656		0.83	15.59	8.8	
810	5.36	4.955		0.34	15.60	-4.7	
815	6.07	3.879		0.30	15.54	-58.2	
820	6.17	3.784		0.26	15.55	-69.5	
825	6.15	3.784		0.25	15.57	-75.8	

Sample Time: 830

Purge Volume:

IPI-4D

Project No.:		Site:	Columbia Cement Company	Well No:	IP1-4D	Date:	9/19
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	4.91		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
945	6.79	0.560		0.0	19.61	49.5	4.91
950	6.75	0.540		0.0	19.60	8.0	
955	6.69	0.533		0.07	19.55	-31.8	
1000	6.68	0.534		0.00	19.54	-89.8	
1005	6.69	0.537		0.00	19.55	-98.7	
1010	6.70	0.537		0.00	19.54	-103.5	
1015	6.71	0.538		0.00	19.53	-110.8	

Sample Time: 1015

Purge Volume:

9/19

MW-00-12D

Project No.:		Site:	Columbia Cement Company	Well No:	MW-00-12D	Date:	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.94		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1045	4.33	23.11		0.00	16.55	101.7	5.94
1050	4.20	22.51		0.00	16.31	95.2	
1055	6.03	5.422		0.00	15.97	-78.2	
1100	6.05	5.415		0.00	15.82	-86.9	
1105	6.09	5.410		0.00	15.83	-96.6	
1110	6.09	5.410		0.00	15.82	-99.6	
1115	6.10	5.413		0.00	15.81	-100.4	

Sample Time: 11:15

Purge Volume:

MW-92-4

Project No.:		Site:	Columbia Cement Company	Well No:		Date: 9/14	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	6.20		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C) 17.72	ORP (mV)	Water Level
1200	6.59	1.449		0.00	[illegible]	-75.6	6.20
1205	6.60	1.446		0.00	17.53	-92.1	
1210	6.69	1.451		0.00	18.40	-138.2	
1215	6.72	1.432		0.00	16.34	-150.3	
1220	6.74	1.433		0.00	16.32	-154.2	
1225	6.75	1.430		0.00	16.33	-155.1	
1230	6.73	1.428		0.00	16.34	-160.8	

Sample Time: 1230

Purge Volume:

9/19

MW-97-65

Project No.:		Site: C-C	Columbia Cement Company	Well No:	MW-97-65	Date: 9/19	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	6.28		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1330	6.47	1.832		0.0	16.58	8.7	6.28
1335	6.43	1.863		0.0	16.32	-9.2	
1340	6.39	1.836		0.0	16.20	-36.0	
1345	6.40	1.832		0.0	16.18	-39.3	
1350	6.38	1.811		0.0	16.19	-44.8	
1355	6.35	1.810		0.0	16.20	-45.7	
1400	6.34	1.809		0.0	16.18	-50.8	

Sample Time: 1400

Purge Volume:

MW-98-9D

9/20

Project No.:		Site:	Columbia Cement Company	Well No:	MW-98-9D	Date: 9/20	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	7.00		
Measuring Point:		Sampling Personnel:	JP/SS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
730	5.20	8.721		0.0	11.89	107.1	7.00
735	5.18	7.855		0.0	16.73	84.2	
740	5.617	5.563		0.0	16.52	6.3	
745	6.09	5.258		0.0	16.51	-12.8	
750	6.19	5.141		0.0	16.49	-19.3	
755	6.20	5.140		0.0	16.45	-20.8	
800	6.21	5.133		0.0	17.43	32.3	

Sample Time: 800

Purge Volume:

9/20

MW-97-15

Project No.:		Site:	Columbia Cement Company	Well No:	MW-97-15	Date: 9/20	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.07		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
830	6.46	1.948		0.0	18.06	-52	5.07
835	6.62	0.846		0.0	17.62	-52.1	
840	6.68	0.712		0.0	17.51	-48.2	
845	6.70	0.714		0.0	17.49	-47.3	
850	6.71	0.731		0.0	17.46	-44.9	
855	6.73	0.737		0.0	17.42	-40.1	
900	6.73	0.736		0.0	17.40	-37.2	

Sample Time: 900

Purge Volume:

9/20

IP4-6

Project No.:		Site:	Columbia Cement Company	Well No:	IP4-6	Date:	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.3		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
900	7.49	0.662		0.89	20.99	32.5	5.3
905	7.19	0.646		0.55	20.62	25.9	
910	6.52	0.639		0.45	20.43	42.3	
915	6.50	0.644		0.37	20.35	40.5	
920	6.59	0.659		0.31	20.27	32.1	
925	6.60	0.655		0.31	20.29	32.0	
930	6.61	0.657		0.30	20.28	30.1	

Sample Time: 930

Purge Volume:

9/20

OW-3

Project No.:		Site:	Columbia Cement Company	Well No:	OW-3	Date: 9/20	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	2.6		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
945	6.78	5.399		2.65	19.04	77.8	2.6
950	6.78	5.471		1.20	19.27	52.3	
955	6.79	5.409		0.82	19.09	19.1	
1000	6.80	5.400		0.80	19.06	11.2	
1005	6.80	5.394		0.76	19.08	3.0	
1010	6.80	5.393		0.74	19.06	1.4	

Sample Time: 1030

Purge Volume:

1/20

OW-4

Project No.:		Site:	Columbia Cement Company	Well No:	OW-4	Date: 9/20	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	2.5		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1100	6.82	5.244		4.36	19.53	9.8	2.5
1105	6.80	4.944		1.76	18.47	13.5	
1110	6.63	4.142		0.95	18.37	18.5	
1115	6.54	3.662		0.78	18.10	16.9	
1120	6.50	3.601		0.79	18.11	16.4	
1125	6.50	3.598		0.80	18.08	17.3	
1130	6.49	3.596		0.80	18.08	20.1	

Sample Time: 1130

Purge Volume:

Dup 092017 @ 1200

9/20

@ MW-

Project No.:		**Site:**	Columbia Cement Company	**Well No:**	MW-99-10D	**Date:** 9/20	
Well Depth:		**Screen length:**		**Well Dia.:**		**Casing Type:**	PVC
Sampling Device:	Geopump	**Tubing Type:**	Poly	**Water Level:**	6.18		
Measuring Point:		**Sampling Personnel:**		**Pumping rate:**	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1230	6.94	2.068		2.57	18.77	73.7	6.18
1235	6.87	2.063		1.72	18.47	74.0	
1240	6.67	2.021		0.69	18.09	72.0	
1245	6.64	2.018		0.64	18.07	71.8	
1250	6.64	2.016		0.62	18.05	70.4	
1255	6.63	2.015		0.61	18.05	71.0	
1300	6.62	2.013		0.59	18.04	69.8	

Sample Time: 1300

Purge Volume:

MW-97-28

Project No.:		Site: CC	Columbia Cement Company	Well No:	MW-97-28	Date: 9/20	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.83		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1330	7.30	2.010		0.72	20.14	29.3	5.83
1335	6.63	2.000		0.63	18.77	20.4	
1340	6.62	1.922		0.48	18.95	19.0	
1345	6.64	1.873		0.44	18.97	11.5	
1350	6.63	1.840		0.43	18.98	10.8	
1355	6.62	1.841		0.41	18.98	10.1	
1400	6.62	1.838		0.44	18.99	14.8	

Sample Time: 1400

Purge Volume:

MW-05-145

9/20

Project No.:		**Site:**	Columbia Cement Company	**Well No:**	MW-05-145	**Date:** [illegible]	
Well Depth:		**Screen length:**		**Well Dia.:**		**Casing Type:**	
Sampling Device:	Geopump	**Tubing Type:**	Poly	**Water Level:**	4.10		
Measuring Point:		**Sampling Personnel:**		**Pumping rate:**	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1430	6.39	4.172		1.12	20.13	-75.5	4.10
1435	6.37	4.189		1.08	20.12	-19.7	
1440	6.35	4.072		1.18	20.24	-21.5	
1445	6.32	3.985		1.09	20.30	-25.2	
1450	6.31	4.000		1.08	20.29	-26.1	
1455	6.32	4.002		1.10	20.30	-26.6	

Sample Time: [illegible] 1500

Purge Volume:

