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January 17, 2024

Mr. Jake Bucklin
Environmental Specialist, Solid Waste and Contaminated Sites Section
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, IA 50319

**RE: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT
ROCKWELL COLLINS MAIN PLANT
CEDAR RAPIDS, IOWA**

Dear Mr. Bucklin,

On behalf of Rockwell Collins, Inc. (Collins), this letter report has been prepared to document implementation of Voluntary Corrective Action Activities Work Plan (Work Plan) for the Main Plant site (Land Recycling Program Site [LRP] #2683), located at the Rockwell Collins (Collins) 855 35th Street NE. facility in Cedar Rapids, Iowa (Site, **Figure 1**). Stantec Consulting Services Inc. (Stantec) completed injection of zero-valent iron (S-MicroZVI®) and emulsified vegetable oil (3-D Microemulsion® [3DME]), along with other amendments, to enhance reductive dichlorination of chlorinated volatile organic compounds (CVOCs) in effected areas west of the Site building. A liquid activated carbon barrier (PlumeStop®) was injected to establish a longer-term barrier hydraulically down-gradient of the Site to further reduce CVOCs, and to pilot test its effectiveness to reduce PFAS concentrations. The work was conducted in accordance with the June 2023 Work Plan (work plan) approved by the Iowa Department of Natural Resources (IDNR) on July 5, 2023. The injection activities associated with implementation of the work plan occurred between August 28 and September 21, 2023.

Rule Authorization

Pursuant to the work plan, a waiver to an Underground Injection Control (UIC) authorization was requested and subsequently granted by the United States Environmental Protection Agency (EPA) Region 7. The injections were allowed to be emplaced as Rule Authorized under 40 CFR § 144.24 without the need for a USEPA issued UIC permit and were covered under the USEPA UIC facility ID number IAS113260037 as described in a July 20, 2023, electronic correspondence from USEPA. In addition, the Iowa Department of Natural Resources (IDNR) Water Quality Bureau confirmed a water allocation permit would not be required in electronic correspondence dated July 8, 2023. For reference, the regulatory concurrence is included as **Attachment A**.

Local Permitting

Prior to conducting off-Site ground disturbance activities, Stantec and subcontracted drilling company, Below Ground Surface (BGS), obtained permits from the City of Cedar Rapids (City). These permits include a right-of-way obstruction permit, work in the right-of-way permit, and traffic control plan (**Attachment B**) pursuant to the work plan. Conditions outlined in the permits were followed and are addressed later as an exception to the work plan. Traffic control materials were provided by Advanced Traffic Control, an approved City subcontractor, and equipment and materials were positioned in accordance with the traffic control plan.



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

Utility Locates and Clearing

On August 3, 2023, prior to beginning injection activities, public utilities in the Site project area were located via the Iowa One Call system. Private utilities were located with the assistance of Ground Penetrating Radar Systems (GPRS) and by Weber Communications (Weber, the facility contractor). Once utilities were identified and marked, injection locations were identified and flagged. Planned injection locations were positioned and adjusted to be a safe distance from identified underground utilities and were manually cleared to a depth of at least five feet below ground surface using hand-augering techniques, prior to probe tooling advancement or injection activities. The locations of identified utilities and injection locations in the project area are depicted on **Figures 2 and 3**, respectively. The GPRS Utility Locate Report is included as **Attachment C**.

Groundwater Baseline Sampling

Pre-remediation baseline groundwater sampling and monitoring activities were completed from August 15 through 17, 2023. Prior to purging and sampling monitoring wells, the seventeen Site monitoring wells were opened, allowed to stabilize, and gauged to the nearest 0.01 foot from the top of the well casing with an electronic water level probe. Groundwater gauging data and the calculated groundwater elevations from the August 2023, gauging event are presented in **Table 1**. The groundwater elevation data are presented in **Figure 4**.

As presented on **Table 1**, depth to groundwater from the top of casing in the monitoring wells ranged from 4.57 feet (MW-4) to 13.49 feet (MW-2) below the top of casing. As depicted in **Figure 4**, the general shallow groundwater flow direction in the vicinity of the project area, based on the groundwater elevation data was to the West/Southwest.

Unless noted, groundwater sampling consisted of low flow purging using a submersible bladder pump while collecting groundwater geochemical parameters to check for stability prior to sample collection. Groundwater samples were collected from 12 monitoring wells: MW-1, MW-6, MW-7, MW-8, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, and MW-17. Monitoring well MW-7 was sampled using a peristaltic pump due to also sampling for Per- and Poly-Fluoroalkyl Substances (PFAS). Pursuant to the work plan, the groundwater gauging, purging, and sampling procedures for monitoring well MW-07 were modified to follow the IDNR's *Collection of Public Drinking Water Samples for Per- and Poly-Fluoroalkyl Substances (PFAS) Standard Operating Procedures* (February 23, 2021). Final monitoring well stabilization parameters are summarized in **Table 2**.

The groundwater samples collected at each monitoring well were placed in laboratory-provided bottles, sealed, labeled, placed on wet ice in an insulated cooler, and submitted to Eurofins Environment Testing North Central, LLC, in Cedar Falls, Iowa (Eurofins). Each groundwater sample was analyzed for VOCs using EPA Method 8260D. To help evaluate corrective action performance, additional samples were collected from monitoring wells MW-1, MW-7, MW-12, and MW-17 and submitted to Eurofins to help evaluate for dissolved iron and dissolved manganese using EPA Method 6020B, total organic carbon (TOC) using EPA Method 9060, chloride, nitrate and sulfate using EPA Method 9060, sulfide using Standard Method 4500, and methane, ethane, ethene and carbon dioxide (CO₂) using Method R. S. Kerr (RSK) 175. Groundwater samples from monitoring well MW-7 were also collected and submitted to Eurofins Lancaster Laboratories Environment Testing LLC (Lancaster) to be analyzed for PFAS using EPA Method 1633.



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

One field duplicate sample was collected from MW-12 for VOCs and corrective action performance constituents. One trip blank and one equipment blank were also submitted with the groundwater samples for laboratory analysis of VOCs. One equipment blank was also collected through the sample tubing prior to sampling MW-7, using laboratory-supplied PFAS-free water, and submitted for analysis of PFAS using EPA Method 1633. Groundwater sample collection records are included as **Attachment D**.

Groundwater VOC analytical results from the August 2023 sampling event, along with historic VOC sampling data, are summarized on **Table 3**. The analytical laboratory report and chain of custody record are included as **Attachment E**. Detections of VOCs above laboratory RLs were present in nine of the twelve primary samples, and the field duplicate sample. The detected VOCs included trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), vinyl chloride (VC), 1,1-dichloroethene (1,1-DCE), and 1,1-dichloroethane (1,1-DCA). The groundwater VOC concentration data were compared to applicable Iowa Statewide Standards (SWSs) for groundwater and summarized in **Table 3**.

Of the detected VOCs, the reported concentrations of TCE, cis-1,2-DCE, and VC in one or more monitoring wells exceeded the applicable Iowa SWSs. **Figure 5** summarizes the groundwater VOC concentrations in the sampled monitoring wells exceeding applicable Iowa SWSs. The individual results exceeding applicable Iowa SWSs are summarized as follows:

- TCE was reported to exceed the Iowa SWS for Protected Sources (5 µg/l) in the samples collected from MW-6 (14 µg/l), MW-7 (13.3 µg/l), MW-11 (6.77 µg/l), and MW-17 (41.6 µg/l). TCE was not reported to exceed Iowa SWSs in the remaining samples analyzed.
- Cis-1,2-DCE was reported to be above the Iowa SWS for Non-Protected Sources (350 µg/l) in the sample collected from MW-17 (2410 µg/l). Cis-1,2-DCE was reported to exceed the Iowa SWS for Protected Sources (70 µg/l) but below the Iowa SWS for Non-Protected Sources (350 µg/l) in the sample from MW-06 (155 µg/l). Cis-1,2-DCE was not reported to exceed Iowa SWSs in the remaining samples analyzed.
- VC was reported to exceed the Iowa SWS for Non-Protected Sources (10 µg/l) in the samples collected from MW-17 (16.1 µg/l). VC was reported to exceed the Iowa SWS for Protected Sources (2 µg/l) but below the Iowa SWS for Non-Protected Sources (10 µg/l) in the sample collected from MW-06 (2.61 µg/l) and MW-11 (2.48 µg/l). VC was not reported to exceed Iowa SWSs in the remaining samples analyzed.

A summary of the corrective action performance parameter results is included as **Table 4**, and the analytical laboratory report is included in **Attachment E**. The results of the individual constituents are summarized as follows:

- Concentrations of dissolved iron ranged from less than (<) 0.100 milligrams per liter (mg/L) in MW-1 and MW-7, to 7.20 mg/L in MW-17. Reduced concentrations of dissolved iron in the CVOC plume can indicate reductive conditions and facilitate anaerobic oxidation of VC to CO₂.
- Concentrations of dissolved manganese ranged from 0.140 mg/L in MW-1, to 0.789 mg/L in MW-17. Concentrations of dissolved manganese greater than 1 milligram per liter indicates anaerobic oxidation of cis-1,2-DCE may be possible.



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

- TOC concentrations ranged from 1.45 mg/L in MW-7, to 7.13 mg/L in MW-1. The CVOC dichlorination process requires a degradable carbon source as a primary growth substrate.
- Chloride concentrations ranged from 97.0 mg/L in MW-17, to 448 mg/L in the primary sample collected from MW-7. Elevated concentrations of chloride following dechlorination may be present in comparison to background conditions.
- Nitrate as nitrogen concentrations ranged from <0.200 mg/L in MW-12 and MW-17, to 7.78 mg/L in MW-7. Nitrate is an electron acceptor, and its depletion may indicate a greater propensity for more reducing conditions conducive to reductive dechlorination.
- Sulfate concentrations ranged from 60.0 mg/L in MW-17, to 142 mg/L in MW-1. Sulfate is an electron acceptor, and its depletion may indicate a greater propensity for more reducing conditions conducive to reductive dechlorination.
- Detectable concentrations of sulfide exceeding 0.200 mg/L were not reported in the groundwater samples collected from MW-1, MW-7, MW-12, or MW-17. The presence of sulfide is an indicator of metabolic activity associated with reductive dechlorination.
- Methane concentrations ranged from <1.00 micrograms per liter (µg/L) in MW-1, to 45.7 µg/L in MW-17. The presence of methane is an indicator of metabolic activity associated with reductive dechlorination.
- Detectable concentrations of ethane exceeding 1.00 µg/L were not reported in the groundwater samples collected from MW-1, MW-7, MW-12 or MW-17. Ethane is a byproduct of vinyl chloride dehalogenation.
- Ethene concentrations ranged from <1.00 µg/L in MW-1, to 2.90 µg/L in MW-17. Ethene is a byproduct of vinyl chloride dehalogenation.
- CO₂ concentrations ranged from 17,700 µg/L in MW-1, to 47,700 µg/L in MW-7. CO₂ is the ultimate end product in CVOC reductive dechlorination.

A summary of the PFAS sampling data from MW-7 is included in **Table 5**, and the analytical laboratory report is included in **Attachment E**. As summarized in **Table 5**, detectable concentrations of nine PFAS constituents were reported in the groundwater sample collected from MW-7, with concentrations of two PFAS constituents (Perfluorooctanonic Acid [PFOA] and Perfluorooctanesulfonic Acid [PFOS]) exceeding the current applicable Iowa SWSs for Protected Groundwater. The reported concentration of PFOS in MW-7 also exceeded the current Iowa SWS for Non-Protected Groundwater.

Additional Groundwater Sampling Activities

Based on the CVOC exceedances in MW-6, additional groundwater sampling was conducted on September 5, 2023. Monitoring well MW-6 was resampled for CVOCs to confirm the concentrations previously reported at this location, and existing monitoring well MW-5 was also sampled to confirm CVOCs were not present at this location. A one-inch diameter temporary monitoring well, TW-29, was also advanced and installed by BGS, a licensed Iowa Water Well Driller, on September 1, 2023. TW-29 was installed between MW-6 and MW-5 using direct-push methods to better assess the extent of CVOCs to the south of MW-6 (see **Figure 1**). The soil boring log and construction diagram for TW-29 are included in **Attachment F**. Two soil samples were retained for laboratory analysis during advancement of TW-29; both samples were submitted to Eurofins for analysis of arsenic using EPA Method 6020B. The soil sample analytical laboratory report is included as **Attachment G**. Following installation, the temporary well was developed and surveyed into the



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

existing monitoring well network. TW-29 was plugged and abandoned following completion of groundwater sampling activities, with a copy of the well abandonment form provided as **Attachment H**.

Following gauging, monitoring wells MW-5, MW-6, and TW-29 were purged and sampled using a peristaltic pump using the same methodologies to sample MW-7 in August 2023. The groundwater samples collected at each monitoring well were placed in laboratory-provided bottles, sealed, labeled, placed on wet ice in an insulated cooler, and submitted to Eurofins for analysis of VOCs using EPA Method 8260B. One field duplicate sample and one trip blank were also collected and submitted to Eurofins for rush analysis of VOCs using EPA Method 8260B. An additional groundwater sample from MW-6 was also collected using the same procedures as MW-7 was sampled in August 2023, and submitted to Lancaster for PFAS analysis using EPA Method 1633. One equipment blank was also collected using laboratory-supplied PFAS-free water from the sample tubing prior to sampling MW-6, and also submitted to Lancaster for analysis of PFAS using EPA Method 1633.

Groundwater gauging and stabilization data collected during the sampling event are summarized in **Tables 1** and **2**, respectively. Groundwater sample collection records are included as **Attachment D**. Groundwater VOC analytical results from the September 5, 2023, sampling event are summarized on **Table 3**, and presented on **Figure 5**. The analytical laboratory report and chain of custody record are included in **Attachment E**. As summarized on **Table 3**, detectable concentrations of cis-1,2-DCE, trans-1,2-DCE, and TCE were reported in the primary and duplicate sample collected from MW-6, although these concentrations did not exceed the applicable Iowa SWSs. Detectable concentrations of VOCs were not reported in the groundwater samples collected from MW-5 or TW-29.

The groundwater PFAS concentration data for MW-6 was compared to applicable Iowa SWSs for groundwater and summarized in **Table 5**, and the analytical laboratory report is included in **Attachment E**. As summarized on **Table 5**, detectable concentrations of ten PFAS constituents were reported in the groundwater sample collected from MW-6, with concentrations of PFOA and PFOS exceeding the current applicable Iowa SWSs for Protected Groundwater. The reported concentration of PFOS in MW-6 also exceeded the current Iowa SWS for Non-Protected Groundwater. As noted on **Table 5**, historical concentrations of PFOA and PFOS in a groundwater sample collected from upgradient well monitoring MW-1 has also had the same exceedances for their current respective Iowa SWSs. Given the upgradient PFAS exceedances, the lack of nearby shallow drinking water wells (as documented in the November 2022 Site Assessment Report), and implementation of the voluntary corrective action activities, additional assessment of PFAS is not proposed at this time.

Based on the results of the baseline groundwater sampling, additional delineation of the extent of CVOCs exceeding Iowa SWSs west of monitoring well MW-6 was conducted. Stantec updated the IDNR on the results for MW-6 via electronic mail on September 14, 2023, and stated Collins intention to conduct additional off-site assessment to confirm the extent of CVOCs ahead of injection activities in this area.



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

Monitoring Well Installation and Sampling Results

On September 19, 2023, Stantec supervised BGS during installation of two monitoring wells, MW-18, and MW-19. Following permit approvals from the City and utility locating activities, monitoring wells MW-18 and MW-19 were advanced and installed along the Eastern Avenue NE Right-of-Way, west of the project area to provide monitoring points to evaluate groundwater quality in this area (**Figure 1**).

Soil sampling was completed using hand tools and a 5-foot continuous sampler advanced prior to hollow-stem augers. The retrieved soil samples were split; with one portion logged and field-screened with a calibrated photoionization detector (PID) and the remaining portion preserved in laboratory supplied containers for potential lab analysis. A summary of the PID field screening readings, soil lithology information, and sample intervals retained for analysis is depicted on the soil boring log, included in **Attachment F**. Four soil samples per monitoring well location were retained for laboratory analysis. The retained soil samples were placed in laboratory-provided 4-oz jars using Terracore sampling kits, stored on ice within coolers, and submitted to Eurofins. Two samples per well was submitted for analysis of VOCs using United States Environmental Protection Agency (EPA) Method 8260D, and two soil samples were submitted for analysis of arsenic using EPA Method 6020B. The soil sample analytical laboratory report is included as **Attachment G**.

Monitoring well MW-18 was installed to a depth of 15 feet with 10 feet of 0.010-inch slot polyvinyl chloride (PVC) screen. Monitoring well MW-19 was installed to a depth of 12 feet bgs with 8 feet of 0.010-slot PVC screen. The well construction details for monitoring well MW-18 and MW-19 are presented in **Attachment F**. The monitoring wells were finished with an at-grade completion, capped with lockable compression caps, and secured within bolt-down manholes. Upon completion, the newly installed monitoring wells were developed and surveyed into the existing monitoring well network.

Soil sample analytical results along with historical results are summarized in **Tables 6 and 7**. As summarized on the tables, detectable concentrations of arsenic were reported in at least one soil sample. Arsenic was detected above the Iowa SWS for soil (1.9 mg/kg) in the samples collected from MW-18 at 1.0 to 2.0 feet below ground surface (bgs) (4.24 mg/kg), MW-19 at 1.0 to 2.0 feet bgs (3.85 mg/Kg), and MW-19 at 6.0 to 7.0 feet bgs (16.7 mg/Kg). The concentration of VOC constituents in each of the four soil samples from MW-18 and MW-19 were reported to be less than the respective laboratory reporting limits.

Monitoring wells MW-18 and MW-19 were sampled on September 27, 2023. Following gauging, each monitoring well was purged and sampled using a bladder pump and dedicated tubing using the same methodology as during the August 2023 sampling event. Groundwater gauging and stabilization data are summarized on **Tables 1 and 2**, respectively. The groundwater sample collection records are included in **Attachment D**. The groundwater samples collected were placed in laboratory-provided bottles, sealed, labeled, placed on wet ice in an insulated cooler, and submitted to Eurofins to be analyzed for VOCs using EPA Method 8260D. One field duplicate and one trip blank were also collected and submitted for analysis of VOCs using EPA Method 8260D.

The analytical laboratory report for the samples collected during this event is included in **Attachment E**. The groundwater VOCs concentration data were compared to applicable Iowa



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

SWSs for groundwater and summarized in **Table 3**. As summarized in **Table 3**, detectable concentrations of VOCs were not reported, with the exception of cis-1,2-DCE in monitoring well MW-18. Concentrations of cis-1,2-DCE reported in the samples collected from MW-18 were below the applicable Iowa SWS. Based on these results, VOCs at the Site have been adequately delineated.

Groundwater Remedial Action Activities

The target of the groundwater remediation activities is to address the extent of VOCs exceeding applicable Iowa SWSs for Non-Protected Groundwater located west of the Main Plant building, and incorporate areas around monitoring wells MW-6, MW-7, MW-8, and MW-17 (**Figure 5**). The goal of the injection work is to achieve bioaugmentation and stimulation of chemical reduction and anaerobic biodegradation of CVOCs through vinyl chloride to ethene gas in identified source areas and prevent down-gradient migration of chlorinated VOCs to protected groundwater source areas.

On July 18, 2023, a passive flux meter, provided by Regenesis, was installed in monitoring well MW-12 to help identify preferential transport zones in shallow groundwater that would aid in confirming the proposed injection depths. The passive flux meter was removed on August 2, 2023, and returned to Regenesis for evaluation. Feedback from Regenesis following its analysis of the flux meter data confirmed the proposed injection amendment blends, locations, and intervals were appropriate.

Prior to injection activities, Stantec met with Collins staff to coordinate Site activities, and update the Site-specific Health and Safety Plan (HASP) which addressed safety considerations during the work including drilling, utilities, spill abatement and containment, and pressurized injection safety. A review of the HASP and tailgate safety/fit for duty discussion was completed each day prior to commencing work. Regenesis, a subcontractor of Stantec, provided drain/storm covers or barriers which were used at strategic locations surrounding injection work to minimize potential releases to those areas. The injection materials were delivered, inventoried, and stored inside a Regenesis provided conex box. Caution tape, traffic cones and barriers were used to identify work areas, in addition to a traffic control plan for work in Eastern Avenue.

On August 28, 2023, Stantec mobilized to the site to initiate groundwater remediation activities. Injection activities were conducted between August 28 and September 21, 2023, by Regenesis, under supervision of Stantec. Stantec subcontracted BGS to facilitate the injection activities at the Site using direct-push methods. Daily activity report forms completed by Stantec can be found as **Attachment I**.

In general, the injection activities were completed in accordance to the Work Plan with the following exceptions:

- General:
 - As noted previously, many proposed injection locations had to be adjusted or abandoned to avoid conflicts with identified utilities.



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

- Locations were hand cleared via hand auger and the openings were backfilled with hydrated bentonite crumbles to create a plug which allowed for more effective amendment applications and lesson daylighting of injection material.
- PFAS Pilot Test:
 - The entirety of the pilot test was relocated from surrounding MW-7 to surrounding MW-6 to prevent potential 3DME influence from the on-site barrier. This decision was determined because the radius of influence of the on-site barrier was greater than anticipated. Potential 3DME influence would take up sorption sites and cause the pilot test to be less affective.
 - Injection point layout was changed from two lines of six points to an arc pattern to account for the apparent non-linear groundwater flow around MW-6.
- On-Site Source Grid:
 - Four locations were skipped due to an unidentified underground obstruction identified during utility clearance activities. The injection volume from these points were redistributed to other points within the grid.
 - The total depth of several injection points were up to 19 feet bgs based on gauged groundwater elevations in the area and soil conditions.
- On-Site Barrier:
 - The six locations on the North end of the barrier were moved downgradient of MW-6 and injected 3DME only to treat VOCs near the adjusted PFAS pilot test area. The ZVI and Bio-Dechlor Inoculum (BDI) volume for these six locations were allocated to the PFAS pilot test locations.
 - The locations within the on-site treatment line within grassy areas were reduced from 15 points to 10 points to reduce the amount of readjusting on the grass with the Geoprobe. The 10 points were spaced further apart and the volume determined for 15 points was injected into those 10 points.
- Western Barrier:
 - The injection locations along Eastern Avenue NE were moved from the western side of the street to the eastern side of the street to comply with the occupation permit approved by the City. The City required injection activities take place at least 10 feet from an existing water main located in the western right-of-way of Eastern Avenue NE.
 - To minimize the potential for daylighting, lower flow rates were employed with a greater PlumeStop concentration.
 - Monitoring piezometers PZ-5 and PZ-6 were not installed due to adequate monitoring point distribution along the barrier.



Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

A total of 165 locations (25 on-site source grid locations, 59 on-site barrier locations, 69 western barrier locations, and 12 PFAS pilot locations) were completed using a bottom-up approach. The locations of the completed injection points are depicted on **Figure 3**. Injection locations were generally completed in a leapfrog manner to prevent any area from becoming overly pressurized and to limit daylighting of fluids. To expedite work in Eastern Avenue NE, the crew was doubled to have two Regenesi injection trailers and two BGS direct-push rigs from September 11 to September 15, 2023.

Injections were completed using a 5-foot long, 2.25-inch diameter multi-port screened injection tool. Other equipment provided by the Regenesi Injection trailer included a generator, mixing tanks, water pump, flow and pressure controls, pressure bypass controls, eyewash station, and a forklift. A photographic log depicting the equipment set-up and completion of the groundwater remediation activities is presented in **Attachment J**.

The quantities of zero valent iron (S-MicroZVI®), emulsified vegetable oil (3DME), and PlumeStop® proposed in the Work Plan were injected at the Site. Mixing water was provided by two City of Cedar Rapids fire hydrants in the western right-of-way of Eastern Avenue. The hydrants were equipped with water usage meters, and the hose used to transport water to the trailers was covered in Eastern Avenue by a hose ramp. Pressures encountered during injections were generally between 6 and 40 pounds per square inch (psi) and flow rates were generally observed between 1.7 and 5.39 gallons per minute (gpm). At certain locations, amendment injections were adjusted to lessen the amount of water used to limit daylighting at each location. Additional details regarding the Site injection activities, and injection pressure, flow, and volume of each injection point, are included in **Attachment K**.

Following injection activities, each injection point was plugged with hydrated bentonite chips in accordance with Rule 567-39.7(455B) of the Iowa Administrative Code (IAC). Since soil borings are not covered by Rule 567-39(455B), IDNR Abandoned Water Well Plugging Records (Form 524-1226) were not completed. BGS completed restoration activities in Eastern Avenue NE pursuant to City requirements. Collins Facility staff completed restoration of the Site pavement by December 13, 2023. Regenesi used a handheld global positioning system (GPS) to record the locations of the injection points for future reference.

Waste Disposal Activities

Soil cuttings from the utility pre-clearance and monitoring well installation activities were containerized in nine sealed and labeled 55-gallon steel drums. Water accumulated from decontamination water, groundwater baseline sampling, well development water was containerized in one sealed and labeled 55-gallon steel drum. Drums were staged in a secure on-Site location, on concrete, pending pick-up and disposal. The drums of soil and water were removed from the Site on October 12, 2023, under existing profiles by Heritage Transport, LLC.

Summary

Stantec supervised the implementation of groundwater remediation activities by Regenesi and BGS from August 28 to September 21, 2023. Prior to beginning injection activities, Stantec conducted baseline groundwater sampling, and as a result of the groundwater analytical laboratory results, conducted additional sampling and assessment, including the installation and sampling of two off-site monitoring wells. As a result of the baseline sampling and radius of



January 17, 2024
Mr. Jake Bucklin
Page 10 of 11

Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

influence observed during injections, the extent of groundwater remediation activities shifted to include the area around monitoring well MW-6 and moving the PFAS pilot test to occur around MW-6.

A total of 165 injection points were completed by Regenesis and BGS, with a total of 47,547 gallons of water containing EVO(3-D Microemulsion®), ZVI(S-MicroZVI®) and amendments injected throughout into the plume area and in downgradient barrier areas. Other than realignment of the injection locations and avoidance of subsurface utilities, there was no change in the amount of material injected at the Site.

Recommendations

Stantec recommends proceeding with completion of four quarterly post-implementation groundwater monitoring events, pursuant to the Work Plan. New monitoring wells MW-18 and MW-19 will be included in the quarterly groundwater monitoring plan, with each well sampled for VOCs using EPA Method 8260. The final quarterly sampling event will also be modified to have monitored well MW-6 sampled for PFAS rather than MW-7, given the change in the pilot test location. The data from the monitoring activities will be used to evaluate the effectiveness of the groundwater remediation activities and determine what, if any, additional corrective action is needed to address groundwater impacts at the Site.

A groundwater monitoring summary report documenting the sampling and evaluation activities, and providing recommendations for additional activities, if warranted, will be prepared and submitted to IDNR. If additional activities are required based on the Site conditions, Stantec will recommend proceeding with a risk assessment of the site pursuant to IDNR LRP requirements.

Feel free to contact me if you have any questions or require additional information.

Sincerely,

Stantec Consulting Services Inc.

A handwritten signature in blue ink, appearing to read "Steve Varsa".

Stephen R. Varsa
Senior Hydrogeologist
Phone: 515-251-1020
steve.varsa@stantec.com

cc: John Wolski, RTX
Ben Meissner, EPA Region 7 Water Division
erb:srs:srv

Enclosures:

Tables
Table 1 - Groundwater Elevation Data
Table 2 - Well Purging Data Summary



January 17, 2024
Mr. Jake Bucklin
Page 11 of 11

Reference: VOLUNTARY CORRECTIVE ACTION WORK PLAN IMPLEMENTATION REPORT

Table 3 - Groundwater Analytical Results - VOCs
Table 4 - Groundwater Analytical Results – Metals
Table 5 - Groundwater Analytical Results - PFAS
Table 6 - Soil Analytical Results - VOCs
Table 7 - Soil Analytical Results – Metals

Figures

Figure 1 - Site Plan Map
Figure 2 - Site Map - Utilities
Figure 3 - Injection Locations
Figure 4 - Groundwater Potentiometric Surface Map
Figure 5 - Groundwater Concentration Map

Attachments

Attachment A - UIC Waiver Documentation
Attachment B – City of Cedar Rapids Permits
Attachment C - GPRS Utility Locate Report
Attachment D – Groundwater Sample Collection Forms
Attachment E - Groundwater Laboratory Analytical Reports
Attachment F - Drilling Logs (TW-29, MW-18, and MW-19)
Attachment G - Soil Laboratory Analytical Report
Attachment H – TW-29 Well Abandonment Form
Attachment I - Stantec Daily Report Forms
Attachment J – Site Activities Photolog
Attachment K - Regenesis Injection Report

TABLES

**TABLE 1
GROUNDWATER ELEVATION DATA
855 35TH STREET NE - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Well Identification	Date	Ground Surface Elevation (feet amsl)	TOC Elevation (feet amsl)	Depth to Water (feet)	Groundwater Elevation (feet amsl)
MW-01	8/15/2023	790.15	789.83	5.35	784.48
MW-02	8/15/2023	780.12	779.77	13.49	766.28
MW-03	8/15/2023	780.33	779.92	NM	-
MW-04	8/15/2023	780.08	779.66	4.57	775.09
MW-05	8/15/2023	777.98	777.57	9.76	767.81
MW-06	8/15/2023	774.88	774.55	6.71	767.84
MW-07	8/15/2023	776.31	775.89	8.03	767.86
MW-08	8/15/2023	776.03	775.60	7.10	768.50
MW-09	8/15/2023	777.85	777.41	9.50	767.91
MW-10	8/15/2023	776.73	776.45	7.44	769.01
MW-11	8/15/2023	775.52	775.25	7.78	767.47
MW-12	8/15/2023	774.75	774.40	7.20	767.20
MW-13	8/15/2023	774.69	774.40	6.97	767.43
MW-14	8/15/2023	775.22	774.87	7.48	767.39
MW-15	8/15/2023	774.34	773.91	6.78	767.13
MW-16	8/15/2023	775.18	774.84	7.68	767.16
MW-17	8/15/2023	778.00	774.84	9.17	765.67
MW-18	9/27/2023	774.73	774.34	7.71	766.63
MW-19	9/27/2023	774.17	773.83	7.10	766.73
TW- 29	9/5/2023	776.20	776.08	10.06	766.02

Notes:

NM = Not Measured, interface probe malfunction.

Depth measured from top of well casing (TOC).

Elevation is measured in feet above mean sea level (amsl)

TABLE 2
WELL PURGING DATA SUMMARY
855 35TH STREET - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA

Well ID	Sampling Event	Stabilized Parameter Values					
		Temperature (°C)	pH (s.u.)	Specific Conductance (µΩ/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)
MW-1	8/16/2023	29.6	6.63	1,195	0.75	-23	27
MW-2	NS	NS	NS	NS	NS	NS	NS
MW-3	NS	NS	NS	NS	NS	NS	NS
MW-4	NS	NS	NS	NS	NS	NS	NS
MW-5	9/5/2023	24.0	6.61	6,887	0.48	-76	92
MW-6	8/15/2023	19.4	6.77	968	0.37	96.8	48.5
	9/5/2023	21.5	6.80	1220	1.25	117	44
MW-7	8/17/2023	22.7	6.16	1760	1.16	82.6	25.4
MW-8	8/15/2023	23.6	6.98	1,349	1.26	-132	0
MW-9	8/15/2023	18.2	6.74	1,553	0.20	1.3	72.5
MW-10	NS	NS	NS	NS	NS	NS	NS
MW-11	8/16/2023	18	6.48	3,044	0.00	-184	30.0
MW-12	8/16/2023	21.6	6.93	8.6	4.42	-101	17.8
MW-13	8/16/2023	20.1	6.87	2093	0.17	49.2	8.80
MW-14	8/15/2023	20.1	7.13	879	0.62	-135	7.5
MW-15	8/15/2023	18.6	6.78	925	0.36	105	98.0
MW-16	8/16/2023	17.6	6.72	1,429	0.07	-55	8
MW-17	8/17/2023	19.6	6.96	1,039	0.04	-200	4.76
MW-18	9/27/2023	19.7	6.68	2,543	0.00	-28.9	94.1
MW-19	9/27/2023	20.1	7.42	584	5.37	6.50	39.1
TW-29	9/5/2023	26.3	6.5	3,483	0.65	46	12.9

Notes:

°C = Degrees Celsius.
(µΩ/cm) = Microohms per centimeter.
mg/L = Milligrams per liter.
mV = Millivolts.
NS = Not sampled.
NTU = Nephelometric turbidity units.
s.u. = Standard units.

**TABLE 3
GROUNDWATER ANALYTICAL RESULTS - VOCs
855 35TH STREET - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Well ID	Date	Acetone	cis-1,2-Dichloroethene	1,1-Dichloroethane	1,1-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride
Iowa Statewide Standard	Protected Source	6300	70	140	7	100	5	2
	Non-Protected Source	32000	350	700	180	700	76	10
MW-01	6/24/2019	13.6	<1	<1	<2	<1	<1	<1
	8/16/2023	<10	<1	<1	<2	<1	<1	<1
MW-02	6/24/2019	<10	<1	<1	<2	<1	<1	<1
MW-03	6/24/2019	<10	<1	<1	<2	<1	<1	<1
	9/9/2020	<11	<2	<1	<2	<1	<1	<1
MW-04	6/24/2019	<10	<1	<1	<2	<1	<1	<1
MW-05	6/24/2019	<10	<1	<1	<2	<1	<1	<1
	9/5/2023	<10	<1	<1	<2	<1	<1	<1
MW-06	6/24/2019	<10	<1	<1	<2	<1	<1	<1
	8/15/2023	<10	155	<1	<2	6.4	14	2.61
	9/5/2023	<10	59.5	<1	<2	2.35	4.49	<1
	9/5/2023 (dup)	<10	53.1	<1	<2	2.1	4.28	<1
MW-07	6/24/2019	<10	74	<1	<2	4.37	16.5	<1
	6/24/2019 (dup)	<10	64.1	<1	<2	3.79	13.7	<1
	2/7/2020	<10	24.2	<1	<2	9.69	15.4	<1
	9/9/2020	<10	53.0	<1	<2	9.46	16.3	<1
	9/9/2020 (dup)	<10	50.3	<1	<2	9.89	15.8	<1
	1/13/2022	<10	61.5	<1	<2	6.53	12.6	<1
	4/11/2022	<10	15.7	<1	<2	5.52	9.61	<1
	7/12/2022	<10	98.7	<1	<2	6.18	20.6	<1
	9/7/2022	<10	115	<1	<2	7.37	20.6	<1
	8/17/2023	<10	66.1	<1	<2	6.92	13.3	<1
MW-08	6/24/2019	<10	85.9	<1	<2	<1	<1	<1
	2/7/2020	<10	11.8	<1	<2	<1	<1	<1
	2/7/2020 (dup)	<10	11.7	<1	<2	<1	<1	<1
	9/9/2020	<10	22.0	<1	<2	<1	<1	<1
	1/13/2022	<10	13.3	<1	<2	<1	<1	<1
	4/11/2022	<10	9.78	<1	<2	<1	<1	<1
	7/12/2022	<10	21.8	<1	<2	<1	<1	<1
	9/7/2022	<10	38.8	<1	<2	<1	<1	<1
	8/15/2023	<10	12.5	<1	<2	<1	<1	<1
MW-09	6/24/2019	<10	<1	<1	<2	<1	<1	<1
	8/16/2023	<10	<1	<1	<2	<1	<1	<1
MW-10	6/24/2019	<10	<1	<1	<2	<1	<1	<1
MW-11	5/7/2020	<10	109	<1	<2	2.36	5.03	2.5
	9/9/2020	<10	125	<1	<2	3.44	15.4	1.61
	1/13/2022	<10	109	<1	<2	3.91	6.85	1.13
	4/12/2022	<10	107	<1	<2	4.47	9.87	3.00
	4/12/2022 (dup)	<10	110	<1	<2	4.22	10.6	2.92
	7/12/2022	<10	101	<1	<2	5.59	14.1	<1
	7/12/2022 (dup)	<10	103	<1	<2	5.20	14.5	<1
	9/7/2022	<10	108	<1	<2	5.05	9.25	1.71
	9/7/2022 (dup)	<10	106	<1	<2	4.98	8.54	1.87
	8/16/2023	<10	63.1	<1	<2	3.14	6.77	2.48
MW-12	1/13/2022	<10	5.2	<1	<2	<1	<1	<1
	4/12/2022	<10	55.2	<1	<2	5.11	<1	<1
	7/12/2022	<10	109	<1	<2	10.5	<1	<1
	9/7/2022	<10	24.6	<1	<2	2.08	<1	<1
	8/16/2023	<10	2.06	<1	<2	<1	<1	<1
	8/16/2023 (dup)	<10	2.15	<1	<2	<1	<1	<1
MW-13	1/13/2022	<10	10.7	<1	<2	<1	<1	<1
	1/13/2022 (dup)	<10	9.24	<1	<2	<1	<1	<1
	4/12/2022	<10	6.76	<1	<2	<1	<1	<1
	7/12/2022	<10	11.8	<1	<2	<1	<1	<1
	9/7/2022	<10	8.28	<1	<2	<1	<1	<1
	8/16/2023	<10	1.36	<1	<2	<1	<1	<1

**TABLE 3
GROUNDWATER ANALYTICAL RESULTS - VOCs
855 35TH STREET - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Well ID	Date	Acetone	cis-1,2-Dichloroethene	1,1-Dichloroethane	1,1-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride
Iowa Statewide Standard	Protected Source	6300	70	140	7	100	5	2
	Non-Protected Source	32000	350	700	180	700	76	10
MW-14	9/7/2022	<10	<1	<1	<2	<1	<1	<1
	8/15/2023	<10	<1	<1	<2	<1	<1	<1
MW-15	9/7/2022	<10	4.87	<1	<2	<1	<1	<1
	8/15/2023	<10	1.62	<1	<2	<1	<1	<1
MW-16	9/7/2022	<10	19.5	<1	<2	<1	<1	<1
	8/15/2023	<10	7.45	<1	<2	<1	<1	<1
MW-17	9/7/2022	<10	<u>1310</u>	1.82	<2	8.02	60.2	6.62
	8/17/2023	<10	<u>2410</u>	4.03	2.94	21.5	41.6	<u>16.1</u>
MW-18	9/27/2023	<10	1.30	<1	<2	<1	<1	<1
	9/27/2023 (dup)	<10	1.48	<1	<2	<1	<1	<1
MW-19	9/27/2023	<10	<1	<1	<2	<1	<1	<1
SB-17/TW-17	4/13/2022	<10	481	1.02	<2	6.47	106	5.37
SB-19/TW-19	4/13/2022	<10	<1	<1	<2	<1	<1	<1
SB-20/TW-20	4/13/2022	14.7	1.17	<1	<2	<1	<1	<1
SB-21/TW-21	4/13/2022	<10	<1	<1	<2	<1	2.31	<1
SB-22/TW-22	4/14/2022	<10	<1	<1	<2	<1	<1	<1
SB-23/TW-23	4/13/2022	21.6	<1	<1	<2	<1	<1	<1
SB-24/TW-24	4/13/2022	<10	<1	<1	<2	<1	<1	<1
SB-25/TW-25	4/13/2022	<10	1.57	<1	<2	<1	<1	<1
SB-26/TW-26	4/13/2022	<10	47.0	<1	<2	2.94	9.59	<1
SB-27/TW-27	4/13/2022	<10	<1	<1	<2	<1	1.02	<1
SB-28/TW-28	4/13/2022	<10	<1	<1	<2	<1	<1	<1
TW-29	9/5/2023	<10	<1	<1	<2	<1	<1	<1

Groundwater Vapor Intrusion Screening Levels (VISLs) calculated 8/31/2023 with U.S. EPA VISL Calculator using hazard index of 1, residential exposure scenario, and remaining conservative default inputs.

Results and comparison criteria are in micrograms per liter (µg/L).

VOCs - Volatile Organic Compounds

< - The analyte did not exceed the reporting limit.

"NE" - Not Established

Shaded results exceed Iowa Statewide Standards for Protected Source.

Underlined results exceed Iowa Statewide Standards for Non-Protected Source.

**TABLE 4
GROUNDWATER RESULTS - PERFORMANCE PARAMETERS
855 35TH STREET NE - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Parameter		Oxidation Reduction Potential	Dissolved Oxygen	Nitrate as N	Dissolved Manganese	Dissolved Iron	Sulfate	Methane	TOC	Ethene	Ethane
Well No.	Sample Date	mV	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L	ug/L
MW-01	8/16/2023	-22.6	0.75	4.8	0.014	<0.100	142	<1.00	7.13	<1.00	<1.00
MW-07	8/17/2023	82.6	1.16	7.58	<0.0100	<0.100	78.8	<1.00	1.45	<1.00	<1.00
MW-12	8/16/2023	-101	4.42	<0.200	0.316	0.187	70.3	52.2	2.39	<1.00	<1.00
MW-12*	8/16/2023	-101	4.42	<0.200	0.322	0.213	70.3	51.0	2.50	<1.00	<1.00
MW-17	8/17/2023	-200	0.04	<1.00	0.789	7.20	17,700	45.7	1.89	2.90	<1.00

Notes:

mV = millivolts.

mg/L = milligrams per liter.

ug/L - micrograms per liter.

TOC = Total Organic Carbon.

Detected results are **bold**.

* - Blind duplicate sample collected from MW-12, labeled as DUP-01 (duplicate sample identified second).

< - The analyte did not exceed the reporting limit.

**TABLE 5
GROUNDWATER ANALYTICAL RESULTS - PFAS
855 35TH STREET NE - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Parameters	2023 Iowa SWS Protected Groundwater	2023 Iowa SWS Non-Protected Groundwater	Sample ID:	MW-01	MW-06	MW-06	MW-07	DP-01 (MW-07)	MW-07
			Sample Date:	6/26/19	6/27/19	9/05/23	6/27/19	6/27/19	8/17/23
PFAS Compounds (ng/l)									
Perfluorobutanoic Acid (PFBA)	7,000	35,000		10	130	46	57	58	48
Perfluoropentanoic Acid (PFPeA)	NA	NA		3.0 J	23	23	160	170	81
Perfluorohexanoic Acid (PFHxA)	3,500	18,000		1.3 J	6.9	4.9	22	24	7.7
Perfluoroheptanoic Acid (PFHpA)	NA	NA		0.63 J	3.0	2.3	9.1	10	3.9
Perfluorooctanoic Acid (PFOA)	0.004	50,000		1.3	13	7.6	13	14	8.9
Perfluorononanoic Acid (PFNA)	21	100		< 1.9	< 2.1	0.81 J	1.7 J	1.6 J	1.9
Perfluorodecanoic Acid (PFDA)	NA	NA		< 1.9	< 2.1	< 1.9	< 1.9	< 1.9	< 1.9
Perfluoroundecanoic Acid (PFUnA)	NA	NA		< 1.9	< 2.1	< 1.9	< 1.9	< 1.9	< 1.9
Perfluorododecanoic Acid (PFDoA)	NA	NA		< 1.9	< 2.1	< 1.9	< 1.9	< 1.9	< 1.9
Perfluorotridecanoic Acid (PFTriDA)	NA	NA		< 0.94	< 1.1	< 1.9	< 0.96	< 0.94	< 1.9
Perfluorotetradecanoic Acid (PFTeDA)	NA	NA		< 0.94	< 1.1	< 1.9	< 0.96	< 0.94	< 1.9
Perfluorobutanesulfonic acid (PFBS)	2,000	10,000		2.2	2.3	1.6 J	2.2	2.2	2.2
Perfluoropentanesulfonic acid	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
Perfluorohexanesulfonic acid (PFHxS)	140	700		< 1.9	2.2	2.0	6.4	6.7	3.5
Perfluoroheptanesulfonic acid	NA	NA		< 1.9	< 2.1	< 1.9	< 1.9	< 1.9	< 1.9
Perfluorooctanesulfonic acid (PFOS)	0.02	0.28		0.42 J	8.7	22	11	11	11
Perfluoronanesulfonic acid	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
Perfluorodecanesulfonic acid	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
Perfluorododecanesulfonic acid (PFDoS)	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	NA	NA		NA	NA	< 7.4	NA	NA	< 7.4
1H,1H,2H,2H-perfluorooctanesulfonic acid (4:2)	NA	NA		NA	NA	< 7.4	NA	NA	< 7.4
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	NA	NA		NA	NA	< 7.4	NA	NA	< 7.4
Perfluorooctanesulfonamide	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
NMeFOSA	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
N-ethylperfluoro-1-octanesulfonamide	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
NMeFOSAA	NA	NA		< 2.8	< 3.2	< 3.7	< 2.9	< 2.8	< 3.7
NEIFOSAA	NA	NA		< 2.8	< 3.2	< 1.9	< 2.9	< 2.8	< 1.9
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	NA	NA		NA	NA	< 1.9	NA	NA	< 1.9
HFPO-DA	10	100		NA	NA	< 7.4	NA	NA	< 7.4
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NA	NA		NA	NA	< 7.4	NA	NA	< 7.4
Perfluoro-3-methoxypropanoic acid	NA	NA		NA	NA	0.54 J	NA	NA	< 3.7
Perfluoro(4-methoxybutanoic acid)	NA	NA		NA	NA	< 3.7	NA	NA	< 3.7
Perfluoro-3,6-dioxahexanoic acid	NA	NA		NA	NA	< 3.7	NA	NA	< 3.7
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	NA	NA		NA	NA	< 7.4	NA	NA	< 7.4
11-Chloroheptacosalluoro-3-oxaundecane-1-sulfonic acid	NA	NA		NA	NA	< 7.4	NA	NA	< 7.4
PFEESA	NA	NA		NA	NA	< 3.7	NA	NA	< 3.7
3:3 FTCA	NA	NA		NA	NA	< 9.3	NA	NA	< 9.3
5:3 FTCA	NA	NA		NA	NA	< 46	NA	NA	< 46
7:3 FTCA	NA	NA		NA	NA	< 46	NA	NA	< 46

Results and comparison criteria are in nanograms/liter (ng/l).

PFAS - per- and polyfluoroalkyl substances

Iowa SWS - Iowa Statewide Standards

Detected results are **bold**.

Shaded results exceed applicable Iowa Statewide Standard for Protected Groundwater.

Underlined results applicable Iowa Statewide Standard for Non-Protected Groundwater.

"<" - The analyte did not exceed the reporting limit.

J - The analytical result is estimated.

NA - Not analyzed

**TABLE 6
SOIL ANALYTICAL RESULTS - VOCs
855 35TH STREET - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Parameters	Iowa Statewide Standards	Sample ID:	TW29-S3	TW29-S9	MW18-S2	MW18-S7	MW19-S2	MW19-S7
	Soil	Sample Date:	9/1/23	9/1/23	9/19/23	9/19/23	9/19/23	9/19/23
Volatile Organic Compounds (mg/Kg)								
Acetone	68000		<1.42	<1.42	<1.42	<1.42	<1.42	<1.42
Benzene	56		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Bromodichloromethane	50		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Bromoform	390		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Bromomethane	110		<1.42	<1.42	<1.42	<1.42	<1.42	<1.42
2-Butanone (MEK)	NA		<2.13	<2.13	<2.13	<2.13	<2.13	<2.13
Carbon disulfide	7600		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Carbon tetrachloride	44		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Chlorobenzene	1500		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Chlorodibromomethane	NA		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Chloroethane	30000		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Chloroform	100		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Chloromethane	NA		<0.709	<0.709	<0.709	<0.709	<0.709	<0.709
1,2-Dichlorobenzene	5500		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,3-Dichlorobenzene	6800		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,4-Dichlorobenzene	760		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,1-Dichloroethane	1500		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,2-Dichloroethane	34		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,1-Dichloroethene	380		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
cis-1,2-Dichloroethene	150		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
trans-1,2-Dichloroethene	1500		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,2-Dichloropropane	53		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
cis-1,3-Dichloropropene	NA		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
trans-1,3-Dichloropropene	NA		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Ethylbenzene	7600		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
2-Hexanone	NA		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Methyl isobutyl ketone (MIBK)	6100		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Methylene Chloride	1500		<0.709	<0.709	<0.709	<0.709	<0.709	<0.709
Methyl tert-butyl ether	2300		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Naphthalene	1100		<0.709	<0.709	<0.709	<0.709	<0.709	<0.709
1,1,2,2-Tetrachloroethane	14		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Tetrachloroethene	1500		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Toluene	6100		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,1,1-Trichloroethane	150000		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
1,1,2-Trichloroethane	54		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Trichloroethene	67		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Vinyl chloride	2.1		<0.284	<0.284	<0.284	<0.284	<0.284	<0.284
Xylenes, Total	15000		<0.426	<0.426	<0.426	<0.426	<0.426	<0.426

Notes:

Results and comparison criteria are in milligrams per kilogram (mg/Kg).

Iowa Statewide Standards reference: <https://programs.iowadnr.gov/riskcalc/Home/statewidestandards>.

VOCs = Volatile Organic Compounds.

< = The analyte did not exceed the reporting limit.

NA = No established criteria for the selected analyte/category.

**TABLE 7
SOIL ANALYTICAL RESULTS
855 35TH STREET NE - ROCKWELL COLLINS
CEDAR RAPIDS, IOWA**

Parameters	Iowa Statewide Standards	Sample ID:	TW29 (3'-4')	TW29 (9'-10')	MW18 (2'-3')	MW18 (7'-8')	MW19 (2'-3')	MW19 (7'-8')
	Soil							
Metals (mg/Kg)		Sample Date:	9/1/2023	9/1/2023	9/19/2023	9/19/2023	9/19/2023	9/19/2023
Arsenic	1.9		3.58	1.25	4.24	1.34	3.85	16.7

Results and comparison criteria are in milligrams per kilogram (mg/Kg).







Detected results are **bold**.

Shaded results exceed Iowa Statewide Standards.

FIGURES



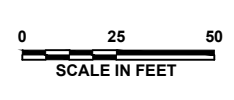
LEGEND:

-  MONITORING WELL LOCATION
-  SOIL BORING LOCATION
-  TEMPORARY MONITORING WELL
-  PROPERTY BOUNDARY
-  MONITORING WELL INSTALLED IN SEPTEMBER 2023
-  TEMPORARY WELL INSTALLED IN SEPTEMBER 2023

C:\pwork\rd\107722\Fig 1 Main Plant 35th St_SPM.dwg 1/8/2024 8:57:12 AM



DESIGNED BY	EMMA BRADY	1/08/2024
DRAWN BY	SCOTT HANSEN	1/08/2024
CHECKED BY	EMMA BRADY	1/08/2024
APPROVED BY	STEVE VARSA	1/08/2024
PROJECT MANAGER	STEVE VARSA	1/08/2024
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

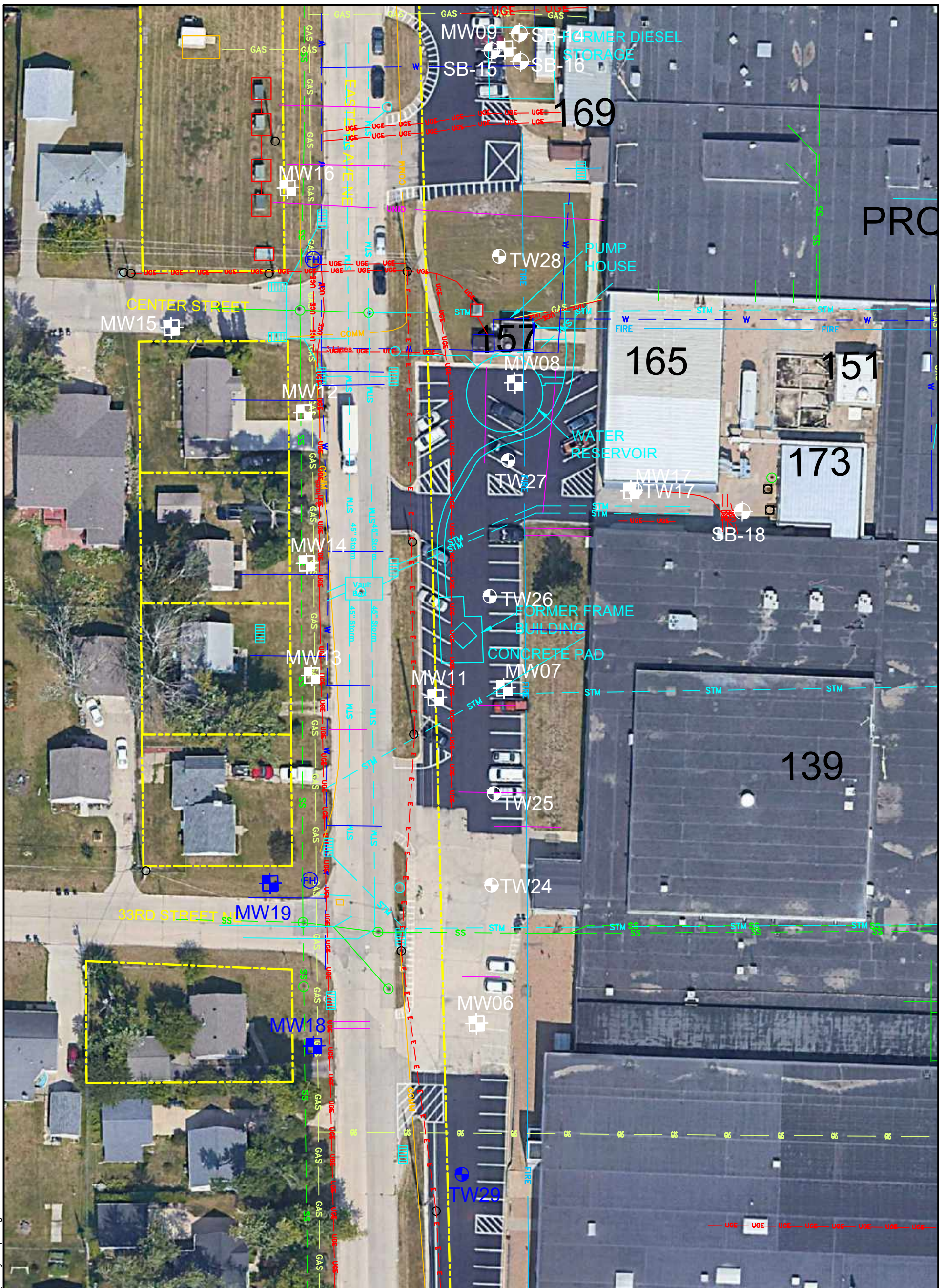


PROJECT LOCATION	855 35TH STREET NE CEDAR RAPIDS, IA 52498
PROJECT	ROCKWELL COLLINS
TITLE	SITE PLAN MAP



FIGURE	1	REVISION	A
FILE NAME			

C:\pwworking\107722\Fig 2 Main Plant 35th St_ Utility Map.dwg 12/21/2023 8:11:22 PM

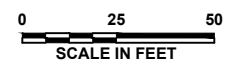


LEGEND:

- | | | | | | | | |
|--|---------------------------|--|---|--|-----------------------------------|--|------------------------------------|
| | MONITORING WELL LOCATION | | MONITORING WELL INSTALLED IN SEPTEMBER 2023 | | UG - UNDERGROUND ELECTRIC | | STORM DRAIN INLET |
| | SOIL BORING LOCATION | | TEMPORARY WELL INSTALLED IN SEPTEMBER 2023 | | E - ELECTRICAL OVERHEAD | | FH - FIRE HYDRANT |
| | TEMPORARY MONITORING WELL | | | | STM - STORM SEWER | | SM - STORM MANYWAY |
| | PROPERTY BOUNDARY | | | | SS - SANITY SEWER | | SM - SANITARY MANYWAY |
| | | | | | W - WATER LINE | | CTV - CONTAINMENT TRENCH AND VALVE |
| | | | | | GAS - GAS LINE | | PP - POWER POLE |
| | | | | | COMM - COMMUNICATION UNIDENTIFIED | | |
| | | | | | FF - FORMER FEATURES | | |

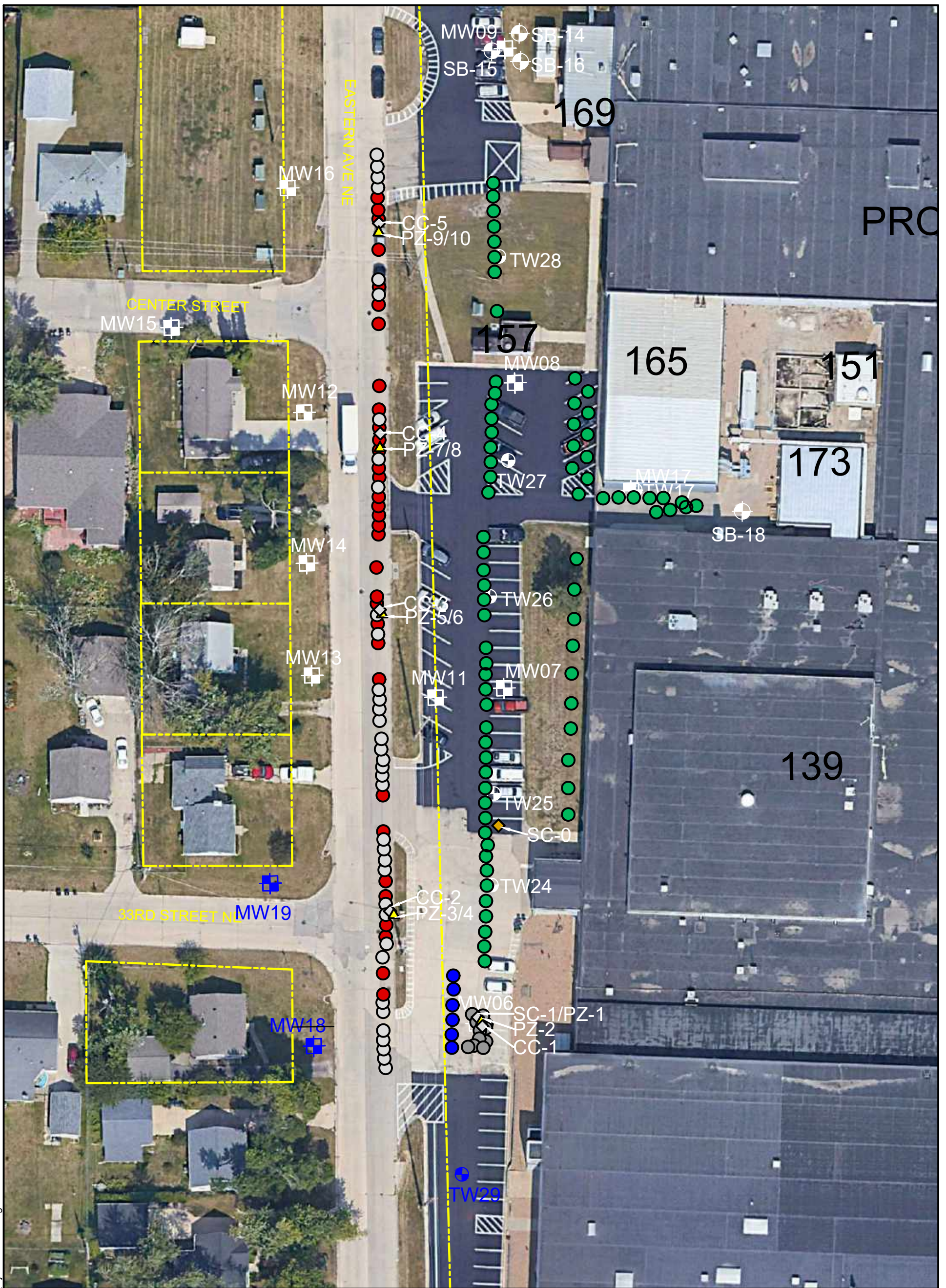


DESIGNED BY	EMMA BRADY	1/08/2024
DRAWN BY	SCOTT HANSEN	1/08/2024
CHECKED BY	EMMA BRADY	1/08/2024
APPROVED BY	STEVE VARSA	1/08/2024
PROJECT MANAGER	STEVE VARSA	1/08/2024
CLIENT APPROVAL		
CLIENT REFERENCE NO.		

















PROJECT LOCATION	855 35TH STREET NE CEDAR RAPIDS, IA 52498
PROJECT	ROCKWELL COLLINS
TITLE	SITE MAP - UTILITIES

FIGURE	2	REVISION	A
FILE NAME			



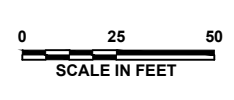
C:\pwworking\107722\Fig 3 Main Plant 35th St_Injection Loc.dwg 12/21/2023 8:11:16 PM

LEGEND:

-  MONITORING WELL LOCATION
-  SOIL BORING LOCATION
-  TEMPORARY MONITORING WELL
-  PROPERTY BOUNDARY
-  MONITORING WELL INSTALLED IN SEPTEMBER 2023
-  TEMPORARY WELL INSTALLED IN SEPTEMBER 2023
-  PLUMESTOP INJECTION POINT (AS DESIGNED)
-  PLUMESTOP INJECTION POINT (DEVIATED)
-  PFAS PILOT INJECTION POINT
-  3DME SMZVI INJECTION POINT
-  3DME INJECTION POINT
-  PIEZOMETERS
-  PRE-INJECTION SOIL CORES
-  CONFIRMATION CORES



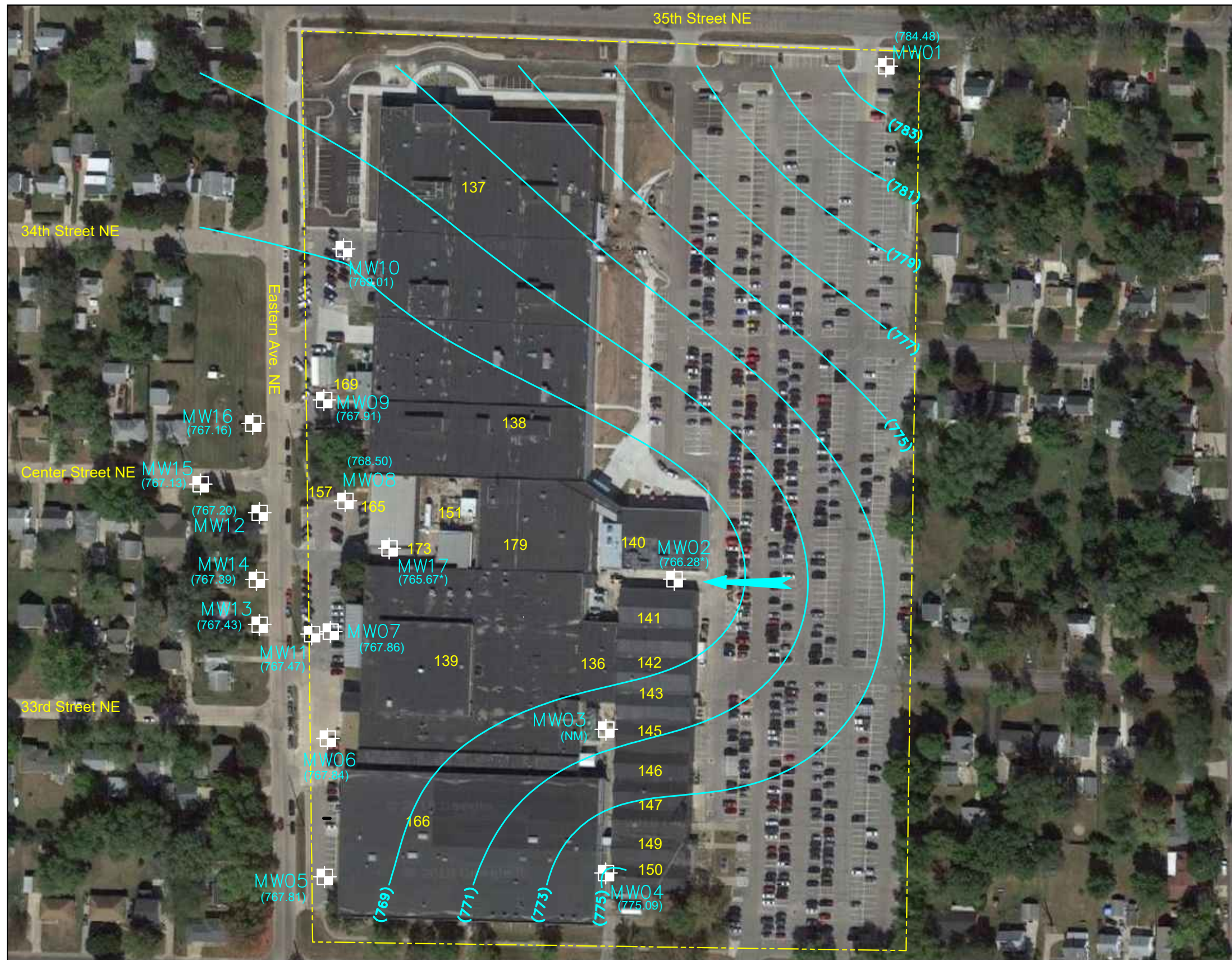
DESIGNED BY	EMMA BRADY	1/08/2024
DRAWN BY	SCOTT HANSEN	1/08/2024
CHECKED BY	EMMA BRADY	1/08/2024
APPROVED BY	STEVE VARSA	1/08/2024
PROJECT MANAGER	STEVE VARSA	1/08/2024
CLIENT APPROVAL		
CLIENT REFERENCE NO.		



PROJECT LOCATION	855 35TH STREET NE CEDAR RAPIDS, IA 52498	
PROJECT	ROCKWELL COLLINS	
TITLE	INJECTION LOCATIONS	



FIGURE	3	REVISION	A
FILE NAME			



LEGEND:

- PROPERTY BOUNDARY
- MONITORING WELL LOCATION
- 139 BUILDING NUMBERS
- (783)— GROUNDWATER ELEVATION CONTOUR WITH ELEVATION (IN FEET ABOVE MEAN SEA LEVEL ; 2-FT INTERVALS)
- ➔ APPROXIMATE GROUNDWATER FLOW DIRECTION
- (767.81) MEASURED GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- (NM) NOT MEASURED
- (*) DATA WAS NOT USED IN DEVELOPMENT OF THE GROUNDWATER ELEVATION CONTOURS

0 150 300



APPROXIMATE SCALE (FEET)

SOURCE: GOOGLE MAP DATA, IMAGERY ©2018.
www.google.com/maps



11311 AURORA AVENUE
DES MOINES, IA 50322
PHONE: (515) 253-0830

FOR:

ROCKWELL COLLINS
855 35TH STREET NE
CEDAR RAPIDS, IOWA 52498

JOB NUMBER:
193709720

DRAWN BY:
SAH

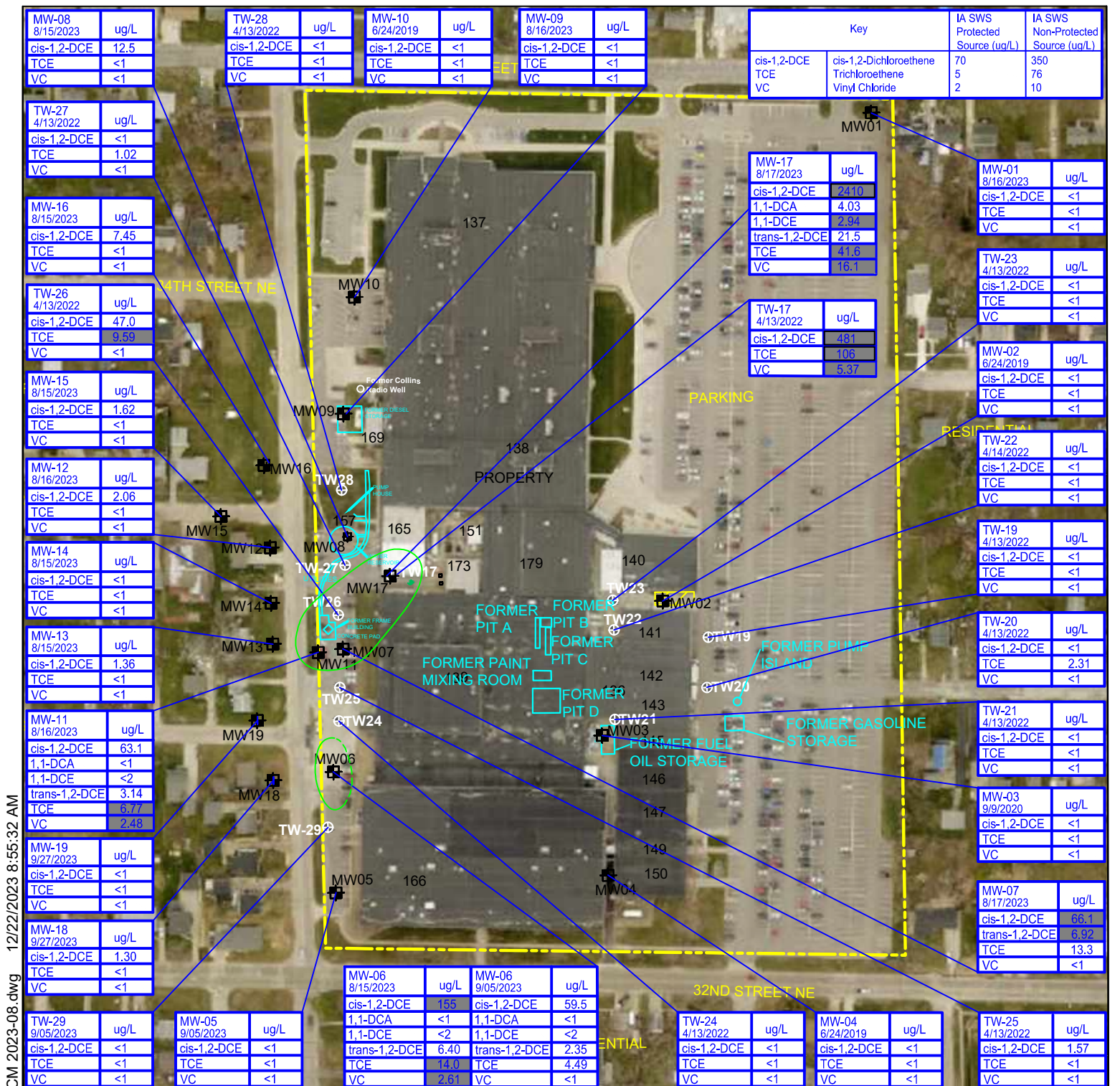
CHECKED BY:
SRV

APPROVED BY:
SRV

FIGURE:

4

DATE:
1/08/2024



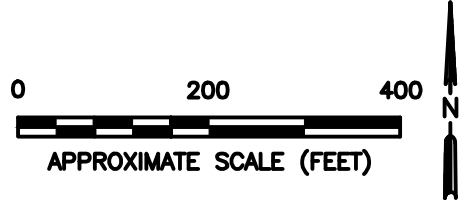
C:\pwwork\dain\0107722\Fig 5 Main Plant 35th St GCM 2023-08.dwg 12/22/2023 8:55:32 AM

LEGEND:

- MONITORING WELL LOCATIONS
- TEMPORARY MONITORING WELL LOCATIONS
- HISTORICAL SITE FEATURES
- PROPERTY BOUNDARY
- ESTIMATED EXTENT OF VOCs IN GROUNDWATER EXCEEDING IOWA STATEWIDE STANDARDS DASHED WHERE INFERRED
- 2017 SOIL EXCAVATION AREA

NOTES:

SHADED RESULTS EXCEED IOWA STATEWIDE STANDARDS FOR PROTECTED SOURCE.
 BOXED RESULTS EXCEED IOWA STATEWIDE STANDARDS FOR NON-PROTECTED SOURCE.
 NS = NOT SAMPLED
 ALL GROUNDWATER CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)
 < = INDICATES THE ANALYTE WAS NOT DETECTED AT OR ABOVE THE SPECIFIED REPORTING LIMIT
 NE = NOT ESTABLISHED
 DUP = DUPLICATE SAMPLE
 SWS = STATE-WIDE STANDARD



<p>Stantec</p> <p>11311 AURORA AVENUE DES MOINES, IA 50322 PHONE: (515) 253-0830</p>	FOR: ROCKWELL COLLINS FACILITY 855 35TH STREET CEDAR RAPIDS, IOWA 52498	GROUNDWATER IMPACT MAP			FIGURE: <h1 style="margin: 0;">5</h1>
	JOB NUMBER: 193709720	DRAWN BY: SAH	CHECKED BY: SRV	APPROVED BY: SRV	DATE: 1/08/2024

ATTACHMENT A

From: [Meissner, Benjamin \(he/him/his\)](#)
To: [Varsa, Steve](#)
Cc: [Anderson, Michael](#); [Hylton Jackson](#); [Mahler, Marina](#)
Subject: RE: Rockwell Collins: 35th Street Site: Groundwater Remediation Work Plan - UIC Authorization Request
Date: Thursday, July 20, 2023 2:17:31 PM

Stephen Varsa, PG, RG
Principal Hydrogeologist
Stantec Environmental Services
11311 Aurora Avenue
Des Moines, Iowa 50322

Mr. Varsa:

We have reviewed the information that you have provided regarding Stantec Consulting Services' proposed use of S-MicroZVI®, 3-D Microemulsion®, BDI® Plus and PlumeStop® for the remediation of groundwater contamination due to a release of chlorinated volatile organic compounds (CVOCs) and chlorinated ethenes (TCE) at the 35th Street NE/Main Plant LRP Site (Land Recycling Program [LRP] #2683) located at 855 35th Street NE, Cedar Rapids, IA. The injection/emplacement of this material into the subsurface proposed in your remediation plan is regulated by the Underground Injection Control (UIC) Program as Class V injection wells. Injection wells in this classification are allowed to operate either as Rule Authorized, or under conditions of a permit. The decision to permit these operations is based on the following criteria: whether the injectate could cause a violation of the Primary Drinking Water Regulations under 40 CFR § 141 or otherwise adversely affect the health of humans; the duration of the project; frequency of injection; and the volume of fluids to be injected. To ensure the protection of underground sources of drinking water, the Environmental Protection Agency (EPA) – Region 7 requires authorization to be obtained from EPA for all aquifer remediation related injection wells by the authorities granted the Administrator under 40 CFR § 144.25(a)(3) prior to commencing operations.

Based on the information provided, the injection/emplacement described in the Corrective Action Design Report (CADR) that you have provided regarding Stantec Consulting Services' proposed use of S-MicroZVI®, 3-D Microemulsion®, BDI® Plus and PlumeStop® to encourage remediation via biodegradation and sorption at the Site should not result in an adverse impact to any underground sources of drinking water or otherwise adversely affect the health of humans. Therefore, EPA Region 7 has determined that the approximately 194 proposed injection points to emplace up to ~55,620 gallons of the selected remedial constituents at the Site will be allowed to operate as Rule Authorized under 40 CFR § 144.24 without the need for permitting. These wells will be covered under the EPA UIC facility ID number IAS113260037. Given our past experience with the proposed remedial approach in Iowa, we do not anticipate any adverse impact to any drinking water wells. However, given the proximity of a drinking water well to the contaminant plume, monitoring of the groundwater to determine any plume migration will be of great importance to ensure the drinking water is not impacted. Please note that if the monitoring does indicate any migration of the contaminant plume toward any of the drinking water wells, you will need to contact both EPA and Iowa Department of Natural Resources (IDNR) so a determination of further actions can be made to prevent plume migration toward the well. If surfacing occurs during the injection/emplacement of remedial materials into the interval designated in the CADR, injection into the well(s) is to be halted and adjustments made to the injection rates/pressures at all remaining injection wells to prevent additional surfacing from occurring. Any materials which have surfaced (either during the well installation or emplacement of remediation materials) will need to be contained and not allowed to migrate off-site. Also, be advised that EPA Region 7 has only approved one treatment event at this time, and additional information will be required for submittal to EPA Region 7 for any further proposed bioremediation treatments at the Site at least 30 days before commencing further operations.

By the authorities granted under 40 CFR Section §144.27, we are also requesting that the results of all groundwater monitoring and copies of any reports or notifications required by the IDNR be submitted as the project progresses to the Director at the following e-mail address: R7_UIC_Program@epa.gov. All required reporting or other correspondence should reference the UIC facility ID number, site name, address, and IDNR registration number. The authorization by rule for this operation automatically terminates for any failure to comply with the above requirements or if the Agency learns or suspects that the operations have adversely impacted an underground source of drinking water or otherwise adversely

affected the health of humans.

Though the EPA Region 7 has determined that this activity will not require an EPA issued UIC permit, this does not preclude the need to obtain a state issued water allocation permit. The Water Quality Bureau of the IDNR handles the state approval of water allocation. Therefore, the proposed remediation MAY NOT go into operation until you have received either a water allocation permit or other form of approval from IDNR.

While a UIC permit was not required for this project, the EPA Region 7 needs to be made aware of any additional remediation projects which your firm will be conducting in Iowa which involves the use of injection wells at least 30 days before commencing operation so that a determination can be made if permitting is necessary. Any injection of materials into the subsurface within the State of Iowa that is done without prior approval from EPA is considered an unauthorized injection and is subject to up to \$10,000 per day per violation in penalties.

Please contact me or Marina Mahler (email: mahler.marina@epa.gov or phone: 913-551-7008) if you should have any questions on this decision and its requirements or any other UIC related issues.

Thanks,

Ben Meissner

EPA Region 7: Water Division

Groundwater & Drinking Water Branch

Phone: (913) 551-7992

Fax: (913) 551-9992

From: Anderson, Michael <michael.anderson@dnr.iowa.gov>

Sent: Saturday, July 8, 2023 4:35 AM

To: Varsa, Steve <steve.varsa@stantec.com>

Cc: Meissner, Benjamin (he/him/his) <Meissner.Benjamin@epa.gov>; Hylton Jackson <hylton.jackson@dnr.iowa.gov>

Subject: Re: Rockwell Collins: 35th Street Site: Groundwater Remediation Work Plan - UIC Authorization Request

The goal of the injections is to achieve bioaugmentation and stimulation of chemical reduction and anerobic biodegradation of chlorinated volatile organic compounds (CVOCs) through vinyl chloride to ethene gas in identified source areas and prevent down-gradient migration of CVOCs. Secondly, liquid activated carbon application is proposed to form a downgradient barrier with a high sorption capacity to reduce concentrations while destructive remediation occurs.

The water supply engineering/water allocation workgroup has no objections to the plan as specified, and will offer no further comment.

On Fri, Jul 7, 2023 at 9:03 PM Varsa, Steve <steve.varsa@stantec.com> wrote:

RE: 35th Street/Main Plant LRP Site, Rockwell Collins, 855 35th Street NE, Cedar Rapids, IA
LRP Site #2683

Hi Ben -

On behalf of Rockwell Collins, Inc., Stantec Environmental Services is requesting US EPA provide a determination regarding applicability of Underground Injection Control (UIC) Program as Rule Authorized for the injection activities outlined in the attached work plan. The injection activities are planned to begin in late August 2023.

Following your response, we will subsequently request approval from the Iowa Department of Natural Resources (IDNR) – Water Quality Bureau, for the planned injection activities. The attached Work

Plan has been approved by Mr. Hylton Jackson, project manager at IDNR Contaminated Sites Section, as noted below.

In summary, there are 194 planned injection locations proposed to depths of approximately 15 feet below ground surface. Attachment 1 in the attached Work Plan summarizes the materials and quantities to be injected at the site.

The closest active water well is located approximately 1,000-feet north-northwest of the site.

Please contact me if you have questions or require additional information regarding this matter.

Thank you,
Steve

Stephen Varsa, P.G., R.G.

Principal Hydrogeologist
Stantec Environmental Services
11311 Aurora Avenue
Des Moines, Iowa 50322
Direct: (515) 251-1020
Cell: (515) 710-7523
Office: (515) 253-0830
steve.varsa@stantec.com

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From: Jackson, Hylton <hylton.jackson@dnr.iowa.gov>

Sent: Wednesday, July 5, 2023 8:16 AM

To: Varsa, Steve <steve.varsa@stantec.com>

Cc: Mike Sullivan <michael.sullivan@dnr.iowa.gov>

Subject: Corrective Action Work Plan Rockwell 35th St.

Steve

I have reviewed the work plan that you submitted for the above mentioned Rockwell LRP site. The DNR approves the plan with no significant comments or questions.

Hylton

--

Hylton Jackson | Environmental Specialist
Solid Waste & Contaminated Sites Section
Iowa Department of Natural Resources
P: 515-681-9927
502 E. 9th Street, Des Moines, IA 50319

iowadnr.gov

Caution: This email originated from outside of Stantec. Please take extra precaution.

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précautions supplémentaires.

Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

--

Michael K. Anderson, P.E. | Environmental Engineer Senior
Water Quality Bureau/Water Supply Engineering Section
Iowa Department of Natural Resources
P: 515-725-0336
502 E. 9th Street, Des Moines, IA 50319

iowadnr.gov

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Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

ATTACHMENT B



**Obstruction of City
Right of Way**

Permit Number:
OBST-120-2023

Permit Information

Job Address:
855 35th St NE Cedar
Rapids
Status:
Issued

Obstruction Type:
Other

Issued Date:
8/25/2023
Expiration Date:
9/28/2023

Reason for Work: Environmental remediation work. Water supply for work to a private property will come from the fire hydrant on the corner of 33rd and Eastern Ave. The water hose will be strung out across the street with a hose ramp over top to allow traffic to continue.

Contacts

Type:
Property Owner Name:

Applicant:

Contact Name:
Collins Aerospace

Emma Brady

Address:

11311 Aurora Ave

Contractors

Type:

Comments

Fees

Invoice Number:
INV-00233208

Invoice Date:
8/25/2023

Invoice Total:
50.000000



**Work in the
Right-of-Way Permit**

Permit Number:
7496 - 2023

Permit Information

Job Address:

3301 EASTERN AVE NE

Monitoring Well, Soil Boring

Issued Date:

9/11/2023

Status:

Issued

Expiration Date

10/22/2023

Reason for Work: Installing injection points in eastern ave ne from 33rd st ne to center st ne

Contacts

Type:

Property Owner Name:

Contact Name:

SICKLES KAYLA A

Address:

3301 EASTERN AVE NE

Applicant:

craig hewins

8110 Cole Parkway
Shawnee, Kansas

Contractors

Type:

Contact Name:

Comments

Fees

Invoice Number:

INV-00234266

Invoice Date:

8/30/2023

Invoice Total:

\$2500.00

Additional Information

Friendly Reminder:

1. The applicant shall notify Iowa One Call (IOC) at 1-800-292-8989 or www.iowaonecall.com for utility locates prior to excavation. IOC required 48 hours notice.

2. Upon approval of permit, the applicant shall notify Public Works Inspectors NE/SE at 1-319-521-5863 or NW/SW at 1-319-440-6377 at least 24 hours in advance of starting any work and in advance of any street or alley pavement repairs. Concrete work requires forms inspections prior to pour and a final inspection after the pour. For properties in NE/SE Quadrant call Vaughn at 319-521-5863; for properties in SW/NW Quadrant call Will at 319-440-6377 to set up inspections. Please give 24 hours advance notice for any needed inspection.

3. Sidewalk Reimbursement Requirements: Pre-Pour Inspection, Inspection after construction has been started, but before the concrete pour. Final Inspection, Inspection after the sidewalk installation is completed. Both inspections are required for the repair to be eligible for reimbursement.



**Work in the
Right-of-Way Permit**

Permit Number:
7584 - 2023

Permit Information

Job Address:

3301 EASTERN AVE NE Monitoring Well, Soil Boring

Issued Date:

9/13/2023

Status:

Issued

Expiration Date

10/13/2023

Reason for Work: Installation of two groundwater monitoring wells located in the grass right of way near the intersection of 33rd st ne and northeastern ave ne.

Contacts

Type:

Property Owner Name:

Contact Name:

SICKLES KAYLA A

Address:

3301 EASTERN AVE NE

Applicant:

craig hewins

8110 Cole Parkway
Shawnee, Kansas

Contractors

Type:

Contact Name:

Comments

Maintain minimum 6 feet clearance from field marked water mains.

Fees

Invoice Number:

INV-00236372

Invoice Date:

9/11/2023

Invoice Total:

\$100.00

Additional Information

Friendly Reminder:

1. The applicant shall notify Iowa One Call (IOC) at 1-800-292-8989 or www.iowaonecall.com for utility locates prior to excavation. IOC required 48 hours notice.
2. Upon approval of permit, the applicant shall notify Public Works Inspectors NE/SE at 1-319-521-5863 or NW/SW at 1-319-440-6377 at least 24 hours in advance of starting any work and in advance of any street or alley pavement repairs. Concrete work requires forms inspections prior to pour and a final inspection after the pour. For properties in NE/SE Quadrant call Vaughn at 319-521-5863; for properties in SW/NW Quadrant call Will at 319-440-6377 to set up inspections. Please give 24 hours advance notice for any needed inspection.
3. Sidewalk Reimbursement Requirements: Pre-Pour Inspection, Inspection after construction has been started, but before the concrete pour. Final Inspection, Inspection after the sidewalk installation is completed. Both inspections are required for the repair to be eligible for reimbursement.







ROAD CLOSED

ROAD CLOSED

ROAD CLOSED TO THRU TRAFFIC

ROAD CLOSED TO THRU TRAFFIC

ROAD CLOSED AHEAD

33rd St NE

33rd St NE

33rd St NE

Eastern Avenue NE

Eastern Avenue

32nd St NE

32nd St NE

32nd St NE

Google

32nd St NE

32nd St NE

32nd St NE



ATTACHMENT C



JOB SUMMARY

Service Completed Date: 08/03/2023

Customer: STANTEC CONSULTING SERVICES INC **Phone Number:**

Billing Address	City	State	Zip
11311 AURORA AVENUE	DES MOINES	IA	50322

Job Details

Jobsite Location	City	State	Zip
855 35th Street Northeast	Cedar Rapids	IA	52402

Work Order Number	574783-79629	Customer Service Phone Num	
Job Num	193709720.100.001	PO Num	40733

Project Manager: John Goossen **Email:** John.Goossen@gprsinc.com

Thank you for using GPRS on your project. We appreciate the opportunity to work with you. If you have questions regarding the results of this scanning, please contact the lead GPRS technician on this project.

EQUIPMENT USED

The following equipment was used on this project:

- **Underground GPR Antenna:** This GPR Antenna uses frequencies ranging from 250 MHz to 450 MHz and is mounted in a stroller frame that rolls over the surface. Data is displayed on a screen and marked in the field in real-time. The surface needs to be reasonably smooth and unobstructed to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the efficacy of GPR. The total effective scan depth can be as much as 8' or more with this antenna but can vary widely depending on the soil conditions and composition. Some soil types, such as clay, may limit maximum depths to 3' or less. As depth increases, targets must be larger to be detected, and non-metallic targets can be challenging to locate. The depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **EM Pipe Locator:** Electromagnetic Pipe and Cable Locator. Detects electromagnetic fields. Used to actively trace conductive pipes and tracer wires, or passively detect power and radio signals traveling along conductive pipes and utilities. For more information, please visit: [Link](#)
- **GPS:** This handheld unit offers accuracy down to 4 inches; however, the accuracy achieved will depend on the satellite environment at the time of collection and is not considered survey-grade. Features can be collected as points, lines, or areas and then exported as a KML/KMZ or overlaid on a CAD drawing. For more information, please visit: [Link](#)



JOB SUMMARY

WORK PERFORMED

GPRS performed the following work on this project:

UNDERGROUND UTILITY

- The total area scanned was approximately 2 acres.
- The effective depth of GPR will vary throughout a site depending on a variety of factors such as surface type, surface conditions, soil type, and moisture content. At this site, the maximum effective GPR depth was approximately 3 feet.

RESULTS AND NOTES

Additional Notes	Located and marked storm sewer lines, and unknown anomalies in conflict of paths of interest. Also located a few utility lines that were missed by other locators onsite. Unable to see sanitary lines with GPR		
Located Utilities:	Water, Storm Sewer, Unknown	Unlocatable Utility Types:	Sanitary Sewer
Marking Medium:	Spray Paint, Flags	Limitations Encountered:	Utilities were too deep to locate
Client's Scope of Work:	Scan, with GPR, 3 lines of soil bore locations.	Findings Walkthrough done with client:	Yes



JOB SUMMARY

Image 1



Image 2



Image 3



Image 4





JOB SUMMARY



CONTACT / SIGNATURE INFORMATION

TERMS & CONDITIONS

<http://www.gprsinc.com/termsandconditions.html>

SIGNATURE



CONTACT NAME

STEVE VERSA

515-251-1020

GPRS

3D LASER SCANNING

BUILD AT THE SPEED OF *INSIGHT*

GPRS DELIVERS SINGULAR SOLUTIONS IN 3D TECHNOLOGY

GPRS intelligently Visualizes The Built World™ above and below ground as the leading provider of accurate and creative 3D laser scanning solutions for the construction, architecture, and engineering industries.

3D laser scan technology is a cost-effective solution to your facility visualization needs. It can reduce and even eliminate costly errors to speed up your design, engineering, and construction process.

ABOVE AND BELOW GROUND DATA CAPTURE

The combination of laser scanning and ground penetrating radar allows you to visualize your facility effectively and accurately.

Our fully integrated service gives you accurate data to expedite design planning, extract 3D coordinates and measure distances, along with the ability to mark-up and share this with project teams. Receiving critical site information will lower project risks and increase project efficiency.

What can GPRS help you visualize?

SERVICES

 **UTILITY LOCATING**

 **VIDEO PIPE INSPECTION**

 **LEAK DETECTION**

 **MAPPING & MODELING**

 **CONCRETE IMAGING**



- ✓ TRAINING
- ✓ EQUIPMENT
- ✓ METHODOLOGY

The use of proper training, multiple technologies and a field-tested methodology are the key to a successful utility locate. GPRS is a master of all three components through the utilization of the SIM Specification.

SIMSPEC.ORG

1.866.914.4718

GPRSINC.COM



JOB SUMMARY

Service Completed Date: 09/18/2023

Customer: STANTEC CONSULTING SERVICES INC **Phone Number:**

Billing Address	City	State	Zip
11311 AURORA AVENUE	DES MOINES	IA	50322

Job Details

Jobsite Location	City	State	Zip
3221 Eastern Ave NE	Cedar Rapids	IA	52402

Work Order Number	592005-95896	Customer Service Phone Num	
Job Num		PO Num	193709720

Project Manager: John Goossen **Email:** John.Goossen@gprsinc.com

Thank you for using GPRS on your project. We appreciate the opportunity to work with you. If you have questions regarding the results of this scanning, please contact the lead GPRS technician on this project.

EQUIPMENT USED

The following equipment was used on this project:

- **Underground GPR Antenna:** This GPR Antenna uses frequencies ranging from 250 MHz to 450 MHz and is mounted in a stroller frame that rolls over the surface. Data is displayed on a screen and marked in the field in real-time. The surface needs to be reasonably smooth and unobstructed to obtain readable scans. Obstructions such as curbs, landscaping, and vegetation will limit the efficacy of GPR. The total effective scan depth can be as much as 8' or more with this antenna but can vary widely depending on the soil conditions and composition. Some soil types, such as clay, may limit maximum depths to 3' or less. As depth increases, targets must be larger to be detected, and non-metallic targets can be challenging to locate. The depths provided should always be treated as estimates as their accuracy can be affected by multiple factors. For more information, please visit: [Link](#)
- **EM Pipe Locator:** Electromagnetic Pipe and Cable Locator. Detects electromagnetic fields. Used to actively trace conductive pipes and tracer wires, or passively detect power and radio signals traveling along conductive pipes and utilities. For more information, please visit: [Link](#)
- **GPS:** This handheld unit offers accuracy down to 4 inches; however, the accuracy achieved will depend on the satellite environment at the time of collection and is not considered survey-grade. Features can be collected as points, lines, or areas and then exported as a KML/KMZ or overlaid on a CAD drawing. For more information, please visit: [Link](#)



JOB SUMMARY

WORK PERFORMED

GPRS performed the following work on this project:

UNDERGROUND UTILITY

- The scope of work included scanning the areas around proposed soil borings. A radius of approximately 10 around each proposed soil boring was scanned unless otherwise noted.
- A total of 2 boring locations were scanned.
- The effective depth of GPR will vary throughout a site depending on a variety of factors such as surface type, surface conditions, soil type, and moisture content. At this site, the maximum effective GPR depth was approximately 3 feet.

RESULTS AND NOTES

Details on Unlocatable Utilities	Unable to verify communication lines within areas of interest. Unable to track down connection points to locate lines.		
Additional Notes	Marked unknown line (orange w/pink flags) and storm sewer (orange SS w/green flags) within southern area.		
Unlocatable Utility Types:	Communication	Located Utilities:	Electric, Natural Gas, Water, Storm Sewer
Marking Medium:	Spray Paint, Flags	Findings Walkthrough done with client:	Yes



JOB SUMMARY

Image 1



Image 2



Image 3



Image 4





JOB SUMMARY



CONTACT / SIGNATURE INFORMATION

TERMS & CONDITIONS

<http://www.gprsinc.com/termsandconditions.html>

SIGNATURE



CONTACT NAME

STEVE VERSA

515-251-1020

GPRS

3D LASER SCANNING

BUILD AT THE SPEED OF *INSIGHT*

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SIMSPEC.ORG

 **UTILITY LOCATING**

 **VIDEO PIPE INSPECTION**

 **LEAK DETECTION**

 **MAPPING & MODELING**

 **CONCRETE IMAGING**

1.866.914.4718

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ATTACHMENT D



GROUNDWATER
SAMPLE COLLECTION RECORD

Well No. MW-0201

3. SAMPLE COLLECTION: Method SS portable bladder pump with disposable bladder and dedicated tubing.

Container Type: 40-mL vial (3)	Preservation: HCl	Analysis Req.: VOCs-(SW-846 8260)
Container Type: 40-mL vial (3)	Preservation: None	Analysis Req.: RSK 175 CO2
Container Type: 40-mL vial (2)	Preservation: Sulfuric Acid	Analysis Req.: 9060A - TOC
Container Type: 250-mL Poly (1)	Preservation: None	Analysis Req.: 9056A - ORGFM
Container Type: 250-mL Poly (1)	Preservation: Nitric Acid	Analysis Req.: 6020B - Dissolved Fe and Mn
Container Type: 500 mL Poly (1)	Preservation: NaOH	Analysis Req.: Sulfide
Container Type: 40 mL vial (3)	Preservation: HCl	Analysis Req.: RSK 175
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____

Sample ID #: MW02-GW-0823 Time Sampled: 1716

4. COMMENTS: Field filter sample: test for MNA parameters.

Depth of sample intake = 1' from Bottom

QA/QC Sample Collected = None

well de-water but recharges

Ellen Kay
Sampler (Signature)

Emma Brady
(Print Name)



**GROUNDWATER
SAMPLE COLLECTION RECORD**

Well No. MW - 06

Job No.: 193709720.100.003

Client: Rockwell Collins-35th St

Location: Cedar Rapids, Iowa

Date: 8/15/2023

Weather Conditions: 77°F, Sunny

1. WATER LEVEL DATA: (from TOC)

a. Total Well Length (h)	<u>14.78</u> feet	Well Diameter	<u>2-inch inner diameter</u>
b. Depth to Water	<u>6.71</u> feet	Three Well Volumes	<u>—</u> gallons
c. Length of Water Column	<u>8.07</u> feet	One System Volume	<u>—</u>

2. WELL PURGING DATA:

a. Purge Method SS portable bladder pump (S/N= 144547) with disposable bladder and dedicated tubing.

b. Purge Requirements Low Flow Stabilization according to SOP.

c. Field Testing Equipment Used In-Situ AT600 Multiparameter Meter (S/N = 1023302) w/Flow Through Cell
Hanna digital turbidity meter (S/N = E0016481)

Time	DTW (ft)	Volume (mL)	Temp. (°C) (+/- 0.5)	pH (s.u.) (+/- 0.1)	Spec. Cond. (µS/cm) (+/- 3%)	ORP (mV) (+/- 10 mV)	DO (mg/L) (+/- 0.3)	Turbidity (NTU) (+/- 10% when >50 NTU)	Color (visual)
0159	7.19	Pre-install							
0200	7.22	Start	22.51	6.52	1334.2	106.8	0.21	3117	>max
0201	7.24	500ml							
0201									
1418.30		Start							
1420.32	7.20	1000ml	14.40	6.30	1280.7	168.8	0.91	2422	7max Brn
1423.31	7.23	1000ml	20.00	6.35	1204.7	154.8	0.75	511.69	485 Brn
1427.16	7.30	1000ml	19.67	6.43	1441.3	140.1	0.68	606.79	508 Brn
1430.49	7.34	1000ml	19.55	6.44	1041.0	138.7	0.63	421.27	415 Lt Brn
1433.4	7.34	1000ml	19.56	6.54	1052.9	133.0	0.58	333.40	348 Lt Brn
1436.37	7.36	1000ml	19.59	6.58	1030.2	130.1	0.53	331.4	237 Lt Brn
1438.41	7.37	1000ml	19.47	6.60	1017.2	124.8	0.48	306.15	208 Lt Brn
1441.15	7.30	1000ml	19.52	6.62	1005.3	123.5	0.45	222.04	142 Lt Brn
1444.23	7.28	1000ml	19.45	6.66	446.60	115.7	0.42	166.09	109 Lt Brn
1447.58	7.22	1000ml	19.54	6.68	982.73	111.2	0.43	116.53	90.4 Lt Brn
1451.27	7.28	1000ml	19.35	6.70	474.03	106.2	0.42	80.71	75.2 Lt Brn
1454.32	7.27	1000ml	19.35	6.72	476.02	102.4	0.41	70.35	69.4 Lt Brn
1457.36	7.31	1000ml	19.40	6.74	474.02	99.7	0.40	59.50	56.7 Lt Brn
1500.39	7.22	1000ml	19.42	6.75	472.66	96.9	0.38	52.14	55.7 Colorless
1504.15	7.30	1000ml	19.44	6.77	468.12	96.8	0.37	48.53	48.5 Colorless
1510		Sample							

ERP
LDC



**GROUNDWATER
SAMPLE COLLECTION RECORD**

Well No. MW- 11

Job No.: 193709720.100.003

Client: Rockwell Collins-35th St

Location: Cedar Rapids, Iowa

Date: 8/16/2023

Weather Conditions: 76°F, Sunny

1. WATER LEVEL DATA: (from TOC)

a. Total Well Length (h)	<u>12.71</u> feet	Well Diameter	<u>2-inch inner diameter</u>
b. Depth to Water	<u>7.78</u> feet	Three Well Volumes	<u>—</u> gallons
c. Length of Water Column	<u>4.93</u> feet	One System Volume	<u>✓</u>

2. WELL PURGING DATA:

a. Purge Method SS portable bladder pump (S/N= 11439) with disposable bladder and dedicated tubing.

b. Purge Requirements Low Flow Stabilization according to SOP.

c. Field Testing Equipment Used In-Situ AT600 Multiparameter Meter (S/N = 1023302) w/Flow Through Cell
Hanna digital turbidity meter (S/N = E0016281)

Time	DTW (ft)	Volume (mL)	Temp. (°C) (+/- 0.5)	pH (s.u.) (+/- 0.1)	Spec. Cond. (µΩ/cm) (+/- 3%)	ORP (mV) (+/- 10 mV)	DO (mg/L) (+/- 0.3)	Turbidity (NTU) (+/- 10% when >50 NTU)	Color (visual)
		Pre-install						Troll/Hanna	
<u>1236</u>	<u>—</u>	<u>Start</u>							
<u>1239</u>	<u>—</u>	<u>1000</u>	<u>18.60</u>	<u>6.49</u>	<u>2517</u>	<u>-178</u>	<u>0.14</u>	<u>426</u>	<u>386 Lt Brn</u>
<u>1243</u>	<u>—</u>	<u>1000</u>	<u>18.25</u>	<u>6.45</u>	<u>2671</u>	<u>-176</u>	<u>0.08</u>	<u>264</u>	<u>143 Lt Brn</u>
<u>1247</u>	<u>✓</u>	<u>1000</u>	<u>18.25</u>	<u>6.44</u>	<u>2820</u>	<u>-177</u>	<u>0.04</u>	<u>148</u>	<u>43.7</u>
<u>1251</u>	<u>—</u>	<u>1000</u>	<u>18.16</u>	<u>6.44</u>	<u>2936</u>	<u>-174</u>	<u>0.03</u>	<u>105</u>	<u>47.3</u>
<u>1255</u>	<u>✓</u>	<u>1000</u>	<u>18.02</u>	<u>6.45</u>	<u>3005</u>	<u>-180</u>	<u>0.02</u>	<u>187</u>	<u>86</u>
<u>1300</u>	<u>✓</u>	<u>1000</u>	<u>17.40</u>	<u>6.47</u>	<u>3024</u>	<u>-182</u>	<u>0.01</u>	<u>88</u>	<u>64</u>
<u>1303</u>	<u>—</u>	<u>1000</u>	<u>17.93</u>	<u>6.48</u>	<u>3048</u>	<u>-183</u>	<u>0.00</u>	<u>64</u>	<u>57.4</u>
<u>1306</u>	<u>—</u>	<u>1000</u>	<u>18.00</u>	<u>6.48</u>	<u>3044</u>	<u>-184</u>	<u>0.00</u>	<u>43</u>	<u>30</u>
<u>1310</u>	<u>—</u>	<u>sample</u>							



GROUNDWATER
SAMPLE COLLECTION RECORD

Well No. MW- 13

3. SAMPLE COLLECTION: Method SS portable bladder pump with disposable bladder and dedicated tubing.

Container Type: <u>40-mL vial (3)</u>	Preservation: <u>HCl</u>	Analysis Req.: <u>VOCs-(SW-846 8260)</u>
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____

Sample ID #: MW13-GW-0823 Time Sampled: 1050

4. COMMENTS: None
Depth of sample intake = 2' from bottom
QA/QC Sample Collected = None

[Signature]
Sampler (Signature)

Emma Brady
(Print Name)



**GROUNDWATER
SAMPLE COLLECTION RECORD**

Well No. MW- 16

Job No.: 193709720.100.003

Client: Rockwell Collins-35th St

Location: Cedar Rapids, Iowa

Date: 8/16/2023

Weather Conditions: 75°F, Sunny

1. WATER LEVEL DATA: (from TOC)

a. Total Well Length (h)	15.12 feet	Well Diameter	2-inch inner diameter
b. Depth to Water	7.68 feet	Three Well Volumes	— gallons
c. Length of Water Column	7.44 feet	One System Volume	—

2. WELL PURGING DATA:

a. Purge Method SS portable bladder pump (S/N= 144548) with disposable bladder and dedicated tubing.

b. Purge Requirements Low Flow Stabilization according to SOP.

c. Field Testing Equipment Used In-Situ AT600 Multiparameter Meter (S/N = 1023302) w/Flow Through Cell
Hanna digital turbidity meter (S/N =)

Time	DTW (ft)	Volume (mL)	Temp. (°C) (±0.5)	pH (s.u.) (±0.1)	Spec.Cond. (µΩ/cm) (±3%)	ORP (mV) (±10 mV)	DO (mg/L) (±0.3)	Turbidity (NTU) (±10% when >50 NTU)	Color (visual)
		Pre-install						Troll/Hanna	
1142	—	Start							
1146	—	1000	18.56	6.69	1452	-38	0.24	122	827 Lt Brn
1149	—	1000	17.79	6.60	1450	-46	0.16	99	78 Lt Brn
1152	—	1000	17.43	6.61	1443	-46	0.12	63	47 Lt Brn
1156	—	1000	17.49	6.63	1438	-50	0.11	38	28 Colorless
1200	—	1000	17.50	6.64	1429	-51	0.08	31	29 Colorless
1203	—	1000	17.54	6.64	1430	-54	0.08	17	19 "
1207	—	1000	17.64	6.71	1427	-55	0.07	13	16 "
1210	—	1000	17.57	6.72	1429	-55	0.07	6	8 "
1215	—	Sample							



**GROUNDWATER
SAMPLE COLLECTION RECORD**

Well No. MW- 05

Job No.: 193709720.100.003

Client: Rockwell Collins-35th St

Location: Cedar Rapids, Iowa

Date: 4/05/2023

Weather Conditions: 85°F, Sunny

1. WATER LEVEL DATA: (from TOC)

- | | | | |
|---------------------------|------------|--------------------|-----------------------------|
| a. Total Well Length (h) | _____ feet | Well Diameter | _____ 2-inch inner diameter |
| b. Depth to Water | _____ feet | Three Well Volumes | _____ gallons |
| c. Length of Water Column | _____ feet | One System Volume | _____ |

2. WELL PURGING DATA: Peristaltic Pump

- a. Purge Method SS portable bladder pump (S/N=_____) with disposable bladder and dedicated tubing.
- b. Purge Requirements Low Flow Stabilization according to SOP.
- c. Field Testing Equipment Used In-Situ AT600 Multiparameter Meter (S/N = _____) w/Flow Through Cell
Hanna digital turbidity meter (S/N=_____)

Time	DTW (ft)	Volume (mL)	Temp. (°C) (+/- 0.5)	pH (s.u.) (+/- 0.1)	Spec. Cond. (µΩ/cm) (+/- 3%)	ORP (mV) (+/- 10 mV)	DO (mg/L) (+/- 0.3)	Turbidity (NTU) (+/- 10% when >50 NTU)	Color (visual)
1400		Pre-install						Troll/Hanna	
1400		Start							
1403	-	1000	28.67	6.43	4591	6.0	1.14	479	Lt Brn
1405	-	1000	26.54	6.38	5151	-5.9	1.69	258	Colorless
1407	-	1000	25.73	6.41	5474	-15.3	1.17	256	"
1410	-	1000	25.02	6.43	5862	-21.5	0.82	209	"
1413	-	1000	24.43	6.45	6145	-29.8	0.70	112	"
1416	-	1000	24.16	6.46	6317	-34.4	0.78	114	"
1420	-	1000	23.95	6.48	6517	-46.9	0.71	107	"
1425	-	1000	23.82	6.53	6691	-58.2	0.56	44	"
1429	-	1000	23.88	6.56	6774	-64.8	0.43	40	"
1434	-	1000	23.97	6.59	6837	-70.3	0.44	83	"
1437	-	1000	23.98	6.61	6887	-75.5	0.48	92	"
1440	-	Sample							



**GROUNDWATER
SAMPLE COLLECTION RECORD**

Well No. MW- 06

Job No.: 193709720.100.003

Client: Rockwell Collins-35th St

Location: Cedar Rapids, Iowa

Date: 4/5/2023

Weather Conditions: 84°F, Sunny

1. WATER LEVEL DATA: (from TOC)

a. Total Well Length (h)	<u>14.78</u> feet	Well Diameter	<u>2-inch inner diameter</u>
b. Depth to Water	<u>7.46</u> feet	Three Well Volumes	<u> </u> gallons
c. Length of Water Column	<u> </u> feet	One System Volume	<u> </u> gallons

2. WELL PURGING DATA:

a. Purge Method peristaltic pump (SS portable bladder pump (S/N=) with disposable bladder and dedicated tubing.

b. Purge Requirements Low Flow Stabilization according to SOP.

c. Field Testing Equipment Used In-Situ AT600 Multiparameter Meter (S/N 1034829) w/Flow Through Cell Hanna digital turbidity meter (S/N=)

Time	DTW (ft)	Volume (mL)	Temp. (°C) (+/- 0.5)	pH (s.u.) (+/- 0.1)	Spec. Cond. (µΩ/cm) (+/- 3%)	ORP (mV) (+/- 10 mV)	DO (mg/L) (+/- 0.3)	Turbidity (NTU) (+/- 10% when >50 NTU)	Color (visual)
		Pre-install						Troll/Hanna	
		Start							
<u>1146</u>	<u>7.54</u>	<u>1000</u>	<u>21.47</u>	<u>6.33</u>	<u>1206.9</u>	<u>12.4</u>	<u>1.31</u>	<u>540</u>	<u>DRK BRN</u>
<u>1151</u>	<u>7.62</u>	<u>1000</u>	<u>21.73</u>	<u>6.30</u>	<u>1270.8</u>	<u>21.4</u>	<u>1.35</u>	<u>338</u>	<u>LT BRN</u>
<u>1153</u>	<u>7.67</u>	<u>1000</u>	<u>21.43</u>	<u>6.30</u>	<u>1270.4</u>	<u>34.1</u>	<u>1.54</u>	<u>101</u>	<u>LT BRN</u>
<u>1155</u>	<u>7.62</u>	<u>1000</u>	<u>21.88</u>	<u>6.31</u>	<u>1270.6</u>	<u>55.5</u>	<u>1.54</u>	<u>232</u>	<u>Colorless</u>
<u>1158</u>	<u>"</u>	<u>1000</u>	<u>21.83</u>	<u>6.33</u>	<u>1262.0</u>	<u>26.5</u>	<u>1.47</u>	<u>75</u>	<u>Colorless</u>
<u>1200</u>	<u>"</u>	<u>1000</u>	<u>21.82</u>	<u>6.35</u>	<u>1254.1</u>	<u>98.0</u>	<u>1.48</u>	<u>288</u>	<u>LT BRN</u>
<u>1203</u>	<u>"</u>	<u>"</u>	<u>21.72</u>	<u>6.34</u>	<u>1242.3</u>	<u>105.6</u>	<u>1.38</u>	<u>147</u>	<u>"</u>
<u>1208</u>	<u>"</u>	<u>"</u>	<u>21.69</u>	<u>6.44</u>	<u>1229.4</u>	<u>112.3</u>	<u>1.34</u>	<u>113</u>	<u>"</u>
<u>1211</u>	<u>"</u>	<u>1000</u>	<u>21.63</u>	<u>6.48</u>	<u>1223.4</u>	<u>113.5</u>	<u>1.29</u>	<u>60</u>	<u>"</u>
<u>1214</u>	<u>"</u>	<u>"</u>	<u>21.49</u>	<u>6.80</u>	<u>1220.0</u>	<u>116.4</u>	<u>1.25</u>	<u>49</u>	<u>Colorless</u>
<u>1217</u>	<u>-</u>	<u>sample</u>							



GROUNDWATER
SAMPLE COLLECTION RECORD

Well No. TW-29

3. SAMPLE COLLECTION: Method

peristaltic pump

Container Type: <u>40ml vial(3)</u>	Preservation: <u>HCC</u>	Analysis Req.: <u>VOCs 8260</u>
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____

Sample ID #: TW-29

Time Sampled: 1445

4. COMMENTS:

went dry after 1000ml, let recharge and sample.

Emma Brady
Sampler (Signature)

Emma Brady
(Print Name)



**GROUNDWATER
SAMPLE COLLECTION RECORD**

Well No. MW - 18

Job No.: 193709822

Client: Rockwell Collins-35th St

Location: Cedar Rapids, Iowa

Date: 9/21/2023

Weather Conditions: 70's, Sunny

1. WATER LEVEL DATA: (from TOC)

a. Total Well Length (h)	<u>13.77</u> feet	Well Diameter	<u>2-inch inner diameter</u>
b. Depth to Water	<u>7.71</u> feet	Three Well Volumes	<u>3.03</u> gallons
c. Length of Water Column	<u>6.06</u> feet	One System Volume	

2. WELL PURGING DATA:

a. Purge Method SS portable bladder pump (S/N= 144547) with disposable bladder and dedicated tubing.

b. Purge Requirements Low Flow Stabilization according to SOP.

c. Field Testing Equipment Used In-Situ AT600 Multiparameter Meter (S/N = 1034929) w/Flow Cell

Time	DTW (ft)	Volume (mL)	Temp. (°C) (±0.5)	pH (s.u.) (±0.1)	Spec.Cond. (µS/cm) (±3%)	ORP (mV) (±10 mV)	DO (mg/L) (±0.3)	Turbidity (NTU) (±10% when >50 NTU)	Color (visual)
1309	7.72	Start							
1312	7.88	500 mL	19.84	6.74	2586	-15.5	0.01	927	Lt BRN
1314	7.89	500 mL	19.82	6.72	2564	-15.8	0.01	912	Lt BRN
1317	7.90	1000 mL	19.89	6.73	2556	-17.5	0.00	3589	Lt BRN
1321	7.95	1000 mL	19.88	6.72	2549	-18.2	0.00	6021	Lt BRN
1324	7.98	1000 mL	19.88	6.73	2551	-21.3	0.00	7824	Lt BRN
1328	7.95	1000 mL	19.94	6.71	2561	-26.4	0.00	9371	Lt BRN
1331	7.93	1000 mL	19.94	6.73	2558	-29.3	0.00	8878	Lt BRN
1334	7.97	1000 mL	19.79	6.73	2557	-32.3	0.00	7102	Lt BRN
1336	7.97	1000 mL	19.73	6.72	2551	-32.3	0.00	4442	Lt BRN
1341	7.95	1000 mL	19.67	6.70	2551	-31.5	0.00	3811	Lt BRN
1345	7.95	1000 mL	19.82	6.70	2549	-30.6	0.00	2649	Lt BRN
1348	7.95	1000 mL	19.80	6.70	2557	-29.3	0.00	1577	Lt BRN
1352	7.95	1000 mL	19.85	6.69	2558	-29.1	0.00	1000	Lt BRN
1355	7.95	1000 mL	19.79	6.70	2559	-28.2	0.00	630.8	Lt BRN
1358	7.95	1000 mL	19.76	6.69	2552	-28.9	0.00	496.7	Lt BRN
1401	7.95	1000 mL	19.86	6.68	2547	-29.2	0.00	354.9	Colorless
1407	7.95	1000 mL	19.79	6.69	2587	-28.9	0.00	272.3	//
1408	7.97	1000 mL	19.77	6.68	2543	-29.1	0.00	211.6	//
1411	7.95	1000 mL	19.73	6.68	2545	-29.0	0.00	168.7	//
1415	7.95	1000 mL	19.71	6.68	2548	-28.9	0.00	122.3	//
1418	7.95	1000 mL	19.69	6.69	2544	-29.0	0.00	108.2	//
1421	7.95	1000 mL	19.74	6.68	2543	-28.9	0.00	94.1	//
1425		Sample							



GROUNDWATER
SAMPLE COLLECTION RECORD

Well No. MW - 18

3. SAMPLE COLLECTION: Method SS portable bladder pump with disposable bladder and dedicated tubing.

Container Type: <u>40-mL vial (3)</u>	Preservation: <u>HCl</u>	Analysis Req.: <u>VOCs-(SW-846 8260)</u>
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____

Sample ID #: MW18, GW-0923 Time Sampled: 1425

4. COMMENTS: Dup01 - GW-0923 collected at "1300"
* NO Hanna Turb meter

[Signature]
Sampler (Signature)

Emma Brady
(Print Name)



GROUNDWATER
SAMPLE COLLECTION RECORD

Well No. MW - 19

3. SAMPLE COLLECTION: Method SS portable bladder pump with disposable bladder and dedicated tubing.

Container Type: <u>40-mL vial (3)</u>	Preservation: <u>HCl</u>	Analysis Req.: <u>VOCs-(SW-846 8260)</u>
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____
Container Type: _____	Preservation: _____	Analysis Req.: _____

Sample ID #: MW19-GW-0923 Time Sampled: 1505

4. COMMENTS: None

[Signature]
Sampler (Signature)

Emma Brady
(Print Name)

ATTACHMENT E



ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 9/1/2023 5:09:37 PM Revision 1

JOB DESCRIPTION

Rockwell Collins – 35th Street Main Plant

JOB NUMBER

310-262869-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



Authorized for release by
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Revision 1



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	6
Detection Summary	7
Client Sample Results	9
Definitions	28
Surrogate Summary	29
QC Sample Results	30
QC Association	45
Chronicle	48
Certification Summary	52
Method Summary	53
Chain of Custody	54
Receipt Checklists	63

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Job ID: 310-262869-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-262869-1

REVISION

The report being provided is a revision of the original report sent on 8/31/2023. The report (revision 1) is being revised due to This report was revised 9/01/2023. MW11 sample collection time was entered incorrectly..

Receipt

The samples were received on 8/17/2023 3:49 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.6°C, 1.3°C and 3.3°C

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-397232 recovered above the upper control limit for Vinyl chloride (22.8%D). The LCS associated with this CCV passed CCV criteria for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-397232/4).

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-397428 recovered above the upper control limit for 4-Methyl-2-pentanone (20.2%D). The LCS associated with this CCV passed CCV criteria for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-397428/3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Job ID: 310-262869-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-262869-2

Receipt

The samples were received on 8/17/2023 3:49 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.6°C, 1.3°C and 3.3°C

HPLC/IC

Method 9056A_ORGFM_48H: The following samples were analyzed outside of analytical holding time due to QC failure: MW07-GW-0823 (310-262869-12) and MW17-GW-0823 (310-262869-13).

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Job ID: 310-262869-2 (Continued)

Laboratory: Eurofins Cedar Falls (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-262869-1	MW01-GW-0823	Water	08/16/23 17:16	08/17/23 15:49
310-262869-2	MW06-GW-0823	Water	08/15/23 15:10	08/17/23 15:49
310-262869-3	MW08-GW-0823	Water	08/15/23 17:55	08/17/23 15:49
310-262869-4	MW09-GW-0823	Water	08/16/23 14:10	08/17/23 15:49
310-262869-5	MW11-GW-0823	Water	08/16/23 13:10	08/17/23 15:49
310-262869-6	MW12-GW-0823	Water	08/16/23 18:15	08/17/23 15:49
310-262869-7	Dup01-GW-0823	Water	08/16/23 00:00	08/17/23 15:49
310-262869-8	MW13-GW-0823	Water	08/16/23 10:50	08/17/23 15:49
310-262869-9	MW14-GW-0823	Water	08/15/23 19:45	08/17/23 15:49
310-262869-10	MW15-GW-0823	Water	08/15/23 18:58	08/17/23 15:49
310-262869-11	MW16-GW-0823	Water	08/15/23 12:15	08/17/23 15:49
310-262869-12	MW07-GW-0823	Water	08/17/23 10:57	08/17/23 15:49
310-262869-13	MW17-GW-0823	Water	08/17/23 09:10	08/17/23 15:49
310-262869-14	Trip Blank	Water	08/17/23 00:00	08/17/23 15:49

Detection Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW01-GW-0823

Lab Sample ID: 310-262869-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide - DL	22200		50.0		ug/L	10		RSK-175	Total/NA
Chloride	97.6	F1	5.00		mg/L	5		9056A	Total/NA
Nitrate as N	4.80		1.00		mg/L	5		9056A	Total/NA
Sulfate	142		5.00		mg/L	5		9056A	Total/NA
Manganese	0.0140		0.0100		mg/L	1		6020B	Dissolved
Total Organic Carbon	7.13		1.00		mg/L	1		9060A	Total/NA

Client Sample ID: MW06-GW-0823

Lab Sample ID: 310-262869-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	155		1.00		ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	6.40		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	14.0		1.00		ug/L	1		8260D	Total/NA
Vinyl chloride	2.61		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW08-GW-0823

Lab Sample ID: 310-262869-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	12.5		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW09-GW-0823

Lab Sample ID: 310-262869-4

No Detections.

Client Sample ID: MW11-GW-0823

Lab Sample ID: 310-262869-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	63.1	F1	1.00		ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	3.14		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	6.77		1.00		ug/L	1		8260D	Total/NA
Vinyl chloride	2.48		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW12-GW-0823

Lab Sample ID: 310-262869-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.06		1.00		ug/L	1		8260D	Total/NA
Carbon dioxide	11600		50.0		ug/L	10		RSK-175	Total/NA
Methane	52.2		1.00		ug/L	1		RSK-175	Total/NA
Chloride	448		10.0		mg/L	10		9056A	Total/NA
Sulfate	70.3		1.00		mg/L	1		9056A	Total/NA
Iron	0.187		0.100		mg/L	1		6020B	Dissolved
Manganese	0.316		0.0100		mg/L	1		6020B	Dissolved
Total Organic Carbon	2.39		1.00		mg/L	1		9060A	Total/NA

Client Sample ID: Dup01-GW-0823

Lab Sample ID: 310-262869-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.15		1.00		ug/L	1		8260D	Total/NA
Carbon dioxide	8580		50.0		ug/L	10		RSK-175	Total/NA
Methane	51.0		1.00		ug/L	1		RSK-175	Total/NA
Chloride	442		10.0		mg/L	10		9056A	Total/NA
Sulfate	70.3		1.00		mg/L	1		9056A	Total/NA
Iron	0.213		0.100		mg/L	1		6020B	Dissolved
Manganese	0.322		0.0100		mg/L	1		6020B	Dissolved

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: Dup01-GW-0823 (Continued)

Lab Sample ID: 310-262869-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	2.50		1.00		mg/L	1		9060A	Total/NA

Client Sample ID: MW13-GW-0823

Lab Sample ID: 310-262869-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.36		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW14-GW-0823

Lab Sample ID: 310-262869-9

No Detections.

Client Sample ID: MW15-GW-0823

Lab Sample ID: 310-262869-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.62		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW16-GW-0823

Lab Sample ID: 310-262869-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	7.45		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW07-GW-0823

Lab Sample ID: 310-262869-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	66.1		1.00		ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	6.92		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	13.3		1.00		ug/L	1		8260D	Total/NA
Carbon dioxide	47400		50.0		ug/L	10		RSK-175	Total/NA
Chloride	333		5.00		mg/L	5		9056A	Total/NA
Nitrate as N	7.58	H	1.00		mg/L	5		9056A	Total/NA
Sulfate	78.8		5.00		mg/L	5		9056A	Total/NA
Total Organic Carbon	1.45		1.00		mg/L	1		9060A	Total/NA

Client Sample ID: MW17-GW-0823

Lab Sample ID: 310-262869-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2410		10.0		ug/L	10		8260D	Total/NA
1,1-Dichloroethane	4.03		1.00		ug/L	1		8260D	Total/NA
1,1-Dichloroethene	2.94		2.00		ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	21.5		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	41.6		1.00		ug/L	1		8260D	Total/NA
Vinyl chloride	16.1		1.00		ug/L	1		8260D	Total/NA
Carbon dioxide	17700		50.0		ug/L	10		RSK-175	Total/NA
Methane	45.7		1.00		ug/L	1		RSK-175	Total/NA
Ethene	2.90		1.00		ug/L	1		RSK-175	Total/NA
Chloride	97.0		1.00		mg/L	1		9056A	Total/NA
Sulfate	60.0		1.00		mg/L	1		9056A	Total/NA
Iron	7.20		0.100		mg/L	1		6020B	Dissolved
Manganese	0.789		0.0100		mg/L	1		6020B	Dissolved
Total Organic Carbon	1.89		1.00		mg/L	1		9060A	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 310-262869-14

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW01-GW-0823

Lab Sample ID: 310-262869-1

Date Collected: 08/16/23 17:16

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 12:32	1
Benzene	<0.500		0.500		ug/L			08/21/23 12:32	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 12:32	1
Bromoform	<5.00		5.00		ug/L			08/21/23 12:32	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 12:32	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 12:32	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 12:32	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 12:32	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 12:32	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 12:32	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 12:32	1
Chloroform	<3.00		3.00		ug/L			08/21/23 12:32	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 12:32	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 12:32	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 12:32	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 12:32	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 12:32	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 12:32	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 12:32	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 12:32	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 12:32	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 12:32	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 12:32	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 12:32	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 12:32	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 12:32	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 12:32	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 12:32	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 12:32	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 12:32	1
Toluene	<1.00		1.00		ug/L			08/21/23 12:32	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 12:32	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 12:32	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 12:32	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 12:32	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 12:32	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 12:32	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 12:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		08/21/23 12:32	1
Dibromofluoromethane (Surr)	97		80 - 128		08/21/23 12:32	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 12:32	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	<1.00		1.00		ug/L			08/21/23 16:15	1
Ethane	<1.00		1.00		ug/L			08/21/23 16:15	1
Ethene	<1.00		1.00		ug/L			08/21/23 16:15	1

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW01-GW-0823

Lab Sample ID: 310-262869-1

Date Collected: 08/16/23 17:16

Matrix: Water

Date Received: 08/17/23 15:49

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	97		60 - 140					08/21/23 16:15	1
Method: RSK-175 - Dissolved Gases (GC) - DL									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	22200		50.0		ug/L			08/21/23 14:08	10
Method: SW846 9056A - Anions, Ion Chromatography									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	97.6	F1	5.00		mg/L			08/17/23 16:58	5
Nitrate as N	4.80		1.00		mg/L			08/17/23 16:58	5
Sulfate	142		5.00		mg/L			08/17/23 16:58	5
Method: SW846 6020B - Metals (ICP/MS) - Dissolved									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.100		0.100		mg/L		08/22/23 09:00	08/25/23 23:23	1
Manganese	0.0140		0.0100		mg/L		08/22/23 09:00	08/25/23 23:23	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	7.13		1.00		mg/L			08/25/23 16:00	1
Sulfide (SM 4500 S2 F)	<2.00		2.00		mg/L		08/21/23 09:46	08/21/23 09:46	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW06-GW-0823

Lab Sample ID: 310-262869-2

Date Collected: 08/15/23 15:10

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 12:53	1
Benzene	<0.500		0.500		ug/L			08/21/23 12:53	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 12:53	1
Bromoform	<5.00		5.00		ug/L			08/21/23 12:53	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 12:53	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 12:53	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 12:53	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 12:53	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 12:53	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 12:53	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 12:53	1
Chloroform	<3.00		3.00		ug/L			08/21/23 12:53	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 12:53	1
cis-1,2-Dichloroethene	155		1.00		ug/L			08/21/23 12:53	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 12:53	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 12:53	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 12:53	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 12:53	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 12:53	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 12:53	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 12:53	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 12:53	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 12:53	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 12:53	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 12:53	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 12:53	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 12:53	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 12:53	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 12:53	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 12:53	1
Toluene	<1.00		1.00		ug/L			08/21/23 12:53	1
trans-1,2-Dichloroethene	6.40		1.00		ug/L			08/21/23 12:53	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 12:53	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 12:53	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 12:53	1
Trichloroethene	14.0		1.00		ug/L			08/21/23 12:53	1
Vinyl chloride	2.61		1.00		ug/L			08/21/23 12:53	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 12:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		80 - 120		08/21/23 12:53	1
Dibromofluoromethane (Surr)	99		80 - 128		08/21/23 12:53	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 12:53	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW08-GW-0823

Lab Sample ID: 310-262869-3

Date Collected: 08/15/23 17:55

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 13:15	1
Benzene	<0.500		0.500		ug/L			08/21/23 13:15	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 13:15	1
Bromoform	<5.00		5.00		ug/L			08/21/23 13:15	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 13:15	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 13:15	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 13:15	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 13:15	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 13:15	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 13:15	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 13:15	1
Chloroform	<3.00		3.00		ug/L			08/21/23 13:15	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 13:15	1
cis-1,2-Dichloroethene	12.5		1.00		ug/L			08/21/23 13:15	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 13:15	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:15	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:15	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:15	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 13:15	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 13:15	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 13:15	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 13:15	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 13:15	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 13:15	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 13:15	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 13:15	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 13:15	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 13:15	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 13:15	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 13:15	1
Toluene	<1.00		1.00		ug/L			08/21/23 13:15	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 13:15	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 13:15	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 13:15	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 13:15	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 13:15	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 13:15	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 13:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		08/21/23 13:15	1
Dibromofluoromethane (Surr)	98		80 - 128		08/21/23 13:15	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 13:15	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW09-GW-0823

Lab Sample ID: 310-262869-4

Date Collected: 08/16/23 14:10

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 13:37	1
Benzene	<0.500		0.500		ug/L			08/21/23 13:37	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 13:37	1
Bromoform	<5.00		5.00		ug/L			08/21/23 13:37	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 13:37	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 13:37	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 13:37	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 13:37	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 13:37	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 13:37	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 13:37	1
Chloroform	<3.00		3.00		ug/L			08/21/23 13:37	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 13:37	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 13:37	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 13:37	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:37	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:37	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:37	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 13:37	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 13:37	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 13:37	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 13:37	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 13:37	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 13:37	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 13:37	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 13:37	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 13:37	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 13:37	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 13:37	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 13:37	1
Toluene	<1.00		1.00		ug/L			08/21/23 13:37	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 13:37	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 13:37	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 13:37	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 13:37	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 13:37	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 13:37	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 13:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		08/21/23 13:37	1
Dibromofluoromethane (Surr)	99		80 - 128		08/21/23 13:37	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 13:37	1

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW11-GW-0823

Lab Sample ID: 310-262869-5

Date Collected: 08/16/23 13:10

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 13:59	1
Benzene	<0.500		0.500		ug/L			08/21/23 13:59	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 13:59	1
Bromoform	<5.00		5.00		ug/L			08/21/23 13:59	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 13:59	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 13:59	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 13:59	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 13:59	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 13:59	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 13:59	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 13:59	1
Chloroform	<3.00		3.00		ug/L			08/21/23 13:59	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 13:59	1
cis-1,2-Dichloroethene	63.1	F1	1.00		ug/L			08/21/23 13:59	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 13:59	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:59	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:59	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 13:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 13:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 13:59	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 13:59	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 13:59	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 13:59	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 13:59	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 13:59	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 13:59	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 13:59	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 13:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 13:59	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 13:59	1
Toluene	<1.00		1.00		ug/L			08/21/23 13:59	1
trans-1,2-Dichloroethene	3.14		1.00		ug/L			08/21/23 13:59	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 13:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 13:59	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 13:59	1
Trichloroethene	6.77		1.00		ug/L			08/21/23 13:59	1
Vinyl chloride	2.48		1.00		ug/L			08/21/23 13:59	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 13:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120		08/21/23 13:59	1
Dibromofluoromethane (Surr)	97		80 - 128		08/21/23 13:59	1
Toluene-d8 (Surr)	102		80 - 120		08/21/23 13:59	1

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW12-GW-0823

Lab Sample ID: 310-262869-6

Date Collected: 08/16/23 18:15

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 14:21	1
Benzene	<0.500		0.500		ug/L			08/21/23 14:21	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 14:21	1
Bromoform	<5.00		5.00		ug/L			08/21/23 14:21	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 14:21	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 14:21	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 14:21	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 14:21	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 14:21	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 14:21	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 14:21	1
Chloroform	<3.00		3.00		ug/L			08/21/23 14:21	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 14:21	1
cis-1,2-Dichloroethene	2.06		1.00		ug/L			08/21/23 14:21	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 14:21	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 14:21	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 14:21	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 14:21	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 14:21	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 14:21	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 14:21	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 14:21	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 14:21	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 14:21	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 14:21	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 14:21	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 14:21	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 14:21	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 14:21	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 14:21	1
Toluene	<1.00		1.00		ug/L			08/21/23 14:21	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 14:21	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 14:21	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 14:21	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 14:21	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 14:21	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 14:21	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 14:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		08/21/23 14:21	1
Dibromofluoromethane (Surr)	98		80 - 128		08/21/23 14:21	1
Toluene-d8 (Surr)	102		80 - 120		08/21/23 14:21	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	11600		50.0		ug/L			08/21/23 14:30	10
Methane	52.2		1.00		ug/L			08/21/23 16:32	1
Ethane	<1.00		1.00		ug/L			08/21/23 16:32	1
Ethene	<1.00		1.00		ug/L			08/21/23 16:32	1

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW12-GW-0823

Lab Sample ID: 310-262869-6

Date Collected: 08/16/23 18:15

Matrix: Water

Date Received: 08/17/23 15:49

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	99		60 - 140					08/21/23 16:32	1
Method: SW846 9056A - Anions, Ion Chromatography									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	448		10.0		mg/L			08/29/23 20:06	10
Nitrate as N	<0.200		0.200		mg/L			08/17/23 17:35	1
Sulfate	70.3		1.00		mg/L			08/17/23 17:35	1
Method: SW846 6020B - Metals (ICP/MS) - Dissolved									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.187		0.100		mg/L		08/22/23 09:00	08/25/23 23:25	1
Manganese	0.316		0.0100		mg/L		08/22/23 09:00	08/25/23 23:25	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	2.39		1.00		mg/L			08/25/23 16:24	1
Sulfide (SM 4500 S2 F)	<2.00		2.00		mg/L		08/21/23 09:46	08/21/23 09:46	1

- 1
- 2
- 3
- 4
- 5
- 6
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- 14
- 15

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: Dup01-GW-0823

Lab Sample ID: 310-262869-7

Date Collected: 08/16/23 00:00

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 14:43	1
Benzene	<0.500		0.500		ug/L			08/21/23 14:43	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 14:43	1
Bromoform	<5.00		5.00		ug/L			08/21/23 14:43	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 14:43	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 14:43	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 14:43	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 14:43	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 14:43	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 14:43	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 14:43	1
Chloroform	<3.00		3.00		ug/L			08/21/23 14:43	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 14:43	1
cis-1,2-Dichloroethene	2.15		1.00		ug/L			08/21/23 14:43	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 14:43	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 14:43	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 14:43	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 14:43	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 14:43	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 14:43	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 14:43	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 14:43	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 14:43	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 14:43	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 14:43	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 14:43	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 14:43	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 14:43	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 14:43	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 14:43	1
Toluene	<1.00		1.00		ug/L			08/21/23 14:43	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 14:43	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 14:43	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 14:43	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 14:43	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 14:43	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 14:43	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 14:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		08/21/23 14:43	1
Dibromofluoromethane (Surr)	96		80 - 128		08/21/23 14:43	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 14:43	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	8580		50.0		ug/L			08/22/23 10:31	10
Methane	51.0		1.00		ug/L			08/21/23 16:49	1
Ethane	<1.00		1.00		ug/L			08/21/23 16:49	1
Ethene	<1.00		1.00		ug/L			08/21/23 16:49	1

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: Dup01-GW-0823

Lab Sample ID: 310-262869-7

Date Collected: 08/16/23 00:00

Matrix: Water

Date Received: 08/17/23 15:49

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	100		60 - 140					08/21/23 16:49	1
Method: SW846 9056A - Anions, Ion Chromatography									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	442		10.0		mg/L			08/29/23 20:18	10
Nitrate as N	<0.200		0.200		mg/L			08/17/23 17:47	1
Sulfate	70.3		1.00		mg/L			08/17/23 17:47	1
Method: SW846 6020B - Metals (ICP/MS) - Dissolved									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.213		0.100		mg/L		08/22/23 09:00	08/25/23 23:28	1
Manganese	0.322		0.0100		mg/L		08/22/23 09:00	08/25/23 23:28	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	2.50		1.00		mg/L			08/25/23 16:48	1
Sulfide (SM 4500 S2 F)	<2.00		2.00		mg/L		08/21/23 09:46	08/21/23 09:46	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW13-GW-0823

Lab Sample ID: 310-262869-8

Date Collected: 08/16/23 10:50

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 15:05	1
Benzene	<0.500		0.500		ug/L			08/21/23 15:05	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 15:05	1
Bromoform	<5.00		5.00		ug/L			08/21/23 15:05	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 15:05	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 15:05	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 15:05	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 15:05	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 15:05	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 15:05	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 15:05	1
Chloroform	<3.00		3.00		ug/L			08/21/23 15:05	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 15:05	1
cis-1,2-Dichloroethene	1.36		1.00		ug/L			08/21/23 15:05	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 15:05	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:05	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:05	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:05	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 15:05	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 15:05	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 15:05	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 15:05	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 15:05	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 15:05	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 15:05	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 15:05	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 15:05	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 15:05	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 15:05	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 15:05	1
Toluene	<1.00		1.00		ug/L			08/21/23 15:05	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 15:05	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 15:05	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 15:05	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 15:05	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 15:05	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 15:05	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 15:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		08/21/23 15:05	1
Dibromofluoromethane (Surr)	98		80 - 128		08/21/23 15:05	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 15:05	1

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW14-GW-0823

Lab Sample ID: 310-262869-9

Date Collected: 08/15/23 19:45

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 15:27	1
Benzene	<0.500		0.500		ug/L			08/21/23 15:27	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 15:27	1
Bromoform	<5.00		5.00		ug/L			08/21/23 15:27	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 15:27	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 15:27	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 15:27	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 15:27	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 15:27	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 15:27	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 15:27	1
Chloroform	<3.00		3.00		ug/L			08/21/23 15:27	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 15:27	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 15:27	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 15:27	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:27	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:27	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:27	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 15:27	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 15:27	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 15:27	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 15:27	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 15:27	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 15:27	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 15:27	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 15:27	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 15:27	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 15:27	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 15:27	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 15:27	1
Toluene	<1.00		1.00		ug/L			08/21/23 15:27	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 15:27	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 15:27	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 15:27	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 15:27	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 15:27	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 15:27	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 15:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		08/21/23 15:27	1
Dibromofluoromethane (Surr)	99		80 - 128		08/21/23 15:27	1
Toluene-d8 (Surr)	100		80 - 120		08/21/23 15:27	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW15-GW-0823

Lab Sample ID: 310-262869-10

Date Collected: 08/15/23 18:58

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 15:49	1
Benzene	<0.500		0.500		ug/L			08/21/23 15:49	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 15:49	1
Bromoform	<5.00		5.00		ug/L			08/21/23 15:49	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 15:49	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 15:49	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 15:49	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 15:49	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 15:49	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 15:49	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 15:49	1
Chloroform	<3.00		3.00		ug/L			08/21/23 15:49	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 15:49	1
cis-1,2-Dichloroethene	1.62		1.00		ug/L			08/21/23 15:49	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 15:49	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:49	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:49	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 15:49	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 15:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 15:49	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 15:49	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 15:49	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 15:49	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 15:49	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 15:49	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 15:49	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 15:49	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 15:49	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 15:49	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 15:49	1
Toluene	<1.00		1.00		ug/L			08/21/23 15:49	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 15:49	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 15:49	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 15:49	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 15:49	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 15:49	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 15:49	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 15:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		08/21/23 15:49	1
Dibromofluoromethane (Surr)	99		80 - 128		08/21/23 15:49	1
Toluene-d8 (Surr)	102		80 - 120		08/21/23 15:49	1

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW16-GW-0823

Lab Sample ID: 310-262869-11

Date Collected: 08/15/23 12:15

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 23:06	1
Benzene	<0.500		0.500		ug/L			08/21/23 23:06	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 23:06	1
Bromoform	<5.00		5.00		ug/L			08/21/23 23:06	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 23:06	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 23:06	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 23:06	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 23:06	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 23:06	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 23:06	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 23:06	1
Chloroform	<3.00		3.00		ug/L			08/21/23 23:06	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 23:06	1
cis-1,2-Dichloroethene	7.45		1.00		ug/L			08/21/23 23:06	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 23:06	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:06	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:06	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:06	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 23:06	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 23:06	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 23:06	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 23:06	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 23:06	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 23:06	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 23:06	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 23:06	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 23:06	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 23:06	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 23:06	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 23:06	1
Toluene	<1.00		1.00		ug/L			08/21/23 23:06	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 23:06	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 23:06	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 23:06	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 23:06	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 23:06	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 23:06	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 23:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		08/21/23 23:06	1
Dibromofluoromethane (Surr)	101		80 - 128		08/21/23 23:06	1
Toluene-d8 (Surr)	100		80 - 120		08/21/23 23:06	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW07-GW-0823

Lab Sample ID: 310-262869-12

Date Collected: 08/17/23 10:57

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 23:28	1
Benzene	<0.500		0.500		ug/L			08/21/23 23:28	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 23:28	1
Bromoform	<5.00		5.00		ug/L			08/21/23 23:28	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 23:28	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 23:28	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 23:28	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 23:28	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 23:28	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 23:28	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 23:28	1
Chloroform	<3.00		3.00		ug/L			08/21/23 23:28	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 23:28	1
cis-1,2-Dichloroethene	66.1		1.00		ug/L			08/21/23 23:28	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 23:28	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:28	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:28	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:28	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 23:28	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 23:28	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 23:28	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 23:28	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 23:28	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 23:28	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 23:28	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 23:28	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 23:28	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 23:28	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 23:28	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 23:28	1
Toluene	<1.00		1.00		ug/L			08/21/23 23:28	1
trans-1,2-Dichloroethene	6.92		1.00		ug/L			08/21/23 23:28	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 23:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 23:28	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 23:28	1
Trichloroethene	13.3		1.00		ug/L			08/21/23 23:28	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 23:28	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 23:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		08/21/23 23:28	1
Dibromofluoromethane (Surr)	100		80 - 128		08/21/23 23:28	1
Toluene-d8 (Surr)	99		80 - 120		08/21/23 23:28	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	47400		50.0		ug/L			08/22/23 10:49	10
Methane	<1.00		1.00		ug/L			08/21/23 17:06	1
Ethane	<1.00		1.00		ug/L			08/21/23 17:06	1
Ethene	<1.00		1.00		ug/L			08/21/23 17:06	1

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW07-GW-0823

Lab Sample ID: 310-262869-12

Date Collected: 08/17/23 10:57

Matrix: Water

Date Received: 08/17/23 15:49

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	98		60 - 140					08/21/23 17:06	1
Method: SW846 9056A - Anions, Ion Chromatography									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	333		5.00		mg/L			08/23/23 20:31	5
Nitrate as N	7.58	H	1.00		mg/L			08/23/23 20:31	5
Sulfate	78.8		5.00		mg/L			08/23/23 20:31	5
Method: SW846 6020B - Metals (ICP/MS) - Dissolved									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.100		0.100		mg/L		08/22/23 09:00	08/25/23 23:30	1
Manganese	<0.0100		0.0100		mg/L		08/22/23 09:00	08/25/23 23:30	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.45		1.00		mg/L			08/25/23 17:12	1
Sulfide (SM 4500 S2 F)	<2.00		2.00		mg/L		08/21/23 09:46	08/21/23 09:46	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW17-GW-0823

Lab Sample ID: 310-262869-13

Date Collected: 08/17/23 09:10

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 23:50	1
Benzene	<0.500		0.500		ug/L			08/21/23 23:50	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 23:50	1
Bromoform	<5.00		5.00		ug/L			08/21/23 23:50	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 23:50	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 23:50	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 23:50	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 23:50	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 23:50	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 23:50	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 23:50	1
Chloroform	<3.00		3.00		ug/L			08/21/23 23:50	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 23:50	1
cis-1,2-Dichloroethene	2410		10.0		ug/L			08/23/23 13:49	10
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 23:50	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:50	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:50	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 23:50	1
1,1-Dichloroethane	4.03		1.00		ug/L			08/21/23 23:50	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 23:50	1
1,1-Dichloroethene	2.94		2.00		ug/L			08/21/23 23:50	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 23:50	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 23:50	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 23:50	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 23:50	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 23:50	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 23:50	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 23:50	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 23:50	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 23:50	1
Toluene	<1.00		1.00		ug/L			08/21/23 23:50	1
trans-1,2-Dichloroethene	21.5		1.00		ug/L			08/21/23 23:50	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 23:50	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 23:50	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 23:50	1
Trichloroethene	41.6		1.00		ug/L			08/21/23 23:50	1
Vinyl chloride	16.1		1.00		ug/L			08/21/23 23:50	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 23:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		08/21/23 23:50	1
4-Bromofluorobenzene (Surr)	100		80 - 120		08/23/23 13:49	10
Dibromofluoromethane (Surr)	101		80 - 128		08/21/23 23:50	1
Dibromofluoromethane (Surr)	96		80 - 128		08/23/23 13:49	10
Toluene-d8 (Surr)	101		80 - 120		08/21/23 23:50	1
Toluene-d8 (Surr)	101		80 - 120		08/23/23 13:49	10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	17700		50.0		ug/L			08/22/23 11:19	10

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW17-GW-0823

Lab Sample ID: 310-262869-13

Date Collected: 08/17/23 09:10

Matrix: Water

Date Received: 08/17/23 15:49

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	45.7		1.00		ug/L			08/21/23 17:23	1
Ethane	<1.00		1.00		ug/L			08/21/23 17:23	1
Ethene	2.90		1.00		ug/L			08/21/23 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	98		60 - 140					08/21/23 17:23	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	97.0		1.00		mg/L			08/23/23 20:45	1
Nitrate as N	<0.200	H	0.200		mg/L			08/23/23 20:45	1
Sulfate	60.0		1.00		mg/L			08/23/23 20:45	1

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	7.20		0.100		mg/L		08/22/23 09:00	08/25/23 23:33	1
Manganese	0.789		0.0100		mg/L		08/22/23 09:00	08/25/23 23:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon (SW846 9060A)	1.89		1.00		mg/L			08/25/23 17:36	1
Sulfide (SM 4500 S2 F)	<2.00		2.00		mg/L		08/21/23 09:46	08/21/23 09:46	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-262869-14

Date Collected: 08/17/23 00:00

Matrix: Water

Date Received: 08/17/23 15:49

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 22:00	1
Benzene	<0.500		0.500		ug/L			08/21/23 22:00	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 22:00	1
Bromoform	<5.00		5.00		ug/L			08/21/23 22:00	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 22:00	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 22:00	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 22:00	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 22:00	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 22:00	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 22:00	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 22:00	1
Chloroform	<3.00		3.00		ug/L			08/21/23 22:00	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 22:00	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 22:00	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 22:00	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 22:00	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 22:00	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 22:00	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 22:00	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 22:00	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 22:00	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 22:00	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 22:00	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 22:00	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 22:00	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 22:00	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 22:00	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 22:00	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 22:00	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 22:00	1
Toluene	<1.00		1.00		ug/L			08/21/23 22:00	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 22:00	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 22:00	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 22:00	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 22:00	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 22:00	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 22:00	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 22:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		08/21/23 22:00	1
Dibromofluoromethane (Surr)	99		80 - 128		08/21/23 22:00	1
Toluene-d8 (Surr)	100		80 - 120		08/21/23 22:00	1

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BFB (80-120)	DBFM (80-128)	TOL (80-120)
310-262869-1	MW01-GW-0823	102	97	101
310-262869-2	MW06-GW-0823	103	99	101
310-262869-3	MW08-GW-0823	100	98	101
310-262869-4	MW09-GW-0823	99	99	101
310-262869-5	MW11-GW-0823	98	97	102
310-262869-5 MS	MW11-GW-0823	101	95	103
310-262869-5 MSD	MW11-GW-0823	100	96	104
310-262869-6	MW12-GW-0823	101	98	102
310-262869-7	Dup01-GW-0823	101	96	101
310-262869-8	MW13-GW-0823	100	98	101
310-262869-9	MW14-GW-0823	101	99	100
310-262869-10	MW15-GW-0823	101	99	102
310-262869-11	MW16-GW-0823	102	101	100
310-262869-11 MS	MW16-GW-0823	101	96	104
310-262869-11 MSD	MW16-GW-0823	99	96	104
310-262869-12	MW07-GW-0823	102	100	99
310-262869-13	MW17-GW-0823	101	101	101
310-262869-13	MW17-GW-0823	100	96	101
310-262869-14	Trip Blank	100	99	100
LCS 310-397230/6	Lab Control Sample	100	96	105
LCS 310-397230/7	Lab Control Sample	99	97	103
LCS 310-397232/6	Lab Control Sample	101	96	105
LCS 310-397232/7	Lab Control Sample	101	99	102
LCS 310-397428/6	Lab Control Sample	102	94	105
LCS 310-397428/7	Lab Control Sample	103	97	99
MB 310-397230/5	Method Blank	102	96	101
MB 310-397232/5	Method Blank	100	98	99
MB 310-397428/5	Method Blank	102	96	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		TFE1 (60-140)
310-262869-1	MW01-GW-0823	97
310-262869-6	MW12-GW-0823	99
310-262869-7	Dup01-GW-0823	100
310-262869-12	MW07-GW-0823	98
310-262869-13	MW17-GW-0823	98
LCS 240-584562/4	Lab Control Sample	105
MB 240-584562/3	Method Blank	107

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-397230/5
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			08/21/23 09:37	1
Benzene	<0.500		0.500		ug/L			08/21/23 09:37	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 09:37	1
Bromoform	<5.00		5.00		ug/L			08/21/23 09:37	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 09:37	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 09:37	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 09:37	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 09:37	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 09:37	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 09:37	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 09:37	1
Chloroform	<3.00		3.00		ug/L			08/21/23 09:37	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 09:37	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 09:37	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 09:37	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 09:37	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 09:37	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 09:37	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 09:37	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 09:37	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 09:37	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 09:37	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 09:37	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 09:37	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 09:37	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 09:37	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 09:37	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 09:37	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 09:37	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 09:37	1
Toluene	<1.00		1.00		ug/L			08/21/23 09:37	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 09:37	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 09:37	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 09:37	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 09:37	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 09:37	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 09:37	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 09:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		08/21/23 09:37	1
Dibromofluoromethane (Surr)	96		80 - 128		08/21/23 09:37	1
Toluene-d8 (Surr)	101		80 - 120		08/21/23 09:37	1

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-397230/6
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	36.62		ug/L		92	50 - 150
Benzene	20.0	19.99		ug/L		100	73 - 122
Bromodichloromethane	20.0	18.64		ug/L		93	72 - 121
Bromoform	20.0	17.84		ug/L		89	55 - 129
2-Butanone (MEK)	40.0	38.38		ug/L		96	50 - 150
Carbon disulfide	20.0	20.43		ug/L		102	58 - 131
Carbon tetrachloride	20.0	19.35		ug/L		97	67 - 132
Chlorobenzene	20.0	20.73		ug/L		104	69 - 121
Chlorodibromomethane	20.0	18.25		ug/L		91	69 - 122
Chloroform	20.0	18.94		ug/L		95	72 - 120
cis-1,2-Dichloroethene	20.0	19.52		ug/L		98	74 - 120
cis-1,3-Dichloropropene	20.0	20.40		ug/L		102	71 - 126
1,2-Dichlorobenzene	20.0	18.17		ug/L		91	68 - 120
1,3-Dichlorobenzene	20.0	18.04		ug/L		90	67 - 123
1,4-Dichlorobenzene	20.0	18.53		ug/L		93	67 - 120
1,1-Dichloroethane	20.0	19.92		ug/L		100	71 - 123
1,2-Dichloroethane	20.0	18.02		ug/L		90	70 - 124
1,1-Dichloroethene	20.0	20.74		ug/L		104	61 - 129
1,2-Dichloropropane	20.0	20.43		ug/L		102	73 - 121
Ethylbenzene	20.0	20.79		ug/L		104	69 - 122
2-Hexanone	40.0	39.07		ug/L		98	60 - 132
Methylene Chloride	20.0	20.26		ug/L		101	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	41.06		ug/L		103	62 - 130
Methyl tert-butyl ether	20.0	19.74		ug/L		99	68 - 127
Naphthalene	20.0	18.25		ug/L		91	50 - 150
1,1,2,2-Tetrachloroethane	20.0	18.50		ug/L		92	64 - 124
Tetrachloroethene	20.0	20.02		ug/L		100	69 - 131
Toluene	20.0	19.49		ug/L		97	72 - 121
trans-1,2-Dichloroethene	20.0	19.57		ug/L		98	68 - 125
trans-1,3-Dichloropropene	20.0	19.43		ug/L		97	68 - 124
1,1,1-Trichloroethane	20.0	19.51		ug/L		98	71 - 128
1,1,2-Trichloroethane	20.0	18.61		ug/L		93	70 - 124
Trichloroethene	20.0	19.60		ug/L		98	73 - 126
Xylenes, Total	40.0	40.10		ug/L		100	68 - 124

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	105		80 - 120

Lab Sample ID: LCS 310-397230/7
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	24.10		ug/L		120	24 - 150
Chloroethane	20.0	21.78		ug/L		109	51 - 137
Chloromethane	20.0	24.51		ug/L		123	37 - 150

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-397230/7
Matrix: Water
Analysis Batch: 397230

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	20.0	23.06		ug/L		115	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	97		80 - 128
Toluene-d8 (Surr)	103		80 - 120

Lab Sample ID: 310-262869-5 MS
Matrix: Water
Analysis Batch: 397230

Client Sample ID: MW11-GW-0823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	<10.0		50.0	45.98		ug/L		92	35 - 150
Benzene	<0.500		25.0	23.00		ug/L		92	47 - 130
Bromodichloromethane	<1.00		25.0	21.87		ug/L		87	58 - 130
Bromoform	<5.00		25.0	21.52		ug/L		86	42 - 130
2-Butanone (MEK)	<10.0		50.0	49.69		ug/L		99	47 - 150
Carbon disulfide	<1.00		25.0	23.09		ug/L		92	39 - 131
Carbon tetrachloride	<2.00		25.0	21.27		ug/L		85	45 - 132
Chlorobenzene	<1.00		25.0	23.83		ug/L		95	54 - 130
Chlorodibromomethane	<5.00		25.0	22.58		ug/L		90	53 - 130
Chloroform	<3.00		25.0	22.28		ug/L		89	55 - 130
cis-1,2-Dichloroethene	63.1	F1	25.0	80.29		ug/L		69	52 - 130
cis-1,3-Dichloropropene	<5.00		25.0	24.18		ug/L		97	55 - 130
1,2-Dichlorobenzene	<1.00		25.0	22.18		ug/L		89	53 - 130
1,3-Dichlorobenzene	<1.00		25.0	21.67		ug/L		87	54 - 130
1,4-Dichlorobenzene	<1.00		25.0	22.45		ug/L		90	53 - 130
1,1-Dichloroethane	<1.00		25.0	22.79		ug/L		91	53 - 130
1,2-Dichloroethane	<1.00		25.0	22.07		ug/L		88	57 - 130
1,1-Dichloroethene	<2.00		25.0	23.34		ug/L		93	39 - 130
1,2-Dichloropropane	<1.00		25.0	24.26		ug/L		97	60 - 130
Ethylbenzene	<1.00		25.0	23.45		ug/L		94	48 - 130
2-Hexanone	<10.0		50.0	50.90		ug/L		102	45 - 132
Methylene Chloride	<5.00		25.0	23.44		ug/L		94	50 - 150
Methyl isobutyl ketone (MIBK)	<10.0		50.0	52.80		ug/L		106	46 - 132
Methyl tert-butyl ether	<1.00		25.0	24.80		ug/L		99	57 - 130
Naphthalene	<5.00		25.0	24.32		ug/L		97	33 - 150
1,1,2,2-Tetrachloroethane	<1.00		25.0	22.78		ug/L		91	51 - 130
Tetrachloroethene	<1.00		25.0	22.89		ug/L		92	42 - 131
Toluene	<1.00		25.0	22.28		ug/L		89	48 - 130
trans-1,2-Dichloroethene	3.14		25.0	24.83		ug/L		87	54 - 130
trans-1,3-Dichloropropene	<5.00		25.0	23.56		ug/L		94	51 - 130
1,1,1-Trichloroethane	<1.00		25.0	21.88		ug/L		88	49 - 130
1,1,2-Trichloroethane	<1.00		25.0	23.11		ug/L		92	56 - 130
Trichloroethene	6.77		25.0	28.94		ug/L		89	55 - 130
Xylenes, Total	<3.00		50.0	45.65		ug/L		91	44 - 130

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-262869-5 MS
Matrix: Water
Analysis Batch: 397230

Client Sample ID: MW11-GW-0823
Prep Type: Total/NA

<u>Surrogate</u>	<u>MS</u> <u>%Recovery</u>	<u>MS</u> <u>Qualifier</u>	<u>Limits</u>
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	95		80 - 128
Toluene-d8 (Surr)	103		80 - 120

Lab Sample ID: 310-262869-5 MSD
Matrix: Water
Analysis Batch: 397230

Client Sample ID: MW11-GW-0823
Prep Type: Total/NA

<u>Analyte</u>	<u>Sample</u> <u>Result</u>	<u>Sample</u> <u>Qualifier</u>	<u>Spike</u> <u>Added</u>	<u>MSD</u> <u>Result</u>	<u>MSD</u> <u>Qualifier</u>	<u>Unit</u>	<u>D</u>	<u>%Rec</u>	<u>%Rec</u> <u>Limits</u>	<u>RPD</u>	<u>RPD</u> <u>Limit</u>
Acetone	<10.0		50.0	43.26		ug/L		87	35 - 150	6	26
Benzene	<0.500		25.0	20.95		ug/L		84	47 - 130	9	20
Bromodichloromethane	<1.00		25.0	20.35		ug/L		81	58 - 130	7	20
Bromoform	<5.00		25.0	20.41		ug/L		82	42 - 130	5	20
2-Butanone (MEK)	<10.0		50.0	48.40		ug/L		97	47 - 150	3	20
Carbon disulfide	<1.00		25.0	20.48		ug/L		82	39 - 131	12	32
Carbon tetrachloride	<2.00		25.0	19.40		ug/L		78	45 - 132	9	20
Chlorobenzene	<1.00		25.0	21.83		ug/L		87	54 - 130	9	20
Chlorodibromomethane	<5.00		25.0	21.03		ug/L		84	53 - 130	7	20
Chloroform	<3.00		25.0	20.48		ug/L		82	55 - 130	8	20
cis-1,2-Dichloroethene	63.1	F1	25.0	73.60	F1	ug/L		42	52 - 130	9	20
cis-1,3-Dichloropropene	<5.00		25.0	22.22		ug/L		89	55 - 130	8	20
1,2-Dichlorobenzene	<1.00		25.0	21.10		ug/L		84	53 - 130	5	20
1,3-Dichlorobenzene	<1.00		25.0	20.16		ug/L		81	54 - 130	7	20
1,4-Dichlorobenzene	<1.00		25.0	20.78		ug/L		83	53 - 130	8	20
1,1-Dichloroethane	<1.00		25.0	21.05		ug/L		84	53 - 130	8	20
1,2-Dichloroethane	<1.00		25.0	20.34		ug/L		81	57 - 130	8	21
1,1-Dichloroethene	<2.00		25.0	21.39		ug/L		86	39 - 130	9	28
1,2-Dichloropropane	<1.00		25.0	22.20		ug/L		89	60 - 130	9	31
Ethylbenzene	<1.00		25.0	21.23		ug/L		85	48 - 130	10	20
2-Hexanone	<10.0		50.0	48.60		ug/L		97	45 - 132	5	20
Methylene Chloride	<5.00		25.0	21.46		ug/L		86	50 - 150	9	24
Methyl isobutyl ketone (MIBK)	<10.0		50.0	49.16		ug/L		98	46 - 132	7	20
Methyl tert-butyl ether	<1.00		25.0	23.59		ug/L		94	57 - 130	5	20
Naphthalene	<5.00		25.0	23.15		ug/L		93	33 - 150	5	30
1,1,2,2-Tetrachloroethane	<1.00		25.0	21.25		ug/L		85	51 - 130	7	20
Tetrachloroethene	<1.00		25.0	20.74		ug/L		83	42 - 131	10	20
Toluene	<1.00		25.0	20.49		ug/L		82	48 - 130	8	20
trans-1,2-Dichloroethene	3.14		25.0	22.71		ug/L		78	54 - 130	9	24
trans-1,3-Dichloropropene	<5.00		25.0	21.68		ug/L		87	51 - 130	8	20
1,1,1-Trichloroethane	<1.00		25.0	20.06		ug/L		80	49 - 130	9	20
1,1,2-Trichloroethane	<1.00		25.0	22.03		ug/L		88	56 - 130	5	20
Trichloroethene	6.77		25.0	26.14		ug/L		78	55 - 130	10	20
Xylenes, Total	<3.00		50.0	41.72		ug/L		83	44 - 130	9	20

<u>Surrogate</u>	<u>MSD</u> <u>%Recovery</u>	<u>MSD</u> <u>Qualifier</u>	<u>Limits</u>
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	104		80 - 120

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-397232/5
Matrix: Water
Analysis Batch: 397232

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			08/21/23 20:11	1
Benzene	<0.500		0.500		ug/L			08/21/23 20:11	1
Bromodichloromethane	<1.00		1.00		ug/L			08/21/23 20:11	1
Bromoform	<5.00		5.00		ug/L			08/21/23 20:11	1
Bromomethane	<4.00		4.00		ug/L			08/21/23 20:11	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/21/23 20:11	1
Carbon disulfide	<1.00		1.00		ug/L			08/21/23 20:11	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/21/23 20:11	1
Chlorobenzene	<1.00		1.00		ug/L			08/21/23 20:11	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/21/23 20:11	1
Chloroethane	<4.00		4.00		ug/L			08/21/23 20:11	1
Chloroform	<3.00		3.00		ug/L			08/21/23 20:11	1
Chloromethane	<3.00		3.00		ug/L			08/21/23 20:11	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 20:11	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 20:11	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 20:11	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 20:11	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/21/23 20:11	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/21/23 20:11	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/21/23 20:11	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/21/23 20:11	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/21/23 20:11	1
Ethylbenzene	<1.00		1.00		ug/L			08/21/23 20:11	1
2-Hexanone	<10.0		10.0		ug/L			08/21/23 20:11	1
Methylene Chloride	<5.00		5.00		ug/L			08/21/23 20:11	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/21/23 20:11	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/21/23 20:11	1
Naphthalene	<5.00		5.00		ug/L			08/21/23 20:11	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/21/23 20:11	1
Tetrachloroethene	<1.00		1.00		ug/L			08/21/23 20:11	1
Toluene	<1.00		1.00		ug/L			08/21/23 20:11	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/21/23 20:11	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/21/23 20:11	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/21/23 20:11	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/21/23 20:11	1
Trichloroethene	<1.00		1.00		ug/L			08/21/23 20:11	1
Vinyl chloride	<1.00		1.00		ug/L			08/21/23 20:11	1
Xylenes, Total	<3.00		3.00		ug/L			08/21/23 20:11	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	100		80 - 120		08/21/23 20:11	1
Dibromofluoromethane (Surr)	98		80 - 128		08/21/23 20:11	1
Toluene-d8 (Surr)	99		80 - 120		08/21/23 20:11	1

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-397232/6

Matrix: Water

Analysis Batch: 397232

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	38.34		ug/L		96	50 - 150
Benzene	20.0	19.43		ug/L		97	73 - 122
Bromodichloromethane	20.0	18.39		ug/L		92	72 - 121
Bromoform	20.0	18.06		ug/L		90	55 - 129
2-Butanone (MEK)	40.0	41.59		ug/L		104	50 - 150
Carbon disulfide	20.0	19.18		ug/L		96	58 - 131
Carbon tetrachloride	20.0	18.83		ug/L		94	67 - 132
Chlorobenzene	20.0	20.45		ug/L		102	69 - 121
Chlorodibromomethane	20.0	18.32		ug/L		92	69 - 122
Chloroform	20.0	18.72		ug/L		94	72 - 120
cis-1,2-Dichloroethene	20.0	19.12		ug/L		96	74 - 120
cis-1,3-Dichloropropene	20.0	19.70		ug/L		99	71 - 126
1,2-Dichlorobenzene	20.0	18.39		ug/L		92	68 - 120
1,3-Dichlorobenzene	20.0	18.23		ug/L		91	67 - 123
1,4-Dichlorobenzene	20.0	18.58		ug/L		93	67 - 120
1,1-Dichloroethane	20.0	19.37		ug/L		97	71 - 123
1,2-Dichloroethane	20.0	18.27		ug/L		91	70 - 124
1,1-Dichloroethene	20.0	19.64		ug/L		98	61 - 129
1,2-Dichloropropane	20.0	19.93		ug/L		100	73 - 121
Ethylbenzene	20.0	20.23		ug/L		101	69 - 122
2-Hexanone	40.0	40.49		ug/L		101	60 - 132
Methylene Chloride	20.0	20.13		ug/L		101	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	41.82		ug/L		105	62 - 130
Methyl tert-butyl ether	20.0	20.11		ug/L		101	68 - 127
Naphthalene	20.0	18.62		ug/L		93	50 - 150
1,1,2,2-Tetrachloroethane	20.0	18.49		ug/L		92	64 - 124
Tetrachloroethene	20.0	19.46		ug/L		97	69 - 131
Toluene	20.0	19.01		ug/L		95	72 - 121
trans-1,2-Dichloroethene	20.0	18.80		ug/L		94	68 - 125
trans-1,3-Dichloropropene	20.0	18.90		ug/L		94	68 - 124
1,1,1-Trichloroethane	20.0	19.07		ug/L		95	71 - 128
1,1,2-Trichloroethane	20.0	18.86		ug/L		94	70 - 124
Trichloroethene	20.0	19.25		ug/L		96	73 - 126
Xylenes, Total	40.0	39.34		ug/L		98	68 - 124

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	105		80 - 120

Lab Sample ID: LCS 310-397232/7

Matrix: Water

Analysis Batch: 397232

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	25.43		ug/L		127	24 - 150
Chloroethane	20.0	21.57		ug/L		108	51 - 137
Chloromethane	20.0	24.39		ug/L		122	37 - 150

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-397232/7
Matrix: Water
Analysis Batch: 397232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	20.0	22.96		ug/L		115	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	99		80 - 128
Toluene-d8 (Surr)	102		80 - 120

Lab Sample ID: 310-262869-11 MS
Matrix: Water
Analysis Batch: 397232

Client Sample ID: MW16-GW-0823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	<10.0		50.0	41.39		ug/L		83	35 - 150
Benzene	<0.500		25.0	22.12		ug/L		88	47 - 130
Bromodichloromethane	<1.00		25.0	21.01		ug/L		84	58 - 130
Bromoform	<5.00		25.0	19.93		ug/L		80	42 - 130
2-Butanone (MEK)	<10.0		50.0	42.77		ug/L		86	47 - 150
Carbon disulfide	<1.00		25.0	22.63		ug/L		91	39 - 131
Carbon tetrachloride	<2.00		25.0	20.25		ug/L		81	45 - 132
Chlorobenzene	<1.00		25.0	23.24		ug/L		93	54 - 130
Chlorodibromomethane	<5.00		25.0	20.58		ug/L		82	53 - 130
Chloroform	<3.00		25.0	21.81		ug/L		87	55 - 130
cis-1,2-Dichloroethene	7.45		25.0	28.86		ug/L		86	52 - 130
cis-1,3-Dichloropropene	<5.00		25.0	21.86		ug/L		87	55 - 130
1,2-Dichlorobenzene	<1.00		25.0	20.59		ug/L		82	53 - 130
1,3-Dichlorobenzene	<1.00		25.0	20.35		ug/L		81	54 - 130
1,4-Dichlorobenzene	<1.00		25.0	20.56		ug/L		82	53 - 130
1,1-Dichloroethane	<1.00		25.0	22.21		ug/L		89	53 - 130
1,2-Dichloroethane	<1.00		25.0	20.87		ug/L		83	57 - 130
1,1-Dichloroethene	<2.00		25.0	23.17		ug/L		93	39 - 130
1,2-Dichloropropane	<1.00		25.0	22.76		ug/L		91	60 - 130
Ethylbenzene	<1.00		25.0	22.32		ug/L		89	48 - 130
2-Hexanone	<10.0		50.0	43.32		ug/L		87	45 - 132
Methylene Chloride	<5.00		25.0	23.20		ug/L		93	50 - 150
Methyl isobutyl ketone (MIBK)	<10.0		50.0	44.45		ug/L		89	46 - 132
Methyl tert-butyl ether	<1.00		25.0	22.11		ug/L		88	57 - 130
Naphthalene	<5.00		25.0	20.02		ug/L		80	33 - 150
1,1,2,2-Tetrachloroethane	<1.00		25.0	20.31		ug/L		81	51 - 130
Tetrachloroethene	<1.00		25.0	21.33		ug/L		85	42 - 131
Toluene	<1.00		25.0	21.41		ug/L		86	48 - 130
trans-1,2-Dichloroethene	<1.00		25.0	22.26		ug/L		88	54 - 130
trans-1,3-Dichloropropene	<5.00		25.0	20.73		ug/L		83	51 - 130
1,1,1-Trichloroethane	<1.00		25.0	20.99		ug/L		84	49 - 130
1,1,2-Trichloroethane	<1.00		25.0	20.94		ug/L		84	56 - 130
Trichloroethene	<1.00		25.0	21.56		ug/L		86	55 - 130
Xylenes, Total	<3.00		50.0	43.92		ug/L		88	44 - 130

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-262869-11 MS
Matrix: Water
Analysis Batch: 397232

Client Sample ID: MW16-GW-0823
Prep Type: Total/NA

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	104		80 - 120

Lab Sample ID: 310-262869-11 MSD
Matrix: Water
Analysis Batch: 397232

Client Sample ID: MW16-GW-0823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone	<10.0		50.0	39.85		ug/L		80	35 - 150	4	26
Benzene	<0.500		25.0	20.22		ug/L		81	47 - 130	9	20
Bromodichloromethane	<1.00		25.0	19.59		ug/L		78	58 - 130	7	20
Bromoform	<5.00		25.0	18.95		ug/L		76	42 - 130	5	20
2-Butanone (MEK)	<10.0		50.0	41.57		ug/L		83	47 - 150	3	20
Carbon disulfide	<1.00		25.0	19.74		ug/L		79	39 - 131	14	32
Carbon tetrachloride	<2.00		25.0	18.56		ug/L		74	45 - 132	9	20
Chlorobenzene	<1.00		25.0	21.22		ug/L		85	54 - 130	9	20
Chlorodibromomethane	<5.00		25.0	19.40		ug/L		78	53 - 130	6	20
Chloroform	<3.00		25.0	19.65		ug/L		79	55 - 130	10	20
cis-1,2-Dichloroethene	7.45		25.0	26.42		ug/L		76	52 - 130	9	20
cis-1,3-Dichloropropene	<5.00		25.0	20.30		ug/L		81	55 - 130	7	20
1,2-Dichlorobenzene	<1.00		25.0	19.34		ug/L		77	53 - 130	6	20
1,3-Dichlorobenzene	<1.00		25.0	18.97		ug/L		76	54 - 130	7	20
1,4-Dichlorobenzene	<1.00		25.0	19.39		ug/L		78	53 - 130	6	20
1,1-Dichloroethane	<1.00		25.0	20.38		ug/L		82	53 - 130	9	20
1,2-Dichloroethane	<1.00		25.0	19.01		ug/L		76	57 - 130	9	21
1,1-Dichloroethene	<2.00		25.0	20.26		ug/L		81	39 - 130	13	28
1,2-Dichloropropane	<1.00		25.0	21.22		ug/L		85	60 - 130	7	31
Ethylbenzene	<1.00		25.0	20.55		ug/L		82	48 - 130	8	20
2-Hexanone	<10.0		50.0	42.49		ug/L		85	45 - 132	2	20
Methylene Chloride	<5.00		25.0	21.20		ug/L		85	50 - 150	9	24
Methyl isobutyl ketone (MIBK)	<10.0		50.0	43.62		ug/L		87	46 - 132	2	20
Methyl tert-butyl ether	<1.00		25.0	21.15		ug/L		85	57 - 130	4	20
Naphthalene	<5.00		25.0	19.52		ug/L		78	33 - 150	3	30
1,1,2,2-Tetrachloroethane	<1.00		25.0	19.55		ug/L		78	51 - 130	4	20
Tetrachloroethene	<1.00		25.0	19.17		ug/L		77	42 - 131	11	20
Toluene	<1.00		25.0	19.76		ug/L		79	48 - 130	8	20
trans-1,2-Dichloroethene	<1.00		25.0	19.87		ug/L		78	54 - 130	11	24
trans-1,3-Dichloropropene	<5.00		25.0	19.56		ug/L		78	51 - 130	6	20
1,1,1-Trichloroethane	<1.00		25.0	18.97		ug/L		76	49 - 130	10	20
1,1,2-Trichloroethane	<1.00		25.0	20.05		ug/L		80	56 - 130	4	20
Trichloroethene	<1.00		25.0	19.65		ug/L		79	55 - 130	9	20
Xylenes, Total	<3.00		50.0	40.10		ug/L		80	44 - 130	9	20

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	104		80 - 120

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-397428/5
Matrix: Water
Analysis Batch: 397428

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			08/23/23 06:49	1
Benzene	<0.500		0.500		ug/L			08/23/23 06:49	1
Bromodichloromethane	<1.00		1.00		ug/L			08/23/23 06:49	1
Bromoform	<5.00		5.00		ug/L			08/23/23 06:49	1
Bromomethane	<4.00		4.00		ug/L			08/23/23 06:49	1
2-Butanone (MEK)	<10.0		10.0		ug/L			08/23/23 06:49	1
Carbon disulfide	<1.00		1.00		ug/L			08/23/23 06:49	1
Carbon tetrachloride	<2.00		2.00		ug/L			08/23/23 06:49	1
Chlorobenzene	<1.00		1.00		ug/L			08/23/23 06:49	1
Chlorodibromomethane	<5.00		5.00		ug/L			08/23/23 06:49	1
Chloroethane	<4.00		4.00		ug/L			08/23/23 06:49	1
Chloroform	<3.00		3.00		ug/L			08/23/23 06:49	1
Chloromethane	<3.00		3.00		ug/L			08/23/23 06:49	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			08/23/23 06:49	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			08/23/23 06:49	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			08/23/23 06:49	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			08/23/23 06:49	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			08/23/23 06:49	1
1,1-Dichloroethane	<1.00		1.00		ug/L			08/23/23 06:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			08/23/23 06:49	1
1,1-Dichloroethene	<2.00		2.00		ug/L			08/23/23 06:49	1
1,2-Dichloropropane	<1.00		1.00		ug/L			08/23/23 06:49	1
Ethylbenzene	<1.00		1.00		ug/L			08/23/23 06:49	1
2-Hexanone	<10.0		10.0		ug/L			08/23/23 06:49	1
Methylene Chloride	<5.00		5.00		ug/L			08/23/23 06:49	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			08/23/23 06:49	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			08/23/23 06:49	1
Naphthalene	<5.00		5.00		ug/L			08/23/23 06:49	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			08/23/23 06:49	1
Tetrachloroethene	<1.00		1.00		ug/L			08/23/23 06:49	1
Toluene	<1.00		1.00		ug/L			08/23/23 06:49	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			08/23/23 06:49	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			08/23/23 06:49	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			08/23/23 06:49	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			08/23/23 06:49	1
Trichloroethene	<1.00		1.00		ug/L			08/23/23 06:49	1
Vinyl chloride	<1.00		1.00		ug/L			08/23/23 06:49	1
Xylenes, Total	<3.00		3.00		ug/L			08/23/23 06:49	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	102		80 - 120		08/23/23 06:49	1
Dibromofluoromethane (Surr)	96		80 - 128		08/23/23 06:49	1
Toluene-d8 (Surr)	101		80 - 120		08/23/23 06:49	1

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-397428/6
Matrix: Water
Analysis Batch: 397428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	40.88		ug/L		102	50 - 150
Benzene	20.0	19.50		ug/L		97	73 - 122
Bromodichloromethane	20.0	18.17		ug/L		91	72 - 121
Bromoform	20.0	18.22		ug/L		91	55 - 129
2-Butanone (MEK)	40.0	42.73		ug/L		107	50 - 150
Carbon disulfide	20.0	18.35		ug/L		92	58 - 131
Carbon tetrachloride	20.0	18.06		ug/L		90	67 - 132
Chlorobenzene	20.0	20.32		ug/L		102	69 - 121
Chlorodibromomethane	20.0	18.73		ug/L		94	69 - 122
Chloroform	20.0	18.76		ug/L		94	72 - 120
cis-1,2-Dichloroethene	20.0	19.04		ug/L		95	74 - 120
cis-1,3-Dichloropropene	20.0	19.06		ug/L		95	71 - 126
1,2-Dichlorobenzene	20.0	18.16		ug/L		91	68 - 120
1,3-Dichlorobenzene	20.0	17.07		ug/L		85	67 - 123
1,4-Dichlorobenzene	20.0	18.23		ug/L		91	67 - 120
1,1-Dichloroethane	20.0	19.53		ug/L		98	71 - 123
1,2-Dichloroethane	20.0	17.98		ug/L		90	70 - 124
1,1-Dichloroethene	20.0	19.56		ug/L		98	61 - 129
1,2-Dichloropropane	20.0	20.20		ug/L		101	73 - 121
Ethylbenzene	20.0	19.78		ug/L		99	69 - 122
2-Hexanone	40.0	42.70		ug/L		107	60 - 132
Methylene Chloride	20.0	19.04		ug/L		95	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	43.30		ug/L		108	62 - 130
Methyl tert-butyl ether	20.0	20.27		ug/L		101	68 - 127
Naphthalene	20.0	18.58		ug/L		93	50 - 150
1,1,2,2-Tetrachloroethane	20.0	18.91		ug/L		95	64 - 124
Tetrachloroethene	20.0	18.79		ug/L		94	69 - 131
Toluene	20.0	18.99		ug/L		95	72 - 121
trans-1,2-Dichloroethene	20.0	18.35		ug/L		92	68 - 125
trans-1,3-Dichloropropene	20.0	18.43		ug/L		92	68 - 124
1,1,1-Trichloroethane	20.0	18.87		ug/L		94	71 - 128
1,1,2-Trichloroethane	20.0	19.02		ug/L		95	70 - 124
Trichloroethene	20.0	19.33		ug/L		97	73 - 126
Xylenes, Total	40.0	38.83		ug/L		97	68 - 124

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	94		80 - 128
Toluene-d8 (Surr)	105		80 - 120

Lab Sample ID: LCS 310-397428/7
Matrix: Water
Analysis Batch: 397428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	23.13		ug/L		116	24 - 150
Chloroethane	20.0	22.19		ug/L		111	51 - 137
Chloromethane	20.0	23.86		ug/L		119	37 - 150

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-397428/7
Matrix: Water
Analysis Batch: 397428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	20.0	22.85		ug/L		114	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	97		80 - 128
Toluene-d8 (Surr)	99		80 - 120

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 570-356571/4
Matrix: Water
Analysis Batch: 356571

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	<5.00		5.00		ug/L			08/21/23 09:31	1

Lab Sample ID: LCS 570-356571/2
Matrix: Water
Analysis Batch: 356571

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon dioxide	562	491.7		ug/L		88	80 - 120

Lab Sample ID: LCSD 570-356571/3
Matrix: Water
Analysis Batch: 356571

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Carbon dioxide	562	491.3		ug/L		87	80 - 120	0	20

Lab Sample ID: MB 570-356969/4
Matrix: Water
Analysis Batch: 356969

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	<5.00		5.00		ug/L			08/22/23 09:29	1

Lab Sample ID: LCS 570-356969/2
Matrix: Water
Analysis Batch: 356969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon dioxide	562	491.0		ug/L		87	80 - 120

Lab Sample ID: LCSD 570-356969/3
Matrix: Water
Analysis Batch: 356969

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Carbon dioxide	562	495.2		ug/L		88	80 - 120	1	20

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-584562/3
Matrix: Water
Analysis Batch: 584562

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Methane	<1.00		1.00		ug/L			08/21/23 11:42	1
Ethane	<1.00		1.00		ug/L			08/21/23 11:42	1
Ethene	<1.00		1.00		ug/L			08/21/23 11:42	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
1,1,1-Trifluoroethane	107		60 - 140				08/21/23 11:42	1	

Lab Sample ID: LCS 240-584562/4
Matrix: Water
Analysis Batch: 584562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ethane	537	498.3		ug/L	93	80 - 120	
Ethene	506	473.5		ug/L	94	80 - 120	
Surrogate	%Recovery	Qualifier	Limits				
1,1,1-Trifluoroethane	105		60 - 140				

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-397526/3
Matrix: Water
Analysis Batch: 397526

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<1.00		1.00		mg/L			08/17/23 16:34	1
Nitrate as N	<0.200		0.200		mg/L			08/17/23 16:34	1
Sulfate	<1.00		1.00		mg/L			08/17/23 16:34	1

Lab Sample ID: LCS 310-397526/4
Matrix: Water
Analysis Batch: 397526

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	2.00	2.131		mg/L	107	90 - 110	
Sulfate	10.0	10.70		mg/L	107	90 - 110	

Lab Sample ID: 310-262869-1 MS
Matrix: Water
Analysis Batch: 397526

Client Sample ID: MW01-GW-0823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	4.80		5.00	10.28		mg/L	110	80 - 120	
Sulfate	142		25.0	164.4	4	mg/L	90	80 - 120	

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 310-262869-1 MSD
Matrix: Water
Analysis Batch: 397526

Client Sample ID: MW01-GW-0823
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	97.6	F1	25.0	121.0		mg/L		94	80 - 120	6	15
Nitrate as N	4.80		5.00	10.22		mg/L		109	80 - 120	1	15
Sulfate	142		25.0	162.6	4	mg/L		83	80 - 120	1	15

Lab Sample ID: MB 310-397745/36
Matrix: Water
Analysis Batch: 397745

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			08/24/23 09:41	1
Nitrate as N	<0.200		0.200		mg/L			08/24/23 09:41	1
Sulfate	<1.00		1.00		mg/L			08/24/23 09:41	1

Lab Sample ID: LCS 310-397745/45
Matrix: Water
Analysis Batch: 397745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.876		mg/L		99	90 - 110
Nitrate as N	2.00	2.105		mg/L		105	90 - 110
Sulfate	10.0	10.06		mg/L		101	90 - 110

Lab Sample ID: MB 310-398210/3
Matrix: Water
Analysis Batch: 398210

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			08/29/23 18:17	1
Sulfate	<1.00		1.00		mg/L			08/29/23 18:17	1

Lab Sample ID: LCS 310-398210/35
Matrix: Water
Analysis Batch: 398210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.605		mg/L		96	90 - 110

Lab Sample ID: LCS 310-398210/4
Matrix: Water
Analysis Batch: 398210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	10.0	9.172		mg/L		92	90 - 110

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-397325/1-A
 Matrix: Water
 Analysis Batch: 397908

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 397325

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.100		0.100		mg/L		08/22/23 09:00	08/25/23 22:19	1
Manganese	<0.0100		0.0100		mg/L		08/22/23 09:00	08/25/23 22:19	1

Lab Sample ID: LCS 310-397325/2-A
 Matrix: Water
 Analysis Batch: 397908

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 397325

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.200	0.2161		mg/L		108	80 - 120
Manganese	0.100	0.09890		mg/L		99	80 - 120

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 240-585227/4
 Matrix: Water
 Analysis Batch: 585227

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<1.00		1.00		mg/L			08/25/23 12:29	1

Lab Sample ID: LCS 240-585227/5
 Matrix: Water
 Analysis Batch: 585227

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	18.3	17.82		mg/L		97	85 - 115

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: MB 310-397259/1-A
 Matrix: Water
 Analysis Batch: 397260

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 397259

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	<2.00		2.00		mg/L		08/21/23 09:46	08/21/23 09:46	1

Lab Sample ID: LCS 310-397259/2-A
 Matrix: Water
 Analysis Batch: 397260

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 397259

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	5.00	1.600	J	mg/L		32	11 - 122

Lab Sample ID: 310-262869-1 MS
 Matrix: Water
 Analysis Batch: 397260

Client Sample ID: MW01-GW-0823
 Prep Type: Total/NA
 Prep Batch: 397259

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	<2.00		5.00	3.800		mg/L		76	10 - 122

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method: SM 4500 S2 F - Sulfide, Total (Continued)

Lab Sample ID: 310-262869-1 MSD
 Matrix: Water
 Analysis Batch: 397260

Client Sample ID: MW01-GW-0823
 Prep Type: Total/NA
 Prep Batch: 397259

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfide	<2.00		5.00	3.600		mg/L		72	10 - 122	5	26

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Association Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

GC/MS VOA

Analysis Batch: 397230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Total/NA	Water	8260D	
310-262869-2	MW06-GW-0823	Total/NA	Water	8260D	
310-262869-3	MW08-GW-0823	Total/NA	Water	8260D	
310-262869-4	MW09-GW-0823	Total/NA	Water	8260D	
310-262869-5	MW11-GW-0823	Total/NA	Water	8260D	
310-262869-6	MW12-GW-0823	Total/NA	Water	8260D	
310-262869-7	Dup01-GW-0823	Total/NA	Water	8260D	
310-262869-8	MW13-GW-0823	Total/NA	Water	8260D	
310-262869-9	MW14-GW-0823	Total/NA	Water	8260D	
310-262869-10	MW15-GW-0823	Total/NA	Water	8260D	
MB 310-397230/5	Method Blank	Total/NA	Water	8260D	
LCS 310-397230/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-397230/7	Lab Control Sample	Total/NA	Water	8260D	
310-262869-5 MS	MW11-GW-0823	Total/NA	Water	8260D	
310-262869-5 MSD	MW11-GW-0823	Total/NA	Water	8260D	

Analysis Batch: 397232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-11	MW16-GW-0823	Total/NA	Water	8260D	
310-262869-12	MW07-GW-0823	Total/NA	Water	8260D	
310-262869-13	MW17-GW-0823	Total/NA	Water	8260D	
310-262869-14	Trip Blank	Total/NA	Water	8260D	
MB 310-397232/5	Method Blank	Total/NA	Water	8260D	
LCS 310-397232/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-397232/7	Lab Control Sample	Total/NA	Water	8260D	
310-262869-11 MS	MW16-GW-0823	Total/NA	Water	8260D	
310-262869-11 MSD	MW16-GW-0823	Total/NA	Water	8260D	

Analysis Batch: 397428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-13	MW17-GW-0823	Total/NA	Water	8260D	
MB 310-397428/5	Method Blank	Total/NA	Water	8260D	
LCS 310-397428/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-397428/7	Lab Control Sample	Total/NA	Water	8260D	

GC VOA

Analysis Batch: 356571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1 - DL	MW01-GW-0823	Total/NA	Water	RSK-175	
310-262869-6	MW12-GW-0823	Total/NA	Water	RSK-175	
MB 570-356571/4	Method Blank	Total/NA	Water	RSK-175	
LCS 570-356571/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 570-356571/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 356969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-7	Dup01-GW-0823	Total/NA	Water	RSK-175	
310-262869-12	MW07-GW-0823	Total/NA	Water	RSK-175	
310-262869-13	MW17-GW-0823	Total/NA	Water	RSK-175	
MB 570-356969/4	Method Blank	Total/NA	Water	RSK-175	

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QC Association Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

GC VOA (Continued)

Analysis Batch: 356969 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 570-356969/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 570-356969/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 584562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Total/NA	Water	RSK-175	
310-262869-6	MW12-GW-0823	Total/NA	Water	RSK-175	
310-262869-7	Dup01-GW-0823	Total/NA	Water	RSK-175	
310-262869-12	MW07-GW-0823	Total/NA	Water	RSK-175	
310-262869-13	MW17-GW-0823	Total/NA	Water	RSK-175	
MB 240-584562/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-584562/4	Lab Control Sample	Total/NA	Water	RSK-175	

HPLC/IC

Analysis Batch: 397526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Total/NA	Water	9056A	
310-262869-6	MW12-GW-0823	Total/NA	Water	9056A	
310-262869-7	Dup01-GW-0823	Total/NA	Water	9056A	
MB 310-397526/3	Method Blank	Total/NA	Water	9056A	
LCS 310-397526/4	Lab Control Sample	Total/NA	Water	9056A	
310-262869-1 MS	MW01-GW-0823	Total/NA	Water	9056A	
310-262869-1 MSD	MW01-GW-0823	Total/NA	Water	9056A	

Analysis Batch: 397745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-12	MW07-GW-0823	Total/NA	Water	9056A	
310-262869-13	MW17-GW-0823	Total/NA	Water	9056A	
MB 310-397745/36	Method Blank	Total/NA	Water	9056A	
LCS 310-397745/45	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 398210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-6	MW12-GW-0823	Total/NA	Water	9056A	
310-262869-7	Dup01-GW-0823	Total/NA	Water	9056A	
MB 310-398210/3	Method Blank	Total/NA	Water	9056A	
LCS 310-398210/35	Lab Control Sample	Total/NA	Water	9056A	
LCS 310-398210/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 397325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Dissolved	Water	3005A	
310-262869-6	MW12-GW-0823	Dissolved	Water	3005A	
310-262869-7	Dup01-GW-0823	Dissolved	Water	3005A	
310-262869-12	MW07-GW-0823	Dissolved	Water	3005A	
310-262869-13	MW17-GW-0823	Dissolved	Water	3005A	
MB 310-397325/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-397325/2-A	Lab Control Sample	Total/NA	Water	3005A	

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QC Association Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Metals

Analysis Batch: 397908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Dissolved	Water	6020B	397325
310-262869-6	MW12-GW-0823	Dissolved	Water	6020B	397325
310-262869-7	Dup01-GW-0823	Dissolved	Water	6020B	397325
310-262869-12	MW07-GW-0823	Dissolved	Water	6020B	397325
310-262869-13	MW17-GW-0823	Dissolved	Water	6020B	397325
MB 310-397325/1-A	Method Blank	Total/NA	Water	6020B	397325
LCS 310-397325/2-A	Lab Control Sample	Total/NA	Water	6020B	397325

General Chemistry

Prep Batch: 397259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Total/NA	Water	SM 4500 S2 C	
310-262869-6	MW12-GW-0823	Total/NA	Water	SM 4500 S2 C	
310-262869-7	Dup01-GW-0823	Total/NA	Water	SM 4500 S2 C	
310-262869-12	MW07-GW-0823	Total/NA	Water	SM 4500 S2 C	
310-262869-13	MW17-GW-0823	Total/NA	Water	SM 4500 S2 C	
MB 310-397259/1-A	Method Blank	Total/NA	Water	SM 4500 S2 C	
LCS 310-397259/2-A	Lab Control Sample	Total/NA	Water	SM 4500 S2 C	
310-262869-1 MS	MW01-GW-0823	Total/NA	Water	SM 4500 S2 C	
310-262869-1 MSD	MW01-GW-0823	Total/NA	Water	SM 4500 S2 C	

Analysis Batch: 397260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Total/NA	Water	SM 4500 S2 F	397259
310-262869-6	MW12-GW-0823	Total/NA	Water	SM 4500 S2 F	397259
310-262869-7	Dup01-GW-0823	Total/NA	Water	SM 4500 S2 F	397259
310-262869-12	MW07-GW-0823	Total/NA	Water	SM 4500 S2 F	397259
310-262869-13	MW17-GW-0823	Total/NA	Water	SM 4500 S2 F	397259
MB 310-397259/1-A	Method Blank	Total/NA	Water	SM 4500 S2 F	397259
LCS 310-397259/2-A	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	397259
310-262869-1 MS	MW01-GW-0823	Total/NA	Water	SM 4500 S2 F	397259
310-262869-1 MSD	MW01-GW-0823	Total/NA	Water	SM 4500 S2 F	397259

Analysis Batch: 585227

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262869-1	MW01-GW-0823	Total/NA	Water	9060A	
310-262869-6	MW12-GW-0823	Total/NA	Water	9060A	
310-262869-7	Dup01-GW-0823	Total/NA	Water	9060A	
310-262869-12	MW07-GW-0823	Total/NA	Water	9060A	
310-262869-13	MW17-GW-0823	Total/NA	Water	9060A	
MB 240-585227/4	Method Blank	Total/NA	Water	9060A	
LCS 240-585227/5	Lab Control Sample	Total/NA	Water	9060A	

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW01-GW-0823

Date Collected: 08/16/23 17:16

Date Received: 08/17/23 15:49

Lab Sample ID: 310-262869-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 12:32
Total/NA	Analysis	RSK-175	DL	10	356571	I9H5	EET CAL 4	08/21/23 14:08
Total/NA	Analysis	RSK-175		1	584562	JBN	EET CLE	08/21/23 16:15
Total/NA	Analysis	9056A		5	397526	QTZ5	EET CF	08/17/23 16:58
Dissolved	Prep	3005A			397325	KCK5	EET CF	08/22/23 09:00
Dissolved	Analysis	6020B		1	397908	DHM5	EET CF	08/25/23 23:23
Total/NA	Analysis	9060A		1	585227	JWW	EET CLE	08/25/23 16:00
Total/NA	Prep	SM 4500 S2 C			397259	DGU1	EET CF	08/21/23 09:46
Total/NA	Analysis	SM 4500 S2 F		1	397260	DGU1	EET CF	08/21/23 09:46

Client Sample ID: MW06-GW-0823

Date Collected: 08/15/23 15:10

Date Received: 08/17/23 15:49

Lab Sample ID: 310-262869-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 12:53

Client Sample ID: MW08-GW-0823

Date Collected: 08/15/23 17:55

Date Received: 08/17/23 15:49

Lab Sample ID: 310-262869-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 13:15

Client Sample ID: MW09-GW-0823

Date Collected: 08/16/23 14:10

Date Received: 08/17/23 15:49

Lab Sample ID: 310-262869-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 13:37

Client Sample ID: MW11-GW-0823

Date Collected: 08/16/23 13:10

Date Received: 08/17/23 15:49

Lab Sample ID: 310-262869-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 13:59

Client Sample ID: MW12-GW-0823

Date Collected: 08/16/23 18:15

Date Received: 08/17/23 15:49

Lab Sample ID: 310-262869-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 14:21
Total/NA	Analysis	RSK-175		10	356571	I9H5	EET CAL 4	08/21/23 14:30

Eurofins Cedar Falls

Lab Chronicle

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW12-GW-0823

Lab Sample ID: 310-262869-6

Date Collected: 08/16/23 18:15

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	RSK-175		1	584562	JBN	EET CLE	08/21/23 16:32
Total/NA	Analysis	9056A		10	398210	QTZ5	EET CF	08/29/23 20:06
Total/NA	Analysis	9056A		1	397526	QTZ5	EET CF	08/17/23 17:35
Dissolved	Prep	3005A			397325	KCK5	EET CF	08/22/23 09:00
Dissolved	Analysis	6020B		1	397908	DHM5	EET CF	08/25/23 23:25
Total/NA	Analysis	9060A		1	585227	JWW	EET CLE	08/25/23 16:24
Total/NA	Prep	SM 4500 S2 C			397259	DGU1	EET CF	08/21/23 09:46
Total/NA	Analysis	SM 4500 S2 F		1	397260	DGU1	EET CF	08/21/23 09:46

Client Sample ID: Dup01-GW-0823

Lab Sample ID: 310-262869-7

Date Collected: 08/16/23 00:00

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 14:43
Total/NA	Analysis	RSK-175		10	356969	I9H5	EET CAL 4	08/22/23 10:31
Total/NA	Analysis	RSK-175		1	584562	JBN	EET CLE	08/21/23 16:49
Total/NA	Analysis	9056A		10	398210	QTZ5	EET CF	08/29/23 20:18
Total/NA	Analysis	9056A		1	397526	QTZ5	EET CF	08/17/23 17:47
Dissolved	Prep	3005A			397325	KCK5	EET CF	08/22/23 09:00
Dissolved	Analysis	6020B		1	397908	DHM5	EET CF	08/25/23 23:28
Total/NA	Analysis	9060A		1	585227	JWW	EET CLE	08/25/23 16:48
Total/NA	Prep	SM 4500 S2 C			397259	DGU1	EET CF	08/21/23 09:46
Total/NA	Analysis	SM 4500 S2 F		1	397260	DGU1	EET CF	08/21/23 09:46

Client Sample ID: MW13-GW-0823

Lab Sample ID: 310-262869-8

Date Collected: 08/16/23 10:50

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 15:05

Client Sample ID: MW14-GW-0823

Lab Sample ID: 310-262869-9

Date Collected: 08/15/23 19:45

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 15:27

Lab Chronicle

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: MW15-GW-0823

Lab Sample ID: 310-262869-10

Date Collected: 08/15/23 18:58

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397230	WSE8	EET CF	08/21/23 15:49

Client Sample ID: MW16-GW-0823

Lab Sample ID: 310-262869-11

Date Collected: 08/15/23 12:15

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397232	WSE8	EET CF	08/21/23 23:06

Client Sample ID: MW07-GW-0823

Lab Sample ID: 310-262869-12

Date Collected: 08/17/23 10:57

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397232	WSE8	EET CF	08/21/23 23:28
Total/NA	Analysis	RSK-175		10	356969	I9H5	EET CAL 4	08/22/23 10:49
Total/NA	Analysis	RSK-175		1	584562	JBN	EET CLE	08/21/23 17:06
Total/NA	Analysis	9056A		5	397745	QTZ5	EET CF	08/23/23 20:31
Dissolved	Prep	3005A			397325	KCK5	EET CF	08/22/23 09:00
Dissolved	Analysis	6020B		1	397908	DHM5	EET CF	08/25/23 23:30
Total/NA	Analysis	9060A		1	585227	JWW	EET CLE	08/25/23 17:12
Total/NA	Prep	SM 4500 S2 C			397259	DGU1	EET CF	08/21/23 09:46
Total/NA	Analysis	SM 4500 S2 F		1	397260	DGU1	EET CF	08/21/23 09:46

Client Sample ID: MW17-GW-0823

Lab Sample ID: 310-262869-13

Date Collected: 08/17/23 09:10

Matrix: Water

Date Received: 08/17/23 15:49

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397232	WSE8	EET CF	08/21/23 23:50
Total/NA	Analysis	8260D		10	397428	WSE8	EET CF	08/23/23 13:49
Total/NA	Analysis	RSK-175		10	356969	I9H5	EET CAL 4	08/22/23 11:19
Total/NA	Analysis	RSK-175		1	584562	JBN	EET CLE	08/21/23 17:23
Total/NA	Analysis	9056A		1	397745	QTZ5	EET CF	08/23/23 20:45
Dissolved	Prep	3005A			397325	KCK5	EET CF	08/22/23 09:00
Dissolved	Analysis	6020B		1	397908	DHM5	EET CF	08/25/23 23:33
Total/NA	Analysis	9060A		1	585227	JWW	EET CLE	08/25/23 17:36
Total/NA	Prep	SM 4500 S2 C			397259	DGU1	EET CF	08/21/23 09:46
Total/NA	Analysis	SM 4500 S2 F		1	397260	DGU1	EET CF	08/21/23 09:46

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-262869-14

Date Collected: 08/17/23 00:00

Matrix: Water

Date Received: 08/17/23 15:49

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
Total/NA	Analysis	8260D		1	397232	WSE8	EET CF	08/21/23 22:00

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

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Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

Laboratory: Eurofins Calscience

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0830	11-16-23
California	SCAQMD LAP	17LA0919	11-30-23
California	State	3082	07-31-24
Nevada	State	CA00111	07-31-24
Oregon	NELAP	4175	02-02-24
USDA	US Federal Programs	P330-22-00059	06-08-26
Washington	State	C916-18	10-11-23

Laboratory: Eurofins Cleveland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	421	06-01-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
RSK-175		Water	Ethane
RSK-175		Water	Ethene
RSK-175		Water	Methane

Method Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins – 35th Street Main Plant

Job ID: 310-262869-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
RSK-175	Dissolved Gases (GC)	RSK	EET CAL 4
RSK-175	Dissolved Gases (GC)	RSK	EET CLE
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
9060A	Organic Carbon, Total (TOC)	SW846	EET CLE
SM 4500 S2 F	Sulfide, Total	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
SM 4500 S2 C	Sulfide, Sample Pretreatment/Concentration	SM	EET CF

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

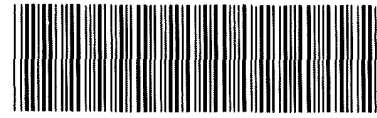
EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396



Environment Testing
America



310-262869 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>STATTEL</u>			
City/State:	CITY <u>DES MOINES</u>	STATE <u>IA</u>	Project: <u>3576 ST.</u>
Receipt Information			
Date/Time Received:	DATE <u>8/17/23</u>	TIME <u>1500</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input checked="" type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>3</u>	
Cooler Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>1</u>		Correction Factor (°C): <u>0.0</u>	
* Temp Blank: Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.3</u>		Corrected Temp (°C): <u>1.3</u>	
Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			





Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>STATTEC</u>			
City/State: <u>DES MOINES IA</u>		Project: <u>3576 ST</u>	
Receipt Information			
Date/Time Received:	DATE <u>8/17/23</u>	TIME <u>1500</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input checked="" type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____
Multiple Coolers?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>2</u> of <u>3</u>
Cooler Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?		<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
<u>1 - 500 mL NT "Trip Blank" with 500 mL</u>			
<u>HAZ/212C ACCEPT</u>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet Ice <input type="checkbox"/> Blue Ice <input type="checkbox"/> Dry Ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>T</u>		Correction Factor (°C): <u>0.0</u>	
Temp Blank Temperature - If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.6</u>		Corrected Temp (°C): <u>0.6</u>	
Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
a) If yes: Is there evidence that the chilling process began?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?)		<input type="checkbox"/> Yes	<input type="checkbox"/> No
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>STATTEC</u>			
City/State:	CITY <u>DES MOINES</u>	STATE <u>IA</u>	Project: <u>35th ST.</u>
Receipt Information			
Date/Time Received:	DATE <u>8/17/23</u>	TIME <u>1500</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input checked="" type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>3</u> of <u>3</u>	
Cooler Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
<u>MW-01-GW0823, Dup 01, MW-01-GW0823</u>			
<u>MU-17</u>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet Ice <input type="checkbox"/> Blue Ice <input type="checkbox"/> Dry Ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>[Signature]</u>		Correction Factor (°C): <u>0.0</u>	
Temp Blank: Temperature - If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>3.3</u>		Corrected Temp (°C): <u>3.3</u>	
Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Client Information Client Contact: Steve Varsa Company: Stantec Consulting Services Inc Address: 11311 Aurora Avenue City: Des Moines State: IA, 50322-7904 Phone: 193709409 Email: steve.varsa@stantec.com Project Name: Rockwell Collins - 35th Street Corrective Action Implementation Site: 35th Street		Lab PM: Bindert, Zach T E-Mail: Zach.Bindert@st.eurofins.com Carrier Tracking No(s): State of Origin: Job #:		COC No: 310-83350-23213 Page: Page 1 of 2	
Due Date Requested: Standard TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #: 193709409 WO #: Project #: 31012345 SSOW#:		Analysis Requested			
Sample Date Sample Time Sample Type (C=Comp, G=grab) Matrix (W=water, S=solid, O=soil, E=soil, T=soil, A=air) Preservation Code:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) RSK 175 - Methane, Ethane, Ethene 9060A - TOC Chloride and Sulfate - 9066A_ORGM_49H 9020B - Dissolved Iron and Manganese RSK 176_CO2 - RSK-176 CO2 Sulfide			
Sample Identification MW06 - GW-0823 MW08 - GW-0823 MW09 - GW-0823 MW11 - GW-0823 MW12 - GW-0823 Dup01 - GW-0823 MW13 - GW-0823 MW14 - GW-0823 MW15 - GW-0823 MW16 - GW-0823		Special Instructions/Note: NITRATE 48 HOUR HOD TIME			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:			
Empty Kit Relinquished by Relinquished by: Emma Brady Date: 8/17/2023		Method of Shipment:			
Relinquished by: Emma Brady Date: 8/17/2023		Received by: [Signature] Date/Time: 8/23 1500 Company:			
Relinquished by:		Received by:			
Relinquished by:		Received by:			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks:			



Eurofins Cedar Falls
 3019 Venture Way
 Cedar Falls, IA 50613
 Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

33/3.1



Client Information (Sub Contract Lab)		Sampler	Lab PM	Carmer Tracking No(s)		COC No
Client Contact		Bindert, Zach T				310-64482.1
Shipping/Receiving		E-Mail		State of Origin		Page
Company		Zach Bindert@et.eurofins.com		Iowa		Page 1 of 1
Eurofins Environment Testing North Centr		Accreditations Required (See note)		State - Iowa		Job #
Address:		Due Date Requested:		Preservation Codes:		310-262869-1
180 S. Van Buren Avenue,		8/30/2023		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)		
City:		TAT Requested (days):		Analysis Requested		
Barberton		8/30/2023				
State, Zip		PO #:		Field Filtered Sample (Yes or No)		
OH, 44203		WO #:		Perform MS/MSD (Yes or No)		
Phone:		Project #:		960A/ TOC		
330-497-9396(Tel) 330-497-0772(Fax)		31012345		RSK_175/ Methane, Ethane, Ethene		
Email:		SSOW#:		Total Number of Containers		
Rockwell Collins - 35th Street Main Plant				Special Instructions/Note:		
Site:				RSK/2001		
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Preservation Code
MW01-GW-0823 (310-262869-1)	8/16/23	17:16 Central	Water	X	X	5
MW12-GW-0823 (310-262869-6)	8/16/23	18:15 Central	Water	X	X	5
Dup01-GW-0823 (310-262869-7)	8/16/23	Central	Water	X	X	5
MW07-GW-0823 (310-262869-12)	8/17/23	10:57 Central	Water	X	X	5
MW17-GW-0823 (310-262869-13)	8/17/23	09:10 Central	Water	X	X	5

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Empty Kit Relinquished by _____ Date: _____
 Relinquished by _____ Date/Time: 8/18/23 1220 Company: Loar
 Relinquished by _____ Date/Time: 8-19-23 930 Company: _____
 Relinquished by _____ Date/Time: _____ Company: _____
 Custody Seals Intact: _____ Cooler Temperature(s) °C and Other Remarks: _____
 Δ Yes Δ No

Eurofins - Cleveland Sample Receipt Form/Narrative Login # : _____
Barberton Facility

Client Euc Cedar Falls Site Name _____ Cooler unpacked by: _____
Cooler Received on 8-19-23 Opened on 8-19-23 _____
FedEx: 1st Gfd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____


Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # _____ Foam Box _____ Client Cooler _____ Box _____ Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None _____

1. Cooler temperature upon receipt See Multiple Cooler Form
IR GUN # 21 (CF 02 °C) Observed Cooler Temp. 3.3 °C Corrected Cooler Temp. 3.1 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____ Yes No
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N) # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC312502
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials?  Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
Concerning _____

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____
VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 310-262869-1

Login Number: 262869

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Homolar, Dana J

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 310-262869-1

Login Number: 262869

List Number: 3

Creator: Yu, Tiffany

List Source: Eurofins Calscience

List Creation: 08/19/23 10:45 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 9/24/2023 8:33:27 PM

JOB DESCRIPTION

Rockwell Collins 35th St. - Main Campus

JOB NUMBER

410-139509-1

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
9/24/2023 8:33:27 PM

Authorized for release by
Amek Carter, Project Manager
Loran.Carter@et.eurofinsus.com
(717)556-7252

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Detection Summary	7
Client Sample Results	8
Isotope Dilution Summary	13
QC Sample Results	15
QC Association Summary	22
Lab Chronicle	23
Certification Summary	24
Method Summary	25
Sample Summary	26
Chain of Custody	27
Receipt Checklists	28

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
cn	Refer to Case Narrative for further detail
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Job ID: 410-139509-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Narrative

Job Narrative 410-139509-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 8/18/2023 9:56 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

The Field Sampler was not listed on the Chain of Custody.

All backup containers for water samples received for 1633 PFAS analysis were frozen after receipt

MW07-GW-0823 (410-139509-1), EB01-GW-0823 (410-139509-2) and Trip Blank (410-139509-3)

PFAS

Method 1633: The recovery for the labeled isotope(s) 13C4 PFBA, 13C6 PFDA, 13C7 PFUnA and 13C2 PFTeDA in the following sample: EB01-GW-0823 (410-139509-2) are outside the QC acceptance limits. Sufficient sample was not available to re-extract this sample.

Method 1633: The recovery for labeled isotope: 13C8 FOSA, d5-NEtFOSAA, M2-6:2 FTS, M2-8:2 FTS, d7-N-MeFOSE-M, d9-N-EtFOSE-M, d5-NEtPFOSA and d3-NMePFOSA is outside the QC acceptance limits in the closing continuing calibration verification standard, biased high. Since the recovery for the labeled isotope is within QC limits in the following sample: EB01-GW-0823 (410-139509-2), the data is reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: MW07-GW-0823

Lab Sample ID: 410-139509-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid	48		7.4	1.9	ng/L	1		1633	Total/NA
Perfluoropentanoic acid	81		3.7	0.93	ng/L	1		1633	Total/NA
Perfluorohexanoic acid	7.7		1.9	0.46	ng/L	1		1633	Total/NA
Perfluoroheptanoic acid	3.9		1.9	0.48	ng/L	1		1633	Total/NA
Perfluorooctanoic acid	8.9		1.9	0.59	ng/L	1		1633	Total/NA
Perfluorononanoic acid	1.9		1.9	0.46	ng/L	1		1633	Total/NA
Perfluorobutanesulfonic acid	2.2		1.9	0.28	ng/L	1		1633	Total/NA
Perfluorohexanesulfonic acid	3.5		1.9	0.53	ng/L	1		1633	Total/NA
Perfluorooctanesulfonic acid	11		1.9	0.46	ng/L	1		1633	Total/NA

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-139509-2

No Detections.

Client Sample ID: Trip Blank

Lab Sample ID: 410-139509-3

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: MW07-GW-0823

Lab Sample ID: 410-139509-1

Date Collected: 08/17/23 11:15

Matrix: Water

Date Received: 08/18/23 09:56

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	48		7.4	1.9	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoropentanoic acid	81		3.7	0.93	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorohexanoic acid	7.7		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoroheptanoic acid	3.9		1.9	0.48	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorooctanoic acid	8.9		1.9	0.59	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorononanoic acid	1.9		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorodecanoic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoroundecanoic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorododecanoic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorotridecanoic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorotetradecanoic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorobutanesulfonic acid	2.2		1.9	0.28	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoropentanesulfonic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorohexanesulfonic acid	3.5		1.9	0.53	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoroheptanesulfonic acid	ND		1.9	0.37	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorooctanesulfonic acid	11		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorononanesulfonic acid	ND		1.9	0.37	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorodecanesulfonic acid	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.9	0.83	ng/L		08/23/23 06:25	09/13/23 16:34	1
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		7.4	1.6	ng/L		08/23/23 06:25	09/13/23 16:34	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		7.4	2.3	ng/L		08/23/23 06:25	09/13/23 16:34	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		7.4	2.4	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluorooctanesulfonamide	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
NMeFOSA	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
N-ethylperfluoro-1-octanesulfonamide	ND		1.9	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
NMeFOSAA	ND		3.7	1.1	ng/L		08/23/23 06:25	09/13/23 16:34	1
NEtFOSAA	ND		1.9	0.65	ng/L		08/23/23 06:25	09/13/23 16:34	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.6	ng/L		08/23/23 06:25	09/13/23 16:34	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.6	ng/L		08/23/23 06:25	09/13/23 16:34	1
HFPO-DA	ND		7.4	1.9	ng/L		08/23/23 06:25	09/13/23 16:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.4	1.4	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoro-3-methoxypropanoic acid	ND		3.7	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoro(4-methoxybutanoic acid)	ND		3.7	0.93	ng/L		08/23/23 06:25	09/13/23 16:34	1
Perfluoro-3,6-dioxaheptanoic acid	ND		3.7	0.93	ng/L		08/23/23 06:25	09/13/23 16:34	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		7.4	0.93	ng/L		08/23/23 06:25	09/13/23 16:34	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		7.4	1.9	ng/L		08/23/23 06:25	09/13/23 16:34	1
PFEESA	ND		3.7	0.46	ng/L		08/23/23 06:25	09/13/23 16:34	1
3:3 FTCA	ND		9.3	1.4	ng/L		08/23/23 06:25	09/13/23 16:34	1
5:3 FTCA	ND		46	9.3	ng/L		08/23/23 06:25	09/13/23 16:34	1
7:3 FTCA	ND		46	9.3	ng/L		08/23/23 06:25	09/13/23 16:34	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: MW07-GW-0823

Lab Sample ID: 410-139509-1

Date Collected: 08/17/23 11:15

Matrix: Water

Date Received: 08/18/23 09:56

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	98.1		10 - 130	08/23/23 06:25	09/13/23 16:34	1
13C5 PFPeA	97.9		35 - 150	08/23/23 06:25	09/13/23 16:34	1
13C5 PFHxA	92.0		55 - 150	08/23/23 06:25	09/13/23 16:34	1
13C4 PFHpA	95.0		55 - 150	08/23/23 06:25	09/13/23 16:34	1
13C8 PFOA	93.5		60 - 140	08/23/23 06:25	09/13/23 16:34	1
13C9 PFNA	91.7		55 - 140	08/23/23 06:25	09/13/23 16:34	1
13C6 PFDA	94.1		50 - 140	08/23/23 06:25	09/13/23 16:34	1
13C7 PFUnA	85.2		30 - 140	08/23/23 06:25	09/13/23 16:34	1
13C2-PFDoDA	77.4		10 - 150	08/23/23 06:25	09/13/23 16:34	1
13C2 PFTeDA	67.8		10 - 130	08/23/23 06:25	09/13/23 16:34	1
13C3 PFBS	101		55 - 150	08/23/23 06:25	09/13/23 16:34	1
13C3 PFHxS	91.8		55 - 150	08/23/23 06:25	09/13/23 16:34	1
13C8 PFOS	89.4		45 - 140	08/23/23 06:25	09/13/23 16:34	1
13C8 FOSA	84.7		30 - 130	08/23/23 06:25	09/13/23 16:34	1
d3-NMeFOSAA	76.1		45 - 200	08/23/23 06:25	09/13/23 16:34	1
d5-NEtFOSAA	74.1		10 - 200	08/23/23 06:25	09/13/23 16:34	1
M2-4:2 FTS	103		60 - 200	08/23/23 06:25	09/13/23 16:34	1
M2-6:2 FTS	106		60 - 200	08/23/23 06:25	09/13/23 16:34	1
M2-8:2 FTS	97.7		50 - 200	08/23/23 06:25	09/13/23 16:34	1
13C3 HFPO-DA	89.6		25 - 160	08/23/23 06:25	09/13/23 16:34	1
d7-N-MeFOSE-M	71.2		10 - 150	08/23/23 06:25	09/13/23 16:34	1
d9-N-EtFOSE-M	65.6		10 - 150	08/23/23 06:25	09/13/23 16:34	1
d5-NEtPFOSA	61.4		10 - 130	08/23/23 06:25	09/13/23 16:34	1
d3-NMePFOSA	63.0		15 - 130	08/23/23 06:25	09/13/23 16:34	1

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-139509-2

Date Collected: 08/17/23 10:30

Matrix: Water

Date Received: 08/18/23 09:56

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	ND		7.5	1.9	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluoroheptanoic acid	ND		1.9	0.49	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluorooctanoic acid	ND		1.9	0.60	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluorodecanoic acid	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluoroundecanoic acid	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluorododecanoic acid	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluorotridecanoic acid	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluorotetradecanoic acid	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluoropentanesulfonic acid	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
Perfluorohexanesulfonic acid	ND		1.9	0.54	ng/L		08/23/23 06:25	09/13/23 16:46	1
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		7.5	1.6	ng/L		08/23/23 06:25	09/13/23 16:46	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		7.5	2.4	ng/L		08/23/23 06:25	09/13/23 16:46	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		7.5	2.5	ng/L		08/23/23 06:25	09/13/23 16:46	1
NMeFOSA	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
N-ethylperfluoro-1-octanesulfonamide	ND		1.9	0.47	ng/L		08/23/23 06:25	09/13/23 16:46	1
NMeFOSAA	ND		3.8	1.1	ng/L		08/23/23 06:25	09/13/23 16:46	1
NEtFOSAA	ND		1.9	0.66	ng/L		08/23/23 06:25	09/13/23 16:46	1

Eurofins Lancaster Laboratories Environment Testing, LLC

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-139509-2

Date Collected: 08/17/23 10:30

Matrix: Water

Date Received: 08/18/23 09:56

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.7	ng/L		08/23/23 06:25	09/13/23 16:46	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.7	ng/L		08/23/23 06:25	09/13/23 16:46	1
HFPO-DA	ND		7.5	1.9	ng/L		08/23/23 06:25	09/13/23 16:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.5	1.4	ng/L		08/23/23 06:25	09/13/23 16:46	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		7.5	0.94	ng/L		08/23/23 06:25	09/13/23 16:46	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		7.5	1.9	ng/L		08/23/23 06:25	09/13/23 16:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	161	*5+ cn	10 - 130				08/23/23 06:25	09/13/23 16:46	1
13C4 PFHpA	146		55 - 150				08/23/23 06:25	09/13/23 16:46	1
13C8 PFOA	129		60 - 140				08/23/23 06:25	09/13/23 16:46	1
13C6 PFDA	155	*5+ cn	50 - 140				08/23/23 06:25	09/13/23 16:46	1
13C7 PFUnA	155	*5+ cn	30 - 140				08/23/23 06:25	09/13/23 16:46	1
13C2-PFDoDA	150		10 - 150				08/23/23 06:25	09/13/23 16:46	1
13C2 PFTeDA	142	*5+ cn	10 - 130				08/23/23 06:25	09/13/23 16:46	1
13C3 PFHxS	149		55 - 150				08/23/23 06:25	09/13/23 16:46	1
d3-NMeFOSAA	155		45 - 200				08/23/23 06:25	09/13/23 16:46	1
d5-NEtFOSAA	146	cn	10 - 200				08/23/23 06:25	09/13/23 16:46	1
M2-4:2 FTS	164		60 - 200				08/23/23 06:25	09/13/23 16:46	1
M2-6:2 FTS	176	cn	60 - 200				08/23/23 06:25	09/13/23 16:46	1
M2-8:2 FTS	156	cn	50 - 200				08/23/23 06:25	09/13/23 16:46	1
13C3 HFPO-DA	148		25 - 160				08/23/23 06:25	09/13/23 16:46	1
d7-N-MeFOSE-M	145	cn	10 - 150				08/23/23 06:25	09/13/23 16:46	1
d9-N-EtFOSE-M	140	cn	10 - 150				08/23/23 06:25	09/13/23 16:46	1
d5-NEtPFOSA	124	cn	10 - 130				08/23/23 06:25	09/13/23 16:46	1
d3-NMePFOSA	123	cn	15 - 130				08/23/23 06:25	09/13/23 16:46	1

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid	ND		38	9.4	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorohexanoic acid	ND		19	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorononanoic acid	ND		19	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorobutanesulfonic acid	ND		19	2.8	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluoroheptanesulfonic acid	ND		19	3.8	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorooctanesulfonic acid	ND		19	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorononanesulfonic acid	ND		19	3.8	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorodecanesulfonic acid	ND		19	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorododecanesulfonic acid (PFDoS)	ND		19	8.5	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluorooctanesulfonamide	ND		19	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluoro-3-methoxypropanoic acid	ND		38	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluoro(4-methoxybutanoic acid)	ND		38	9.4	ng/L		08/23/23 06:25	09/19/23 00:22	10
Perfluoro-3,6-dioxahexanoic acid	ND		38	9.4	ng/L		08/23/23 06:25	09/19/23 00:22	10
PFEESA	ND		38	4.7	ng/L		08/23/23 06:25	09/19/23 00:22	10
3:3 FTCA	ND		94	14	ng/L		08/23/23 06:25	09/19/23 00:22	10

Eurofins Lancaster Laboratories Environment Testing, LLC

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-139509-2

Date Collected: 08/17/23 10:30

Matrix: Water

Date Received: 08/18/23 09:56

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
5:3 FTCA	ND		470	94	ng/L		08/23/23 06:25	09/19/23 00:22	10
7:3 FTCA	ND		470	94	ng/L		08/23/23 06:25	09/19/23 00:22	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C5 PFPeA	149		35 - 150				08/23/23 06:25	09/19/23 00:22	10
13C5 PFHxA	149		55 - 150				08/23/23 06:25	09/19/23 00:22	10
13C9 PFNA	137		55 - 140				08/23/23 06:25	09/19/23 00:22	10
13C3 PFBS	150		55 - 150				08/23/23 06:25	09/19/23 00:22	10
13C8 PFOS	136		45 - 140				08/23/23 06:25	09/19/23 00:22	10
13C8 FOSA	127	cn	30 - 130				08/23/23 06:25	09/19/23 00:22	10

Client Sample ID: Trip Blank

Lab Sample ID: 410-139509-3

Date Collected: 08/17/23 00:00

Matrix: Water

Date Received: 08/18/23 09:56

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	ND		7.3	1.8	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoropentanoic acid	ND		3.7	0.92	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorohexanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoroheptanoic acid	ND		1.8	0.48	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorooctanoic acid	ND		1.8	0.59	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorononanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorodecanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoroundecanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorododecanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorotridecanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorotetradecanoic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorobutanesulfonic acid	ND		1.8	0.27	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoropentanesulfonic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorohexanesulfonic acid	ND		1.8	0.52	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoroheptanesulfonic acid	ND		1.8	0.37	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorooctanesulfonic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorononanesulfonic acid	ND		1.8	0.37	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorodecanesulfonic acid	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.8	0.82	ng/L		08/23/23 06:25	09/13/23 17:10	1
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		7.3	1.6	ng/L		08/23/23 06:25	09/13/23 17:10	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		7.3	2.3	ng/L		08/23/23 06:25	09/13/23 17:10	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		7.3	2.4	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluorooctanesulfonamide	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
NMeFOSA	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
N-ethylperfluoro-1-octanesulfonamide	ND		1.8	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
NMeFOSAA	ND		3.7	1.1	ng/L		08/23/23 06:25	09/13/23 17:10	1
NEtFOSAA	ND		1.8	0.64	ng/L		08/23/23 06:25	09/13/23 17:10	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		18	4.6	ng/L		08/23/23 06:25	09/13/23 17:10	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: Trip Blank

Lab Sample ID: 410-139509-3

Date Collected: 08/17/23 00:00

Matrix: Water

Date Received: 08/18/23 09:56

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2- (N-ethylperfluoro-1-octanesulfonamid o) ethanol	ND		18	4.6	ng/L		08/23/23 06:25	09/13/23 17:10	1
HFPO-DA	ND		7.3	1.8	ng/L		08/23/23 06:25	09/13/23 17:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		7.3	1.4	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoro-3-methoxypropanoic acid	ND		3.7	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoro(4-methoxybutanoic acid)	ND		3.7	0.92	ng/L		08/23/23 06:25	09/13/23 17:10	1
Perfluoro-3,6-dioxaheptanoic acid	ND		3.7	0.92	ng/L		08/23/23 06:25	09/13/23 17:10	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid	ND		7.3	0.92	ng/L		08/23/23 06:25	09/13/23 17:10	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid	ND		7.3	1.8	ng/L		08/23/23 06:25	09/13/23 17:10	1
PFEESA	ND		3.7	0.46	ng/L		08/23/23 06:25	09/13/23 17:10	1
3:3 FTCA	ND		9.2	1.4	ng/L		08/23/23 06:25	09/13/23 17:10	1
5:3 FTCA	ND		46	9.2	ng/L		08/23/23 06:25	09/13/23 17:10	1
7:3 FTCA	ND		46	9.2	ng/L		08/23/23 06:25	09/13/23 17:10	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	94.6		10 - 130				08/23/23 06:25	09/13/23 17:10	1
13C5 PFPeA	92.6		35 - 150				08/23/23 06:25	09/13/23 17:10	1
13C5 PFHxA	95.5	I	55 - 150				08/23/23 06:25	09/13/23 17:10	1
13C4 PFHpA	91.6		55 - 150				08/23/23 06:25	09/13/23 17:10	1
13C8 PFOA	116		60 - 140				08/23/23 06:25	09/13/23 17:10	1
13C9 PFNA	95.4		55 - 140				08/23/23 06:25	09/13/23 17:10	1
13C6 PFDA	94.2		50 - 140				08/23/23 06:25	09/13/23 17:10	1
13C7 PFUnA	92.1		30 - 140				08/23/23 06:25	09/13/23 17:10	1
13C2-PFDoDA	85.5		10 - 150				08/23/23 06:25	09/13/23 17:10	1
13C2 PFTeDA	88.1		10 - 130				08/23/23 06:25	09/13/23 17:10	1
13C3 PFBS	103		55 - 150				08/23/23 06:25	09/13/23 17:10	1
13C3 PFHxS	88.7		55 - 150				08/23/23 06:25	09/13/23 17:10	1
13C8 PFOS	89.9		45 - 140				08/23/23 06:25	09/13/23 17:10	1
13C8 FOSA	88.7		30 - 130				08/23/23 06:25	09/13/23 17:10	1
d3-NMeFOSAA	92.8		45 - 200				08/23/23 06:25	09/13/23 17:10	1
d5-NEtFOSAA	87.1		10 - 200				08/23/23 06:25	09/13/23 17:10	1
M2-4:2 FTS	82.1		60 - 200				08/23/23 06:25	09/13/23 17:10	1
M2-6:2 FTS	92.4		60 - 200				08/23/23 06:25	09/13/23 17:10	1
M2-8:2 FTS	89.9		50 - 200				08/23/23 06:25	09/13/23 17:10	1
13C3 HFPO-DA	92.2		25 - 160				08/23/23 06:25	09/13/23 17:10	1
d7-N-MeFOSE-M	85.7		10 - 150				08/23/23 06:25	09/13/23 17:10	1
d9-N-EtFOSE-M	84.0		10 - 150				08/23/23 06:25	09/13/23 17:10	1
d5-NEtPFOSA	73.6		10 - 130				08/23/23 06:25	09/13/23 17:10	1
d3-NMePFOSA	70.9		15 - 130				08/23/23 06:25	09/13/23 17:10	1

Isotope Dilution Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (10-130)	PFPeA (35-150)	13C5PHA (55-150)	C4PFHA (55-150)	C8PFOA (60-140)	C9PFNA (55-140)	C6PFDA (50-140)	13C7PUA (30-140)
410-139509-1	MW07-GW-0823	98.1	97.9	92.0	95.0	93.5	91.7	94.1	85.2
410-139509-2	EB01-GW-0823	161 *5+ cn			146	129		155 *5+ cn	155 *5+ cn
410-139509-2 - DL	EB01-GW-0823		149	149			137		
410-139509-2 DU	EB01-GW-0823	95.3	107	100	97.8	112	93.0	94.7	93.9
410-139509-3	Trip Blank	94.6	92.6	95.5 l	91.6	116	95.4	94.2	92.1
MB 410-411356/1-A	Method Blank	88.0	95.2	91.6	89.4	92.1	83.9	92.5	92.9

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoDA (10-150)	PFTDA (10-130)	C3PFBS (55-150)	C3PFHS (55-150)	C8PFOS (45-140)	PFOSA (30-130)	d3NMFOS (45-200)	d5NEFOS (10-200)
410-139509-1	MW07-GW-0823	77.4	67.8	101	91.8	89.4	84.7	76.1	74.1
410-139509-2	EB01-GW-0823	150	142 *5+ cn		149			155	146 cn
410-139509-2 - DL	EB01-GW-0823			150		136	127 cn		
410-139509-2 DU	EB01-GW-0823	89.2	85.3	118	91.8	92.4	87.7	83.0	82.8
410-139509-3	Trip Blank	85.5	88.1	103	88.7	89.9	88.7	92.8	87.1
MB 410-411356/1-A	Method Blank	89.3	82.9	99.3	78.4	81.5	79.7	78.4	79.2

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M242FTS (60-200)	M262FTS (60-200)	M282FTS (50-200)	HFPODA (25-160)	NMFM (10-150)	NEFM (10-150)	d5NPFSA (10-130)	d3NMFSA (15-130)
410-139509-1	MW07-GW-0823	103	106	97.7	89.6	71.2	65.6	61.4	63.0
410-139509-2	EB01-GW-0823	164	176 cn	156 cn	148	145 cn	140 cn	124 cn	123 cn
410-139509-2 - DL	EB01-GW-0823								
410-139509-2 DU	EB01-GW-0823	99.2	124	115	94.1	81.7	79.5	65.5	69.4
410-139509-3	Trip Blank	82.1	92.4	89.9	92.2	85.7	84.0	73.6	70.9
MB 410-411356/1-A	Method Blank	88.5	89.2	89.1	86.6	79.0	73.3	60.2	59.7

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA
- C9PFNA = 13C9 PFNA
- C6PFDA = 13C6 PFDA
- 13C7PUA = 13C7 PFUnA
- PFDoDA = 13C2-PFDODA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- C3PFHS = 13C3 PFHxS
- C8PFOS = 13C8 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- M242FTS = M2-4:2 FTS
- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- HFPODA = 13C3 HFPO-DA
- NMFM = d7-N-MeFOSE-M
- NEFM = d9-N-EtFOSE-M

Isotope Dilution Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus
 d5NPFSA = d5-NEtPFOSA
 d3NMFSA = d3-NMePFOSA

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (10-130)	PFPeA (40-150)	13C5PHA (40-150)	C4PFHA (40-150)	C8PFOA (30-140)	C9PFNA (30-140)	C6PFDA (20-140)	13C7PUA (20-140)
LCS 410-411356/2-A	Lab Control Sample	91.6	95.4	91.3	88.8	86.4	88.2	89.2	83.7
LLCS 410-411356/3-A	Lab Control Sample	96.5	99.0	97.5	91.9	113	91.0	91.6	87.8

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDoDA (10-150)	PFTDA (10-130)	C3PFBS (25-150)	C3PFHS (25-150)	C8PFOS (20-140)	PFOSA (10-130)	d3NMFOS (10-200)	d5NEFOS (10-200)
LCS 410-411356/2-A	Lab Control Sample	79.5	77.7	96.7	86.0	85.1	78.0	82.2	78.3
LLCS 410-411356/3-A	Lab Control Sample	88.6	82.3	99.1	91.6	92.6	86.9	86.3	86.5

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M242FTS (25-200)	M262FTS (25-200)	M282FTS (25-200)	HFPODA (25-160)	NMFM (10-150)	NEFM (10-150)	d5NPFSA (10-130)	d3NMFSA (10-130)
LCS 410-411356/2-A	Lab Control Sample	86.4	98.4	93.8	85.9	79.7	75.5	69.4	68.7
LLCS 410-411356/3-A	Lab Control Sample	96.4	93.9	91.6	97.4	83.8	80.8	75.4	75.0

Surrogate Legend

PFBA = 13C4 PFBA
 PFPeA = 13C5 PFPeA
 13C5PHA = 13C5 PFHxA
 C4PFHA = 13C4 PFHpA
 C8PFOA = 13C8 PFOA
 C9PFNA = 13C9 PFNA
 C6PFDA = 13C6 PFDA
 13C7PUA = 13C7 PFUnA
 PFDoDA = 13C2-PFDDoDA
 PFTDA = 13C2 PFTeDA
 C3PFBS = 13C3 PFBS
 C3PFHS = 13C3 PFHxS
 C8PFOS = 13C8 PFOS
 PFOSA = 13C8 FOSA
 d3NMFOS = d3-NMeFOSAA
 d5NEFOS = d5-NEtFOSAA
 M242FTS = M2-4:2 FTS
 M262FTS = M2-6:2 FTS
 M282FTS = M2-8:2 FTS
 HFPODA = 13C3 HFPO-DA
 NMFM = d7-N-MeFOSE-M
 NEFM = d9-N-EtFOSE-M
 d5NPFSA = d5-NEtPFOSA
 d3NMFSA = d3-NMePFOSA

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Lab Sample ID: MB 410-411356/1-A
Matrix: Water
Analysis Batch: 419042

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 411356

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid	ND		8.0	2.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoropentanoic acid	ND		4.0	1.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoroheptanoic acid	ND		2.0	0.52	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorooctanoic acid	ND		2.0	0.64	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorobutanesulfonic acid	ND		2.0	0.30	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoropentanesulfonic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoroheptanesulfonic acid	ND		2.0	0.57	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoroheptanesulfonic acid	ND		2.0	0.40	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorononanesulfonic acid	ND		2.0	0.40	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorodecanesulfonic acid	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.90	ng/L		08/23/23 06:25	09/13/23 15:58	1
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		8.0	1.7	ng/L		08/23/23 06:25	09/13/23 15:58	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		8.0	2.5	ng/L		08/23/23 06:25	09/13/23 15:58	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		8.0	2.6	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluorooctanesulfonamide	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
NMeFOSA	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
N-ethylperfluoro-1-octanesulfonamide	ND		2.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
NMeFOSAA	ND		4.0	1.2	ng/L		08/23/23 06:25	09/13/23 15:58	1
NEtFOSAA	ND		2.0	0.70	ng/L		08/23/23 06:25	09/13/23 15:58	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20	5.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		20	5.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
HFPO-DA	ND		8.0	2.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		8.0	1.5	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoro-3-methoxypropanoic acid	ND		4.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoro(4-methoxybutanoic acid)	ND		4.0	1.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
Perfluoro-3,6-dioxahexanoic acid	ND		4.0	1.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		8.0	1.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		8.0	2.0	ng/L		08/23/23 06:25	09/13/23 15:58	1
PFEESA	ND		4.0	0.50	ng/L		08/23/23 06:25	09/13/23 15:58	1
3:3 FTCA	ND		10	1.5	ng/L		08/23/23 06:25	09/13/23 15:58	1
5:3 FTCA	ND		50	10	ng/L		08/23/23 06:25	09/13/23 15:58	1
7:3 FTCA	ND		50	10	ng/L		08/23/23 06:25	09/13/23 15:58	1

Eurofins Lancaster Laboratories Environment Testing, LLC

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	88.0		10 - 130	08/23/23 06:25	09/13/23 15:58	1
13C5 PFPeA	95.2		35 - 150	08/23/23 06:25	09/13/23 15:58	1
13C5 PFHxA	91.6		55 - 150	08/23/23 06:25	09/13/23 15:58	1
13C4 PFHpA	89.4		55 - 150	08/23/23 06:25	09/13/23 15:58	1
13C8 PFOA	92.1		60 - 140	08/23/23 06:25	09/13/23 15:58	1
13C9 PFNA	83.9		55 - 140	08/23/23 06:25	09/13/23 15:58	1
13C6 PFDA	92.5		50 - 140	08/23/23 06:25	09/13/23 15:58	1
13C7 PFUnA	92.9		30 - 140	08/23/23 06:25	09/13/23 15:58	1
13C2-PFDoDA	89.3		10 - 150	08/23/23 06:25	09/13/23 15:58	1
13C2 PFTeDA	82.9		10 - 130	08/23/23 06:25	09/13/23 15:58	1
13C3 PFBS	99.3		55 - 150	08/23/23 06:25	09/13/23 15:58	1
13C3 PFHxS	78.4		55 - 150	08/23/23 06:25	09/13/23 15:58	1
13C8 PFOS	81.5		45 - 140	08/23/23 06:25	09/13/23 15:58	1
13C8 FOSA	79.7		30 - 130	08/23/23 06:25	09/13/23 15:58	1
d3-NMeFOSAA	78.4		45 - 200	08/23/23 06:25	09/13/23 15:58	1
d5-NEtFOSAA	79.2		10 - 200	08/23/23 06:25	09/13/23 15:58	1
M2-4:2 FTS	88.5		60 - 200	08/23/23 06:25	09/13/23 15:58	1
M2-6:2 FTS	89.2		60 - 200	08/23/23 06:25	09/13/23 15:58	1
M2-8:2 FTS	89.1		50 - 200	08/23/23 06:25	09/13/23 15:58	1
13C3 HFPO-DA	86.6		25 - 160	08/23/23 06:25	09/13/23 15:58	1
d7-N-MeFOSE-M	79.0		10 - 150	08/23/23 06:25	09/13/23 15:58	1
d9-N-EtFOSE-M	73.3		10 - 150	08/23/23 06:25	09/13/23 15:58	1
d5-NEtPFOSA	60.2		10 - 130	08/23/23 06:25	09/13/23 15:58	1
d3-NMePFOSA	59.7		15 - 130	08/23/23 06:25	09/13/23 15:58	1

Lab Sample ID: LCS 410-411356/2-A

Matrix: Water

Analysis Batch: 419042

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 411356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid	50.1	46.3		ng/L		93	54 - 152
Perfluorohexanoic acid	25.0	22.4		ng/L		89	55 - 152
Perfluoroheptanoic acid	25.0	23.7		ng/L		95	54 - 154
Perfluorooctanoic acid	25.0	25.3		ng/L		101	52 - 161
Perfluorononanoic acid	25.0	23.8		ng/L		95	59 - 149
Perfluorodecanoic acid	25.0	23.9		ng/L		96	52 - 147
Perfluoroundecanoic acid	25.0	22.8		ng/L		91	48 - 159
Perfluorododecanoic acid	25.0	24.4		ng/L		98	64 - 142
Perfluorotridecanoic acid	25.0	24.2		ng/L		97	49 - 148
Perfluorotetradecanoic acid	25.0	23.7		ng/L		94	47 - 161
Perfluorobutanesulfonic acid	22.2	20.0		ng/L		90	62 - 144
Perfluoropentanesulfonic acid	23.6	21.6		ng/L		92	59 - 151
Perfluorohexanesulfonic acid	22.9	22.6		ng/L		99	57 - 146
Perfluoroheptanesulfonic acid	23.9	24.1		ng/L		101	55 - 152
Perfluorooctanesulfonic acid	23.2	23.0		ng/L		99	58 - 149
Perfluorononanesulfonic acid	24.1	23.1		ng/L		96	52 - 148
Perfluorodecanesulfonic acid	24.2	22.8		ng/L		94	51 - 147
Perfluorododecanesulfonic acid (PFDoS)	24.3	22.6		ng/L		93	36 - 145
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	93.9	92.1		ng/L		98	67 - 146

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 410-411356/2-A

Matrix: Water

Analysis Batch: 419042

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 411356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	95.2	80.2		ng/L		84	61 - 151
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	96.2	86.2		ng/L		90	63 - 152
Perfluorooctanesulfonamide	25.0	25.3		ng/L		101	61 - 148
NMeFOSA	25.0	24.8		ng/L		99	63 - 145
N-ethylperfluoro-1-octanesulfonamide	25.0	24.2		ng/L		97	65 - 139
NMeFOSAA	25.0	23.7		ng/L		95	58 - 144
NEtFOSAA	25.0	24.5		ng/L		98	59 - 146
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	250	238		ng/L		95	71 - 136
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	250	244		ng/L		97	69 - 137
HFPO-DA	100	95.5		ng/L		95	63 - 144
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.5	95.2		ng/L		101	68 - 146
Perfluoro-3-methoxypropanoic acid	50.1	47.0		ng/L		94	51 - 145
Perfluoro(4-methoxybutanoic acid)	50.1	46.4		ng/L		93	55 - 148
Perfluoro-3,6-dioxaheptanoic acid	50.1	48.2		ng/L		96	48 - 161
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	93.5	92.1		ng/L		98	56 - 156
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	94.5	92.5		ng/L		98	46 - 156
PFEESA	44.6	44.2		ng/L		99	56 - 151
3:3 FTCA	125	104		ng/L		83	62 - 129
5:3 FTCA	626	574		ng/L		92	63 - 134
7:3 FTCA	626	546		ng/L		87	50 - 138

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	91.6		10 - 130
13C5 PFPeA	95.4		40 - 150
13C5 PFHxA	91.3		40 - 150
13C4 PFHpA	88.8		40 - 150
13C8 PFOA	86.4		30 - 140
13C9 PFNA	88.2		30 - 140
13C6 PFDA	89.2		20 - 140
13C7 PFUnA	83.7		20 - 140
13C2-PFDoDA	79.5		10 - 150
13C2 PFTeDA	77.7		10 - 130
13C3 PFBS	96.7		25 - 150
13C3 PFHxS	86.0		25 - 150
13C8 PFOS	85.1		20 - 140
13C8 FOSA	78.0		10 - 130
d3-NMeFOSAA	82.2		10 - 200
d5-NEtFOSAA	78.3		10 - 200
M2-4:2 FTS	86.4		25 - 200

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 410-411356/2-A

Matrix: Water

Analysis Batch: 419042

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 411356

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-6:2 FTS	98.4		25 - 200
M2-8:2 FTS	93.8		25 - 200
13C3 HFPO-DA	85.9		25 - 160
d7-N-MeFOSE-M	79.7		10 - 150
d9-N-EtFOSE-M	75.5		10 - 150
d5-NEtPFOSA	69.4		10 - 130
d3-NMePFOSA	68.7		10 - 130

Lab Sample ID: LLCS 410-411356/3-A

Matrix: Water

Analysis Batch: 419042

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 411356

Analyte	Spike Added	LLCS LLCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluorobutanoic acid	16.0	14.8		ng/L		92	44 - 157
Perfluoropentanoic acid	8.00	6.94		ng/L		87	57 - 148
Perfluorohexanoic acid	4.00	3.46		ng/L		87	62 - 149
Perfluoroheptanoic acid	4.00	3.57		ng/L		89	56 - 150
Perfluorooctanoic acid	4.00	3.53		ng/L		88	57 - 161
Perfluorononanoic acid	4.00	3.92		ng/L		98	53 - 157
Perfluorodecanoic acid	4.00	3.87		ng/L		97	43 - 158
Perfluoroundecanoic acid	4.00	3.68		ng/L		92	50 - 155
Perfluorododecanoic acid	4.00	3.77		ng/L		94	60 - 141
Perfluorotridecanoic acid	4.00	3.62		ng/L		90	52 - 140
Perfluorotetradecanoic acid	4.00	3.56		ng/L		89	52 - 156
Perfluorobutanesulfonic acid	3.55	2.85		ng/L		80	63 - 145
Perfluoropentanesulfonic acid	3.76	3.24		ng/L		86	58 - 144
Perfluorohexanesulfonic acid	3.66	3.42		ng/L		94	44 - 158
Perfluoroheptanesulfonic acid	3.81	3.43		ng/L		90	51 - 150
Perfluorooctanesulfonic acid	3.71	3.54		ng/L		95	43 - 162
Perfluorononanesulfonic acid	3.85	3.28		ng/L		85	46 - 151
Perfluorodecanesulfonic acid	3.86	3.35		ng/L		87	50 - 144
Perfluorododecanesulfonic acid (PFDoS)	3.88	3.31		ng/L		85	30 - 138
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	15.0	13.6		ng/L		90	52 - 158
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	15.2	14.3		ng/L		94	48 - 158
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	15.4	13.6		ng/L		88	46 - 165
Perfluorooctanesulfonamide	4.00	3.75		ng/L		94	47 - 163
NMeFOSA	4.00	3.66		ng/L		92	54 - 155
N-ethylperfluoro-1-octanesulfonamide	4.00	3.93		ng/L		98	49 - 156
NMeFOSAA	4.00	3.17	J	ng/L		79	32 - 160
NEtFOSAA	4.00	3.82		ng/L		95	51 - 154
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	40.0	38.5		ng/L		96	56 - 151
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	40.0	37.2		ng/L		93	60 - 147

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 410-411356/3-A

Matrix: Water

Analysis Batch: 419042

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 411356

Analyte	Spike	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
	Added	Result	Qualifier				
HFPO-DA	16.0	15.6		ng/L		97	58 - 154
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	15.1	14.7		ng/L		97	61 - 148
Perfluoro-3-methoxypropanoic acid	8.00	6.98		ng/L		87	48 - 150
Perfluoro(4-methoxybutanoic acid)	8.00	6.88		ng/L		86	49 - 154
Perfluoro-3,6-dioxaheptanoic acid	8.00	7.03		ng/L		88	47 - 160
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	15.0	14.9		ng/L		100	44 - 167
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	15.1	13.5		ng/L		89	36 - 158
PFEESA	7.12	6.54		ng/L		92	56 - 144
3:3 FTCA	20.0	16.0		ng/L		80	32 - 161
5:3 FTCA	100	84.4		ng/L		84	39 - 156
7:3 FTCA	100	79.6		ng/L		79	36 - 149

Isotope Dilution	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C4 PFBA	96.5		10 - 130
13C5 PFPeA	99.0		40 - 150
13C5 PFHxA	97.5		40 - 150
13C4 PFHpA	91.9		40 - 150
13C8 PFOA	113		30 - 140
13C9 PFNA	91.0		30 - 140
13C6 PFDA	91.6		20 - 140
13C7 PFUnA	87.8		20 - 140
13C2-PFDoDA	88.6		10 - 150
13C2 PFTeDA	82.3		10 - 130
13C3 PFBS	99.1		25 - 150
13C3 PFHxS	91.6		25 - 150
13C8 PFOS	92.6		20 - 140
13C8 FOSA	86.9		10 - 130
d3-NMeFOSAA	86.3		10 - 200
d5-NEtFOSAA	86.5		10 - 200
M2-4:2 FTS	96.4		25 - 200
M2-6:2 FTS	93.9		25 - 200
M2-8:2 FTS	91.6		25 - 200
13C3 HFPO-DA	97.4		25 - 160
d7-N-MeFOSE-M	83.8		10 - 150
d9-N-EtFOSE-M	80.8		10 - 150
d5-NEtPFOSA	75.4		10 - 130
d3-NMePFOSA	75.0		10 - 130

Lab Sample ID: 410-139509-2 DU

Matrix: Water

Analysis Batch: 419042

Client Sample ID: EB01-GW-0823

Prep Type: Total/NA

Prep Batch: 411356

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD
	Result	Qualifier	Result	Qualifier				Limit
Perfluorobutanoic acid	ND		ND		ng/L		NC	30

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: 410-139509-2 DU

Client Sample ID: EB01-GW-0823

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 419042

Prep Batch: 411356

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Perfluoropentanoic acid	ND		ND		ng/L		NC	30
Perfluorohexanoic acid	ND		ND		ng/L		NC	30
Perfluoroheptanoic acid	ND		ND		ng/L		NC	30
Perfluorooctanoic acid	ND		ND		ng/L		NC	30
Perfluorononanoic acid	ND		ND		ng/L		NC	30
Perfluorodecanoic acid	ND		ND		ng/L		NC	30
Perfluoroundecanoic acid	ND		ND		ng/L		NC	30
Perfluorododecanoic acid	ND		ND		ng/L		NC	30
Perfluorotridecanoic acid	ND		ND		ng/L		NC	30
Perfluorotetradecanoic acid	ND		ND		ng/L		NC	30
Perfluorobutanesulfonic acid	ND		ND		ng/L		NC	30
Perfluoropentanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorohexanesulfonic acid	ND		ND		ng/L		NC	30
Perfluoroheptanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorooctanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorononanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorodecanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorododecanesulfonic acid (PFDoS)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		ND		ng/L		NC	30
Perfluorooctanesulfonamide	ND		ND		ng/L		NC	30
NMeFOSA	ND		ND		ng/L		NC	30
N-ethylperfluoro-1-octanesulfonamide	ND		ND		ng/L		NC	30
NMeFOSAA	ND		ND		ng/L		NC	30
NEtFOSAA	ND		ND		ng/L		NC	30
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		ND		ng/L		NC	30
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		ND		ng/L		NC	30
HFPO-DA	ND		ND		ng/L		NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		ND		ng/L		NC	30
Perfluoro-3-methoxypropanoic acid	ND		ND		ng/L		NC	30
Perfluoro(4-methoxybutanoic acid)	ND		ND		ng/L		NC	30
Perfluoro-3,6-dioxaheptanoic acid	ND		ND		ng/L		NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		ND		ng/L		NC	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		ND		ng/L		NC	30
PFEESA	ND		ND		ng/L		NC	30
3:3 FTCA	ND		ND		ng/L		NC	30

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: 410-139509-2 DU

Client Sample ID: EB01-GW-0823

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 419042

Prep Batch: 411356

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
5:3 FTCA	ND		ND		ng/L		NC	30
7:3 FTCA	ND		ND		ng/L		NC	30

Isotope Dilution	DU	DU	Limits
	%Recovery	Qualifier	
13C4 PFBA	95.3		10 - 130
13C5 PFPeA	107		35 - 150
13C5 PFHxA	100		55 - 150
13C4 PFHpA	97.8		55 - 150
13C8 PFOA	112		60 - 140
13C9 PFNA	93.0		55 - 140
13C6 PFDA	94.7		50 - 140
13C7 PFUnA	93.9		30 - 140
13C2-PFDoDA	89.2		10 - 150
13C2 PFTeDA	85.3		10 - 130
13C3 PFBS	118		55 - 150
13C3 PFHxS	91.8		55 - 150
13C8 PFOS	92.4		45 - 140
13C8 FOSA	87.7		30 - 130
d3-NMeFOSAA	83.0		45 - 200
d5-NEtFOSAA	82.8		10 - 200
M2-4:2 FTS	99.2		60 - 200
M2-6:2 FTS	124		60 - 200
M2-8:2 FTS	115		50 - 200
13C3 HFPO-DA	94.1		25 - 160
d7-N-MeFOSE-M	81.7		10 - 150
d9-N-EtFOSE-M	79.5		10 - 150
d5-NEtPFOSA	65.5		10 - 130
d3-NMePFOSA	69.4		15 - 130

QC Association Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

LCMS

Prep Batch: 411356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-139509-1	MW07-GW-0823	Total/NA	Water	1633	
410-139509-2	EB01-GW-0823	Total/NA	Water	1633	
410-139509-2 - RA	EB01-GW-0823	Total/NA	Water	1633	
410-139509-2 - DL	EB01-GW-0823	Total/NA	Water	1633	
410-139509-3	Trip Blank	Total/NA	Water	1633	
MB 410-411356/1-A	Method Blank	Total/NA	Water	1633	
LCS 410-411356/2-A	Lab Control Sample	Total/NA	Water	1633	
LLCS 410-411356/3-A	Lab Control Sample	Total/NA	Water	1633	
410-139509-2 DU	EB01-GW-0823	Total/NA	Water	1633	

Analysis Batch: 419042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-139509-1	MW07-GW-0823	Total/NA	Water	1633	411356
410-139509-2	EB01-GW-0823	Total/NA	Water	1633	411356
410-139509-3	Trip Blank	Total/NA	Water	1633	411356
MB 410-411356/1-A	Method Blank	Total/NA	Water	1633	411356
LCS 410-411356/2-A	Lab Control Sample	Total/NA	Water	1633	411356
LLCS 410-411356/3-A	Lab Control Sample	Total/NA	Water	1633	411356
410-139509-2 DU	EB01-GW-0823	Total/NA	Water	1633	411356

Analysis Batch: 420512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-139509-2 - RA	EB01-GW-0823	Total/NA	Water	1633	411356
410-139509-2 - DL	EB01-GW-0823	Total/NA	Water	1633	411356



Lab Chronicle

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Client Sample ID: MW07-GW-0823

Lab Sample ID: 410-139509-1

Date Collected: 08/17/23 11:15

Matrix: Water

Date Received: 08/18/23 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1633			411356	RC3V	ELLE	08/23/23 06:25
Total/NA	Analysis	1633		1	419042	QY4X	ELLE	09/13/23 16:34

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-139509-2

Date Collected: 08/17/23 10:30

Matrix: Water

Date Received: 08/18/23 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1633			411356	RC3V	ELLE	08/23/23 06:25
Total/NA	Analysis	1633		1	419042	QY4X	ELLE	09/13/23 16:46
Total/NA	Prep	1633	RA		411356	RC3V	ELLE	08/23/23 06:25
Total/NA	Analysis	1633	RA	1	420512	RPU6	ELLE	09/18/23 15:42
Total/NA	Prep	1633	DL		411356	RC3V	ELLE	08/23/23 06:25
Total/NA	Analysis	1633	DL	10	420512	RPU6	ELLE	09/19/23 00:22

Client Sample ID: Trip Blank

Lab Sample ID: 410-139509-3

Date Collected: 08/17/23 00:00

Matrix: Water

Date Received: 08/18/23 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1633			411356	RC3V	ELLE	08/23/23 06:25
Total/NA	Analysis	1633		1	419042	QY4X	ELLE	09/13/23 17:10

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	361	03-01-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1633	1633	Water	Perfluoro(4-methoxybutanoic acid)



Method Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Method	Method Description	Protocol	Laboratory
1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	ELLE
1633	Solid-Phase Extraction (SPE)	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-139509-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-139509-1	MW07-GW-0823	Water	08/17/23 11:15	08/18/23 09:56
410-139509-2	EB01-GW-0823	Water	08/17/23 10:30	08/18/23 09:56
410-139509-3	Trip Blank	Water	08/17/23 00:00	08/18/23 09:56

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Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 410-139509-1

Login Number: 139509

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

List Number: 1

Creator: Arroyo, Haley

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable, where thermal pres is required (<=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temp acceptable, where thermal pres is required (<=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Refer to Job Narrative for details.
Sample custody seals are intact.	True	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	



ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 9/13/2023 4:55:22 PM Revision 1

JOB DESCRIPTION

35th St. GWS

JOB NUMBER

310-264021-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



Authorized for release by
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Revision 1



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	5
Detection Summary	6
Client Sample Results	7
Definitions	13
Surrogate Summary	14
QC Sample Results	15
QC Association	20
Chronicle	21
Certification Summary	22
Method Summary	23
Chain of Custody	24
Receipt Checklists	26

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Job ID: 310-264021-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-264021-1

Revision

This report was revised 9/13/2023. The client requested that Benzene detections be reviewed. The laboratory re-analyzed the samples and determined the original results were impacted by carryover from another sample.

Receipt

The samples were received on 9/5/2023 4:38 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

GC/MS VOA

Method 8260D: The following sample was diluted due to the nature of the sample matrix: TW29-GW-0923 (310-264021-6). Elevated reporting limits (RLs) are provided. Sample had high levels of sediment in the vial.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-264021-1	TB01-GW-0923	Ground Water	09/05/23 06:30	09/05/23 16:38
310-264021-2	Dup01-GW-0923	Ground Water	09/05/23 13:00	09/05/23 16:38
310-264021-3	EB01-GW-0923	Ground Water	09/05/23 11:30	09/05/23 16:38
310-264021-4	MW06-GW-0923	Ground Water	09/05/23 12:17	09/05/23 16:38
310-264021-5	MW05-GW-0923	Ground Water	09/05/23 14:40	09/05/23 16:38
310-264021-6	TW29-GW-0923	Ground Water	09/05/23 14:55	09/05/23 16:38

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Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: TB01-GW-0923

Lab Sample ID: 310-264021-1

No Detections.

Client Sample ID: Dup01-GW-0923

Lab Sample ID: 310-264021-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	53.1		1.00		ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	2.10		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	4.28		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: EB01-GW-0923

Lab Sample ID: 310-264021-3

No Detections.

Client Sample ID: MW06-GW-0923

Lab Sample ID: 310-264021-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	59.5		1.00		ug/L	1		8260D	Total/NA
trans-1,2-Dichloroethene	2.35		1.00		ug/L	1		8260D	Total/NA
Trichloroethene	4.49		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW05-GW-0923

Lab Sample ID: 310-264021-5

No Detections.

Client Sample ID: TW29-GW-0923

Lab Sample ID: 310-264021-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: TB01-GW-0923

Lab Sample ID: 310-264021-1

Date Collected: 09/05/23 06:30

Matrix: Ground Water

Date Received: 09/05/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/06/23 23:59	1
Benzene	<0.500		0.500		ug/L			09/06/23 23:59	1
Bromodichloromethane	<1.00		1.00		ug/L			09/06/23 23:59	1
Bromoform	<5.00		5.00		ug/L			09/06/23 23:59	1
Bromomethane	<4.00		4.00		ug/L			09/06/23 23:59	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/06/23 23:59	1
Carbon disulfide	<1.00		1.00		ug/L			09/06/23 23:59	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/06/23 23:59	1
Chlorobenzene	<1.00		1.00		ug/L			09/06/23 23:59	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/06/23 23:59	1
Chloroethane	<4.00		4.00		ug/L			09/06/23 23:59	1
Chloroform	<3.00		3.00		ug/L			09/06/23 23:59	1
Chloromethane	<3.00		3.00		ug/L			09/06/23 23:59	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/06/23 23:59	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/06/23 23:59	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/06/23 23:59	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/06/23 23:59	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/06/23 23:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/06/23 23:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/06/23 23:59	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/06/23 23:59	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/06/23 23:59	1
Ethylbenzene	<1.00		1.00		ug/L			09/06/23 23:59	1
2-Hexanone	<10.0		10.0		ug/L			09/06/23 23:59	1
Methylene Chloride	<5.00		5.00		ug/L			09/06/23 23:59	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/06/23 23:59	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/06/23 23:59	1
Naphthalene	<5.00		5.00		ug/L			09/06/23 23:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/06/23 23:59	1
Tetrachloroethene	<1.00		1.00		ug/L			09/06/23 23:59	1
Toluene	<1.00		1.00		ug/L			09/06/23 23:59	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/06/23 23:59	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/06/23 23:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/06/23 23:59	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/06/23 23:59	1
Trichloroethene	<1.00		1.00		ug/L			09/06/23 23:59	1
Vinyl chloride	<1.00		1.00		ug/L			09/06/23 23:59	1
Xylenes, Total	<3.00		3.00		ug/L			09/06/23 23:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		80 - 120		09/06/23 23:59	1
Dibromofluoromethane (Surr)	95		80 - 128		09/06/23 23:59	1
Toluene-d8 (Surr)	98		80 - 120		09/06/23 23:59	1

Client Sample Results

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: Dup01-GW-0923

Lab Sample ID: 310-264021-2

Date Collected: 09/05/23 13:00

Matrix: Ground Water

Date Received: 09/05/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/12/23 16:49	1
Benzene	<0.500		0.500		ug/L			09/12/23 16:49	1
Bromodichloromethane	<1.00		1.00		ug/L			09/12/23 16:49	1
Bromoform	<5.00		5.00		ug/L			09/12/23 16:49	1
Bromomethane	<4.00		4.00		ug/L			09/12/23 16:49	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/12/23 16:49	1
Carbon disulfide	<1.00		1.00		ug/L			09/12/23 16:49	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/12/23 16:49	1
Chlorobenzene	<1.00		1.00		ug/L			09/12/23 16:49	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/12/23 16:49	1
Chloroethane	<4.00		4.00		ug/L			09/12/23 16:49	1
Chloroform	<3.00		3.00		ug/L			09/12/23 16:49	1
Chloromethane	<3.00		3.00		ug/L			09/12/23 16:49	1
cis-1,2-Dichloroethene	53.1		1.00		ug/L			09/12/23 16:49	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 16:49	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 16:49	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 16:49	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 16:49	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/12/23 16:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/12/23 16:49	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/12/23 16:49	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/12/23 16:49	1
Ethylbenzene	<1.00		1.00		ug/L			09/12/23 16:49	1
2-Hexanone	<10.0		10.0		ug/L			09/12/23 16:49	1
Methylene Chloride	<5.00		5.00		ug/L			09/12/23 16:49	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/12/23 16:49	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/12/23 16:49	1
Naphthalene	<5.00		5.00		ug/L			09/12/23 16:49	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/12/23 16:49	1
Tetrachloroethene	<1.00		1.00		ug/L			09/12/23 16:49	1
Toluene	<1.00		1.00		ug/L			09/12/23 16:49	1
trans-1,2-Dichloroethene	2.10		1.00		ug/L			09/12/23 16:49	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 16:49	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/12/23 16:49	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/12/23 16:49	1
Trichloroethene	4.28		1.00		ug/L			09/12/23 16:49	1
Vinyl chloride	<1.00		1.00		ug/L			09/12/23 16:49	1
Xylenes, Total	<3.00		3.00		ug/L			09/12/23 16:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		80 - 120		09/12/23 16:49	1
Dibromofluoromethane (Surr)	101		80 - 128		09/12/23 16:49	1
Toluene-d8 (Surr)	97		80 - 120		09/12/23 16:49	1

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: EB01-GW-0923

Lab Sample ID: 310-264021-3

Date Collected: 09/05/23 11:30

Matrix: Ground Water

Date Received: 09/05/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/07/23 00:22	1
Benzene	<0.500		0.500		ug/L			09/07/23 00:22	1
Bromodichloromethane	<1.00		1.00		ug/L			09/07/23 00:22	1
Bromoform	<5.00		5.00		ug/L			09/07/23 00:22	1
Bromomethane	<4.00		4.00		ug/L			09/07/23 00:22	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/07/23 00:22	1
Carbon disulfide	<1.00		1.00		ug/L			09/07/23 00:22	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/07/23 00:22	1
Chlorobenzene	<1.00		1.00		ug/L			09/07/23 00:22	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/07/23 00:22	1
Chloroethane	<4.00		4.00		ug/L			09/07/23 00:22	1
Chloroform	<3.00		3.00		ug/L			09/07/23 00:22	1
Chloromethane	<3.00		3.00		ug/L			09/07/23 00:22	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/07/23 00:22	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/07/23 00:22	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/07/23 00:22	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/07/23 00:22	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/07/23 00:22	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/07/23 00:22	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/07/23 00:22	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/07/23 00:22	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/07/23 00:22	1
Ethylbenzene	<1.00		1.00		ug/L			09/07/23 00:22	1
2-Hexanone	<10.0		10.0		ug/L			09/07/23 00:22	1
Methylene Chloride	<5.00		5.00		ug/L			09/07/23 00:22	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/07/23 00:22	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/07/23 00:22	1
Naphthalene	<5.00		5.00		ug/L			09/07/23 00:22	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/07/23 00:22	1
Tetrachloroethene	<1.00		1.00		ug/L			09/07/23 00:22	1
Toluene	<1.00		1.00		ug/L			09/07/23 00:22	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/07/23 00:22	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/07/23 00:22	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/07/23 00:22	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/07/23 00:22	1
Trichloroethene	<1.00		1.00		ug/L			09/07/23 00:22	1
Vinyl chloride	<1.00		1.00		ug/L			09/07/23 00:22	1
Xylenes, Total	<3.00		3.00		ug/L			09/07/23 00:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120		09/07/23 00:22	1
Dibromofluoromethane (Surr)	96		80 - 128		09/07/23 00:22	1
Toluene-d8 (Surr)	99		80 - 120		09/07/23 00:22	1

Client Sample Results

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: MW06-GW-0923

Lab Sample ID: 310-264021-4

Date Collected: 09/05/23 12:17

Matrix: Ground Water

Date Received: 09/05/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/12/23 17:12	1
Benzene	<0.500		0.500		ug/L			09/12/23 17:12	1
Bromodichloromethane	<1.00		1.00		ug/L			09/12/23 17:12	1
Bromoform	<5.00		5.00		ug/L			09/12/23 17:12	1
Bromomethane	<4.00		4.00		ug/L			09/12/23 17:12	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/12/23 17:12	1
Carbon disulfide	<1.00		1.00		ug/L			09/12/23 17:12	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/12/23 17:12	1
Chlorobenzene	<1.00		1.00		ug/L			09/12/23 17:12	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/12/23 17:12	1
Chloroethane	<4.00		4.00		ug/L			09/12/23 17:12	1
Chloroform	<3.00		3.00		ug/L			09/12/23 17:12	1
Chloromethane	<3.00		3.00		ug/L			09/12/23 17:12	1
cis-1,2-Dichloroethene	59.5		1.00		ug/L			09/12/23 17:12	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 17:12	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:12	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:12	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:12	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/12/23 17:12	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/12/23 17:12	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/12/23 17:12	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/12/23 17:12	1
Ethylbenzene	<1.00		1.00		ug/L			09/12/23 17:12	1
2-Hexanone	<10.0		10.0		ug/L			09/12/23 17:12	1
Methylene Chloride	<5.00		5.00		ug/L			09/12/23 17:12	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/12/23 17:12	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/12/23 17:12	1
Naphthalene	<5.00		5.00		ug/L			09/12/23 17:12	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/12/23 17:12	1
Tetrachloroethene	<1.00		1.00		ug/L			09/12/23 17:12	1
Toluene	<1.00		1.00		ug/L			09/12/23 17:12	1
trans-1,2-Dichloroethene	2.35		1.00		ug/L			09/12/23 17:12	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 17:12	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/12/23 17:12	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/12/23 17:12	1
Trichloroethene	4.49		1.00		ug/L			09/12/23 17:12	1
Vinyl chloride	<1.00		1.00		ug/L			09/12/23 17:12	1
Xylenes, Total	<3.00		3.00		ug/L			09/12/23 17:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		09/12/23 17:12	1
Dibromofluoromethane (Surr)	102		80 - 128		09/12/23 17:12	1
Toluene-d8 (Surr)	96		80 - 120		09/12/23 17:12	1

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: MW05-GW-0923

Lab Sample ID: 310-264021-5

Date Collected: 09/05/23 14:40

Matrix: Ground Water

Date Received: 09/05/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/12/23 17:34	1
Benzene	<0.500		0.500		ug/L			09/12/23 17:34	1
Bromodichloromethane	<1.00		1.00		ug/L			09/12/23 17:34	1
Bromoform	<5.00		5.00		ug/L			09/12/23 17:34	1
Bromomethane	<4.00		4.00		ug/L			09/12/23 17:34	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/12/23 17:34	1
Carbon disulfide	<1.00		1.00		ug/L			09/12/23 17:34	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/12/23 17:34	1
Chlorobenzene	<1.00		1.00		ug/L			09/12/23 17:34	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/12/23 17:34	1
Chloroethane	<4.00		4.00		ug/L			09/12/23 17:34	1
Chloroform	<3.00		3.00		ug/L			09/12/23 17:34	1
Chloromethane	<3.00		3.00		ug/L			09/12/23 17:34	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/12/23 17:34	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 17:34	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:34	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:34	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:34	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/12/23 17:34	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/12/23 17:34	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/12/23 17:34	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/12/23 17:34	1
Ethylbenzene	<1.00		1.00		ug/L			09/12/23 17:34	1
2-Hexanone	<10.0		10.0		ug/L			09/12/23 17:34	1
Methylene Chloride	<5.00		5.00		ug/L			09/12/23 17:34	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/12/23 17:34	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/12/23 17:34	1
Naphthalene	<5.00		5.00		ug/L			09/12/23 17:34	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/12/23 17:34	1
Tetrachloroethene	<1.00		1.00		ug/L			09/12/23 17:34	1
Toluene	<1.00		1.00		ug/L			09/12/23 17:34	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/12/23 17:34	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 17:34	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/12/23 17:34	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/12/23 17:34	1
Trichloroethene	<1.00		1.00		ug/L			09/12/23 17:34	1
Vinyl chloride	<1.00		1.00		ug/L			09/12/23 17:34	1
Xylenes, Total	<3.00		3.00		ug/L			09/12/23 17:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120		09/12/23 17:34	1
Dibromofluoromethane (Surr)	100		80 - 128		09/12/23 17:34	1
Toluene-d8 (Surr)	96		80 - 120		09/12/23 17:34	1

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: TW29-GW-0923

Lab Sample ID: 310-264021-6

Date Collected: 09/05/23 14:55

Matrix: Ground Water

Date Received: 09/05/23 16:38

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/12/23 17:57	1
Benzene	<0.500		0.500		ug/L			09/12/23 17:57	1
Bromodichloromethane	<1.00		1.00		ug/L			09/12/23 17:57	1
Bromoform	<5.00		5.00		ug/L			09/12/23 17:57	1
Bromomethane	<4.00		4.00		ug/L			09/12/23 17:57	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/12/23 17:57	1
Carbon disulfide	<1.00		1.00		ug/L			09/12/23 17:57	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/12/23 17:57	1
Chlorobenzene	<1.00		1.00		ug/L			09/12/23 17:57	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/12/23 17:57	1
Chloroethane	<4.00		4.00		ug/L			09/12/23 17:57	1
Chloroform	<3.00		3.00		ug/L			09/12/23 17:57	1
Chloromethane	<3.00		3.00		ug/L			09/12/23 17:57	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/12/23 17:57	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 17:57	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:57	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:57	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 17:57	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/12/23 17:57	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/12/23 17:57	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/12/23 17:57	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/12/23 17:57	1
Ethylbenzene	<1.00		1.00		ug/L			09/12/23 17:57	1
2-Hexanone	<10.0		10.0		ug/L			09/12/23 17:57	1
Methylene Chloride	<5.00		5.00		ug/L			09/12/23 17:57	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/12/23 17:57	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/12/23 17:57	1
Naphthalene	<5.00		5.00		ug/L			09/12/23 17:57	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/12/23 17:57	1
Tetrachloroethene	<1.00		1.00		ug/L			09/12/23 17:57	1
Toluene	<1.00		1.00		ug/L			09/12/23 17:57	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/12/23 17:57	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 17:57	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/12/23 17:57	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/12/23 17:57	1
Trichloroethene	<1.00		1.00		ug/L			09/12/23 17:57	1
Vinyl chloride	<1.00		1.00		ug/L			09/12/23 17:57	1
Xylenes, Total	<3.00		3.00		ug/L			09/12/23 17:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		09/12/23 17:57	1
Dibromofluoromethane (Surr)	100		80 - 128		09/12/23 17:57	1
Toluene-d8 (Surr)	97		80 - 120		09/12/23 17:57	1

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Ground Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	TOL
		(80-120)	(80-128)	(80-120)
310-264021-1	TB01-GW-0923	105	95	98
310-264021-2	Dup01-GW-0923	107	101	97
310-264021-3	EB01-GW-0923	104	96	99
310-264021-4	MW06-GW-0923	106	102	96
310-264021-5	MW05-GW-0923	104	100	96
310-264021-6	TW29-GW-0923	101	100	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	TOL
		(80-120)	(80-128)	(80-120)
LCS 310-398709/6	Lab Control Sample	100	96	101
LCS 310-398709/7	Lab Control Sample	104	98	99
LCS 310-399323/6	Lab Control Sample	99	98	99
LCS 310-399323/7	Lab Control Sample	104	99	96
MB 310-398709/5	Method Blank	105	90	99
MB 310-399323/5	Method Blank	106	100	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-398709/5
Matrix: Water
Analysis Batch: 398709

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			09/06/23 22:07	1
Benzene	<0.500		0.500		ug/L			09/06/23 22:07	1
Bromodichloromethane	<1.00		1.00		ug/L			09/06/23 22:07	1
Bromoform	<5.00		5.00		ug/L			09/06/23 22:07	1
Bromomethane	<4.00		4.00		ug/L			09/06/23 22:07	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/06/23 22:07	1
Carbon disulfide	<1.00		1.00		ug/L			09/06/23 22:07	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/06/23 22:07	1
Chlorobenzene	<1.00		1.00		ug/L			09/06/23 22:07	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/06/23 22:07	1
Chloroethane	<4.00		4.00		ug/L			09/06/23 22:07	1
Chloroform	<3.00		3.00		ug/L			09/06/23 22:07	1
Chloromethane	<3.00		3.00		ug/L			09/06/23 22:07	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/06/23 22:07	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/06/23 22:07	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/06/23 22:07	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/06/23 22:07	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/06/23 22:07	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/06/23 22:07	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/06/23 22:07	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/06/23 22:07	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/06/23 22:07	1
Ethylbenzene	<1.00		1.00		ug/L			09/06/23 22:07	1
2-Hexanone	<10.0		10.0		ug/L			09/06/23 22:07	1
Methylene Chloride	<5.00		5.00		ug/L			09/06/23 22:07	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/06/23 22:07	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/06/23 22:07	1
Naphthalene	<5.00		5.00		ug/L			09/06/23 22:07	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/06/23 22:07	1
Tetrachloroethene	<1.00		1.00		ug/L			09/06/23 22:07	1
Toluene	<1.00		1.00		ug/L			09/06/23 22:07	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/06/23 22:07	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/06/23 22:07	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/06/23 22:07	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/06/23 22:07	1
Trichloroethene	<1.00		1.00		ug/L			09/06/23 22:07	1
Vinyl chloride	<1.00		1.00		ug/L			09/06/23 22:07	1
Xylenes, Total	<3.00		3.00		ug/L			09/06/23 22:07	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	105		80 - 120		09/06/23 22:07	1
Dibromofluoromethane (Surr)	90		80 - 128		09/06/23 22:07	1
Toluene-d8 (Surr)	99		80 - 120		09/06/23 22:07	1

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-398709/6
Matrix: Water
Analysis Batch: 398709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	24.28		ug/L		61	50 - 150
Benzene	20.0	16.05		ug/L		80	73 - 122
Bromodichloromethane	20.0	16.29		ug/L		81	72 - 121
Bromoform	20.0	15.31		ug/L		77	55 - 129
2-Butanone (MEK)	40.0	29.92		ug/L		75	50 - 150
Carbon disulfide	20.0	15.10		ug/L		75	58 - 131
Carbon tetrachloride	20.0	17.26		ug/L		86	67 - 132
Chlorobenzene	20.0	17.37		ug/L		87	69 - 121
Chlorodibromomethane	20.0	15.08		ug/L		75	69 - 122
Chloroform	20.0	16.25		ug/L		81	72 - 120
cis-1,2-Dichloroethene	20.0	16.73		ug/L		84	74 - 120
cis-1,3-Dichloropropene	20.0	16.08		ug/L		80	71 - 126
1,2-Dichlorobenzene	20.0	17.07		ug/L		85	68 - 120
1,3-Dichlorobenzene	20.0	17.33		ug/L		87	67 - 123
1,4-Dichlorobenzene	20.0	17.43		ug/L		87	67 - 120
1,1-Dichloroethane	20.0	16.21		ug/L		81	71 - 123
1,2-Dichloroethane	20.0	15.39		ug/L		77	70 - 124
1,1-Dichloroethene	20.0	15.13		ug/L		76	61 - 129
1,2-Dichloropropane	20.0	16.91		ug/L		85	73 - 121
Ethylbenzene	20.0	17.44		ug/L		87	69 - 122
2-Hexanone	40.0	30.35		ug/L		76	60 - 132
Methylene Chloride	20.0	15.15		ug/L		76	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	31.69		ug/L		79	62 - 130
Methyl tert-butyl ether	20.0	14.85		ug/L		74	68 - 127
Naphthalene	20.0	16.41		ug/L		82	50 - 150
1,1,2,2-Tetrachloroethane	20.0	16.52		ug/L		83	64 - 124
Tetrachloroethene	20.0	18.10		ug/L		91	69 - 131
Toluene	20.0	17.61		ug/L		88	72 - 121
trans-1,2-Dichloroethene	20.0	15.27		ug/L		76	68 - 125
trans-1,3-Dichloropropene	20.0	15.42		ug/L		77	68 - 124
1,1,1-Trichloroethane	20.0	17.28		ug/L		86	71 - 128
1,1,2-Trichloroethane	20.0	16.37		ug/L		82	70 - 124
Trichloroethene	20.0	17.77		ug/L		89	73 - 126
Xylenes, Total	40.0	34.84		ug/L		87	68 - 124

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCS 310-398709/7
Matrix: Water
Analysis Batch: 398709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	12.37		ug/L		62	24 - 150
Chloroethane	20.0	14.51		ug/L		73	51 - 137
Chloromethane	20.0	18.10		ug/L		91	37 - 150

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QC Sample Results

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-398709/7
Matrix: Water
Analysis Batch: 398709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	20.0	17.00		ug/L		85	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	98		80 - 128
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: MB 310-399323/5
Matrix: Water
Analysis Batch: 399323

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/12/23 15:19	1
Benzene	<0.500		0.500		ug/L			09/12/23 15:19	1
Bromodichloromethane	<1.00		1.00		ug/L			09/12/23 15:19	1
Bromoform	<5.00		5.00		ug/L			09/12/23 15:19	1
Bromomethane	<4.00		4.00		ug/L			09/12/23 15:19	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/12/23 15:19	1
Carbon disulfide	<1.00		1.00		ug/L			09/12/23 15:19	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/12/23 15:19	1
Chlorobenzene	<1.00		1.00		ug/L			09/12/23 15:19	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/12/23 15:19	1
Chloroethane	<4.00		4.00		ug/L			09/12/23 15:19	1
Chloroform	<3.00		3.00		ug/L			09/12/23 15:19	1
Chloromethane	<3.00		3.00		ug/L			09/12/23 15:19	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/12/23 15:19	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 15:19	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 15:19	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 15:19	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/12/23 15:19	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/12/23 15:19	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/12/23 15:19	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/12/23 15:19	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/12/23 15:19	1
Ethylbenzene	<1.00		1.00		ug/L			09/12/23 15:19	1
2-Hexanone	<10.0		10.0		ug/L			09/12/23 15:19	1
Methylene Chloride	<5.00		5.00		ug/L			09/12/23 15:19	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/12/23 15:19	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/12/23 15:19	1
Naphthalene	<5.00		5.00		ug/L			09/12/23 15:19	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/12/23 15:19	1
Tetrachloroethene	<1.00		1.00		ug/L			09/12/23 15:19	1
Toluene	<1.00		1.00		ug/L			09/12/23 15:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/12/23 15:19	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/12/23 15:19	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/12/23 15:19	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/12/23 15:19	1
Trichloroethene	<1.00		1.00		ug/L			09/12/23 15:19	1

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-399323/5
Matrix: Water
Analysis Batch: 399323

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	<1.00		1.00		ug/L			09/12/23 15:19	1
Xylenes, Total	<3.00		3.00		ug/L			09/12/23 15:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		09/12/23 15:19	1
Dibromofluoromethane (Surr)	100		80 - 128		09/12/23 15:19	1
Toluene-d8 (Surr)	96		80 - 120		09/12/23 15:19	1

Lab Sample ID: LCS 310-399323/6
Matrix: Water
Analysis Batch: 399323

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	27.01		ug/L		68	50 - 150
Benzene	20.0	14.80		ug/L		74	73 - 122
Bromodichloromethane	20.0	15.01		ug/L		75	72 - 121
Bromoform	20.0	17.00		ug/L		85	55 - 129
2-Butanone (MEK)	40.0	28.09		ug/L		70	50 - 150
Carbon disulfide	20.0	16.22		ug/L		81	58 - 131
Carbon tetrachloride	20.0	16.32		ug/L		82	67 - 132
Chlorobenzene	20.0	15.88		ug/L		79	69 - 121
Chlorodibromomethane	20.0	14.99		ug/L		75	69 - 122
Chloroform	20.0	15.59		ug/L		78	72 - 120
cis-1,2-Dichloroethene	20.0	15.90		ug/L		80	74 - 120
cis-1,3-Dichloropropene	20.0	14.98		ug/L		75	71 - 126
1,2-Dichlorobenzene	20.0	16.61		ug/L		83	68 - 120
1,3-Dichlorobenzene	20.0	16.45		ug/L		82	67 - 123
1,4-Dichlorobenzene	20.0	16.37		ug/L		82	67 - 120
1,1-Dichloroethane	20.0	15.64		ug/L		78	71 - 123
1,2-Dichloroethane	20.0	14.29		ug/L		71	70 - 124
1,1-Dichloroethene	20.0	16.72		ug/L		84	61 - 129
1,2-Dichloropropane	20.0	14.88		ug/L		74	73 - 121
Ethylbenzene	20.0	15.77		ug/L		79	69 - 122
2-Hexanone	40.0	30.83		ug/L		77	60 - 132
Methylene Chloride	20.0	15.43		ug/L		77	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	31.06		ug/L		78	62 - 130
Methyl tert-butyl ether	20.0	15.70		ug/L		79	68 - 127
Naphthalene	20.0	16.66		ug/L		83	50 - 150
1,1,2,2-Tetrachloroethane	20.0	17.30		ug/L		86	64 - 124
Tetrachloroethene	20.0	17.93		ug/L		90	69 - 131
Toluene	20.0	16.03		ug/L		80	72 - 121
trans-1,2-Dichloroethene	20.0	16.03		ug/L		80	68 - 125
trans-1,3-Dichloropropene	20.0	14.91		ug/L		75	68 - 124
1,1,1-Trichloroethane	20.0	16.12		ug/L		81	71 - 128
1,1,2-Trichloroethane	20.0	15.09		ug/L		75	70 - 124
Trichloroethene	20.0	16.18		ug/L		81	73 - 126
Xylenes, Total	40.0	32.75		ug/L		82	68 - 124

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-399323/6
Matrix: Water
Analysis Batch: 399323

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	98		80 - 128
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: LCS 310-399323/7
Matrix: Water
Analysis Batch: 399323

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

<i>Analyte</i>	<i>Spike</i> <i>Added</i>	<i>LCS</i> <i>Result</i>	<i>LCS</i> <i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec</i> <i>Limits</i>
Bromomethane	20.0	11.64		ug/L		58	24 - 150
Chloroethane	20.0	14.33		ug/L		72	51 - 137
Chloromethane	20.0	14.06		ug/L		70	37 - 150
Vinyl chloride	20.0	13.95		ug/L		70	57 - 136

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	99		80 - 128
Toluene-d8 (Surr)	96		80 - 120

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QC Association Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

GC/MS VOA

Analysis Batch: 398709

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-264021-1	TB01-GW-0923	Total/NA	Ground Water	8260D	
310-264021-3	EB01-GW-0923	Total/NA	Ground Water	8260D	
MB 310-398709/5	Method Blank	Total/NA	Water	8260D	
LCS 310-398709/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-398709/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 399323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-264021-2	Dup01-GW-0923	Total/NA	Ground Water	8260D	
310-264021-4	MW06-GW-0923	Total/NA	Ground Water	8260D	
310-264021-5	MW05-GW-0923	Total/NA	Ground Water	8260D	
310-264021-6	TW29-GW-0923	Total/NA	Ground Water	8260D	
MB 310-399323/5	Method Blank	Total/NA	Water	8260D	
LCS 310-399323/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-399323/7	Lab Control Sample	Total/NA	Water	8260D	

Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Client Sample ID: TB01-GW-0923

Date Collected: 09/05/23 06:30

Date Received: 09/05/23 16:38

Lab Sample ID: 310-264021-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	398709	FE5V	EET CF	09/06/23 23:59

Client Sample ID: Dup01-GW-0923

Date Collected: 09/05/23 13:00

Date Received: 09/05/23 16:38

Lab Sample ID: 310-264021-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	399323	FE5V	EET CF	09/12/23 16:49

Client Sample ID: EB01-GW-0923

Date Collected: 09/05/23 11:30

Date Received: 09/05/23 16:38

Lab Sample ID: 310-264021-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	398709	FE5V	EET CF	09/07/23 00:22

Client Sample ID: MW06-GW-0923

Date Collected: 09/05/23 12:17

Date Received: 09/05/23 16:38

Lab Sample ID: 310-264021-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	399323	FE5V	EET CF	09/12/23 17:12

Client Sample ID: MW05-GW-0923

Date Collected: 09/05/23 14:40

Date Received: 09/05/23 16:38

Lab Sample ID: 310-264021-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	399323	FE5V	EET CF	09/12/23 17:34

Client Sample ID: TW29-GW-0923

Date Collected: 09/05/23 14:55

Date Received: 09/05/23 16:38

Lab Sample ID: 310-264021-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	399323	FE5V	EET CF	09/12/23 17:57

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

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- 2
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Method Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St. GWS

Job ID: 310-264021-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF

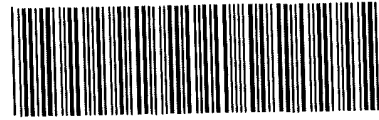
Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401





Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Stawter</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>9/15/23</u>	<u>1638</u>	<u>SL</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input checked="" type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler ID: _____			
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler # ____ of ____			
Cooler Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Which VOA samples are in cooler? ↓			
<u>ALL</u>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>P</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>3.8</u>		Corrected Temp (°C): <u>3.8</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 310-264021-1

Login Number: 264021

List Number: 1

Creator: Lage, Sydney

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 9/27/2023 8:58:00 PM

JOB DESCRIPTION

Rockwell Collins 35th St. - Main Campus

JOB NUMBER

410-141800-1

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
9/27/2023 8:58:00 PM

Authorized for release by
Amek Carter, Project Manager
Loran.Carter@et.eurofinsus.com
(717)556-7252

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Detection Summary	7
Client Sample Results	8
Isotope Dilution Summary	12
QC Sample Results	14
QC Association Summary	21
Lab Chronicle	22
Certification Summary	23
Method Summary	24
Sample Summary	25
Chain of Custody	26
Receipt Checklists	27

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Qualifiers

LCMS

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Job ID: 410-141800-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Narrative

Job Narrative 410-141800-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 9/7/2023 10:26 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.3°C

PFAS

Method 1633: The recovery for target analyte 4,8-Dioxa-3H-perfluorononanoic acid (ADONA) is outside the QC acceptance limits in the closing continuing calibration verification standard. Since the result is high and target 4,8-Dioxa-3H-perfluorononanoic acid (ADONA) is not detected in the following samples: MW06-GW-0823 (410-141800-1), EB01-GW-0823 (410-141800-3) and (410-141800-B-1-B DU), the data is reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Client Sample ID: MW06-GW-0823

Lab Sample ID: 410-141800-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid	46		7.6	1.9	ng/L	1		1633	Total/NA
Perfluoropentanoic acid	23		3.8	0.94	ng/L	1		1633	Total/NA
Perfluorohexanoic acid	4.9		1.9	0.47	ng/L	1		1633	Total/NA
Perfluoroheptanoic acid	2.3		1.9	0.49	ng/L	1		1633	Total/NA
Perfluorooctanoic acid	7.6		1.9	0.60	ng/L	1		1633	Total/NA
Perfluorononanoic acid	0.81	J	1.9	0.47	ng/L	1		1633	Total/NA
Perfluorobutanesulfonic acid	1.6	J	1.9	0.28	ng/L	1		1633	Total/NA
Perfluorohexanesulfonic acid	2.0		1.9	0.54	ng/L	1		1633	Total/NA
Perfluorooctanesulfonic acid	22		1.9	0.47	ng/L	1		1633	Total/NA
Perfluoro-3-methoxypropanoic acid	0.54	J	3.8	0.47	ng/L	1		1633	Total/NA

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-141800-3

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Client Sample ID: MW06-GW-0823

Lab Sample ID: 410-141800-1

Date Collected: 09/05/23 12:17

Matrix: Water

Date Received: 09/07/23 10:26

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	46		7.6	1.9	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoropentanoic acid	23		3.8	0.94	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorohexanoic acid	4.9		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoroheptanoic acid	2.3		1.9	0.49	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorooctanoic acid	7.6		1.9	0.60	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorononanoic acid	0.81	J	1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorodecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoroundecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorododecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorotridecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorotetradecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorobutanesulfonic acid	1.6	J	1.9	0.28	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoropentanesulfonic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorohexanesulfonic acid	2.0		1.9	0.54	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoroheptanesulfonic acid	ND		1.9	0.38	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorooctanesulfonic acid	22		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoronanesulfonic acid	ND		1.9	0.38	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorodecanesulfonic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.9	0.85	ng/L		09/09/23 08:56	09/27/23 00:59	1
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		7.6	1.6	ng/L		09/09/23 08:56	09/27/23 00:59	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		7.6	2.4	ng/L		09/09/23 08:56	09/27/23 00:59	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		7.6	2.5	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluorooctanesulfonamide	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
NMeFOSA	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
N-ethylperfluoro-1-octanesulfonamide	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
NMeFOSAA	ND		3.8	1.1	ng/L		09/09/23 08:56	09/27/23 00:59	1
NEtFOSAA	ND		1.9	0.66	ng/L		09/09/23 08:56	09/27/23 00:59	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.7	ng/L		09/09/23 08:56	09/27/23 00:59	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.7	ng/L		09/09/23 08:56	09/27/23 00:59	1
HFPO-DA	ND		7.6	1.9	ng/L		09/09/23 08:56	09/27/23 00:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	cn	7.6	1.4	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoro-3-methoxypropanoic acid	0.54	J	3.8	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoro(4-methoxybutanoic acid)	ND		3.8	0.94	ng/L		09/09/23 08:56	09/27/23 00:59	1
Perfluoro-3,6-dioxahexanoic acid	ND		3.8	0.94	ng/L		09/09/23 08:56	09/27/23 00:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		7.6	0.94	ng/L		09/09/23 08:56	09/27/23 00:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		7.6	1.9	ng/L		09/09/23 08:56	09/27/23 00:59	1
PFEESA	ND		3.8	0.47	ng/L		09/09/23 08:56	09/27/23 00:59	1
3:3 FTCA	ND		9.4	1.4	ng/L		09/09/23 08:56	09/27/23 00:59	1
5:3 FTCA	ND		47	9.4	ng/L		09/09/23 08:56	09/27/23 00:59	1
7:3 FTCA	ND		47	9.4	ng/L		09/09/23 08:56	09/27/23 00:59	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Client Sample ID: MW06-GW-0823

Lab Sample ID: 410-141800-1

Date Collected: 09/05/23 12:17

Matrix: Water

Date Received: 09/07/23 10:26

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	68.4		10 - 130	09/09/23 08:56	09/27/23 00:59	1
13C5 PFPeA	87.7		35 - 150	09/09/23 08:56	09/27/23 00:59	1
13C5 PFHxA	90.3		55 - 150	09/09/23 08:56	09/27/23 00:59	1
13C4 PFHpA	87.1		55 - 150	09/09/23 08:56	09/27/23 00:59	1
13C8 PFOA	81.3		60 - 140	09/09/23 08:56	09/27/23 00:59	1
13C9 PFNA	82.1		55 - 140	09/09/23 08:56	09/27/23 00:59	1
13C6 PFDA	85.7		50 - 140	09/09/23 08:56	09/27/23 00:59	1
13C7 PFUnA	83.2		30 - 140	09/09/23 08:56	09/27/23 00:59	1
13C2-PFDoDA	75.6		10 - 150	09/09/23 08:56	09/27/23 00:59	1
13C2 PFTeDA	64.2		10 - 130	09/09/23 08:56	09/27/23 00:59	1
13C3 PFBS	97.7		55 - 150	09/09/23 08:56	09/27/23 00:59	1
13C3 PFHxS	88.8		55 - 150	09/09/23 08:56	09/27/23 00:59	1
13C8 PFOS	81.5		45 - 140	09/09/23 08:56	09/27/23 00:59	1
13C8 FOSA	80.0		30 - 130	09/09/23 08:56	09/27/23 00:59	1
d3-NMeFOSAA	69.0		45 - 200	09/09/23 08:56	09/27/23 00:59	1
d5-NEtFOSAA	71.4		10 - 200	09/09/23 08:56	09/27/23 00:59	1
M2-4:2 FTS	99.4		60 - 200	09/09/23 08:56	09/27/23 00:59	1
M2-6:2 FTS	87.2		60 - 200	09/09/23 08:56	09/27/23 00:59	1
M2-8:2 FTS	94.7		50 - 200	09/09/23 08:56	09/27/23 00:59	1
13C3 HFPO-DA	83.4		25 - 160	09/09/23 08:56	09/27