9/21

MW-17-275

Project No.:		Site:	Columbia Cement Company	Well No:	MW-17-275	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	4.94		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
730	6.45	1.208		0.42	18.59	-88	4.94
735	6.43	1.255		0.27	18.46	-104.8	
740	6.33	1.187		0.18	18.48	-114.8	
745	6.32	1.109		0.17	18.47	-119.8	
750	6.29	1.054		0.18	18.47	-125.9	
755	6.26	0.999		0.17	18.45	-132.8	
800	8.27	0.996		0.16	18.44	-135.1	

Sample Time: 8:00

Purge Volume:

Strong odor

Black

9/21

MW-09-26

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-26	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.03		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
830	6.40	2.644		0.67	18.23	-73.1	5.03
835	6.42	2.654		0.65	18.12	-54.6	
840	6.43	2.622		0.67	18.08	-45.7	
845	6.43	2.612		0.65	18.06	-40.2	
850	6.42	2.604		0.62	18.08	-38.1	
855	6.42	2.600		0.60	18.12	-34.5	
~~900~~	—	—					

Sample Time: 900

Purge Volume:

MW-09-21D

9/21

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-21D	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.65		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1000	6.61	2.887		2.54	19.71	-72.8	5.65
1005	6.55	2.892		2.17	19.28	-71.3	
1010	6.54	2.320		0.69	19.13	-69.8	
1015	6.55	2.093		0.61	19.11	-67.1	
1020	6.55	2.047		0.60	19.09	-66.5	
1025	6.54	2.045		0.60	19.10	-65.1	

Sample Time: 1030

Purge Volume:

9/21

MW-09-20S

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-20S	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.7		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1100	6.63	2.029		1.24	19.92	-82.6	5.7
1105	6.60	2.018		0.84	19.82	-91.7	
1110	6.57	1.970		0.46	19.80	-102.9	
1115	6.53	1.914		0.39	19.74	-126.1	
1120	6.62	1.882		0.31	19.75	-136.2	
1125	6.681	1.863		0.29	19.74	-135.7	
1130	6.63	1.883		0.28	19.73	-140.1	

Sample Time: 1130

Purge Volume:

MW-05-15D

9/21

Project No.:		Site:	Columbia Cement Company	Well No:	MW-05-15D	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:			
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1130	3.92	7.567		1.81	19.07	138.7	4.4
1135	3.79	7.507		1.29	18.95	137.0	
1140	3.74	7.488		1.47	18.79	135.5	
1145	3.74	7.441		1.39	18.75	133.8	
1150	3.81	7.385		1.39	18.83	127.6	
1155	3.82	7.380		1.40	18.60	124.2	
1200	3.80	7.382		1.40	18.61	123.8	

Sample Time: 1215

Purge Volume:

9/21

MW-09-18

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-18	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.91		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1230	5.48	3.679		3.29	21.10	45.2	5.91
1235	5.69	3.664		2.78	20.98	38.3	
1240	6.19	3.191		1.08	20.50	5.2	
1245	6.34	3.181		0.93	20.51	1.7	
1250	6.36	3.164		0.98	20.50	0.0	
1255	6.38	3.156		0.98	20.51	-0.3	

Sample Time: 1300

Purge Volume:

9/21

MW-09-19[illegible]

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-19D	Date: 9/21	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	6.01		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1330	6.59	3.965		2.97	17.91	20.2	6.01
1335	6.59	3865		2.03	17.73	15.8	
1340	6.56	3.326		1.00	17.57	1.8	
1345	6.54	3.238		0.90	17.51	4.7	
1350	6.53	3.249		0.92	17.47	-3.7	
1355	6.54	3.239		0.94	17.45	-4.5	
1400	6.54	3.235		0.93	17.48	-5.3	

Sample Time: 1400

Purge Volume:

Dup 092117 @ 1200

9/21

MW-03-13S

Project No.:		Site:	Columbia Cement Company	Well No:	MW-03-13S	Date:	9/21
Well Depth:		Screen length:		Well Dia.:	2	Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	4.98		
Measuring Point:		Sampling Personnel:	T.B/SS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1430	6.94	2.229		2.99	20.95	-30.5	4.98
1435	6.84	1.920		1.33	20.51	-47.4	
1440	6.78	1.820		1.00	20.58	-56.4	
1445	6.77	1.784		0.97	20.66	-59.9	
1450	6.75	1.782		0.90	20.72	-61.7	
1455	6.74	1.783		0.87	20.74	-62.0	
1500	6.75	1.783		0.89	20.74	-61.3	

Sample Time: 1500

Purge Volume:

9/22

MW-09-24

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-24	Date: 9/22	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	@ 3.35		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
830	6.96	1.959		3.17	19.02	-0.4	3.35
835	6.91	1.964		~~0.78~~	18.89	-9.5	
840	6.77	1.873		~~0.79~~	18.69	-11.2	
845	6.70	1.801		0.67	18.59	-5.1	
850	6.68	~~1.768~~ 1.748		0.56	18.55	-3.7	
855	6.66	1.730		0.53	18.52	-0.3	

Sample Time: 900

Purge Volume:

MW-09-25D

9/22

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-25D	Date: 9/22	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	3.29		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
915	6.59	23.45		0.96	17.70	-1.5	3.29
920	6.55	20.12		1.35	17.70	-4.5	
925	6.50	18.28		1.52	17.66	-5.4	
930	6.48	17.61		1.64	17.61	-8.2	
935	6.48	17.60		1.59	17.60	-9.1	
940	6.49	17.53		1.60	17.58	-11.4	
945	6.50	17.52		1.60	17.55	-13.2	

Sample Time: 945

Purge Volume:

MW-09-22

Project No.:		Site: C-C	Columbia Cement Company	Well No:	MW-09-223	Date: 9/22	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	4.90		
Measuring Point:		Sampling Personnel:	JP-SS	Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1000	6.65	2.478		1.05	14.46	-135.8	4.90
1005	6.62	2.454		0.87	18.32	-158.9	
1010	6.60	2.378		0.86	18.19	-163.5	
1015	6.45	2.358		0.72	18.18	-164	
1020	6.43	2.332		0.83	18.16	-168	
1025	6.40	2.320		0.82	18.13	-173.4	
1030	6.41	2.328		0.81	18.15	-175.3	

Sample Time: 1030

Purge Volume:

Strong odor

9/22

MW-09-2

Project No.:		Site:	Columbia Cement Company	Well No:	MW-09-	Date:	9/22
Well Depth:		Screen length:		Well Dia.:	2	Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	4.83		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1045	6.34	23.60		2.13	17.81	-91.1	4.83
1050	6.39	20.00		2.29	17.80	-96.2	
1055	6.52	[illegible]	4.832	1.54	17.72	-97.2	
1100	6.53	[illegible]	4.838	1.30	17.74	-92.1	
1105	6.49	[illegible]	4.858	1.55	17.72	-87.5	
1110	6.50	4.859		1.60	17.69	-82.1	
1115	6.52	4.852		1.59	17.71	-79.9	

Sample Time: 1115

Purge Volume:

9/22

MW-17-285

Project No.:		Site:	Columbia Cement Company	Well No:	MW-17-285	Date: 9/22	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	5.09		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1130	6.55	2.871		2.22	17.63	-42.7	5.09
1135	6.53	2.870		1.77	17.55	-44.6	
1140	6.48	2.916		1.27	17.47	-49.0	
1145	6.44	3.042		1.21	17.52	-52.3	
1150	6.43	3.053		1.18	17.49	-56.1	
1155	6.43	3.058		1.20	17.50	-58.7	
1200	6.42	3.071		1.19	17.48	-54.0	

Sample Time: 1200

Purge Volume:

9/22

MW-17-29

Project No.:		Site:	Columbia Cement Company	Well No:		Date: 9/22	
Well Depth:		Screen length:		Well Dia.:		Casing Type:	PVC
Sampling Device:	Geopump	Tubing Type:	Poly	Water Level:	4.82		
Measuring Point:		Sampling Personnel:		Pumping rate:	250		
Other Info.:	PID = 0.0						

Time	Ph (s.u.)	Cond. (mS/cm)	Turbidity (NTU)	Diss. O2 (mg/l)	Temp (C)	ORP (mV)	Water Level
1215	6.57	32.10		1.49	17.45	-179.0	4.82
1220	6.62	32.11		1.09	17.32	-142.2	
1225	6.64	32.65		0.73	17.17	-166.1	
1230	6.65	32.64		0.69	17.10	-170.5	
1235	6.65	32.46		0.61	17.12	-174.0	
1240	6.63	32.38		0.60	17.18	-175.0	
1245	6.62	32.37		0.60	17.20	-176.3	

Sample Time: 1245

Purge Volume: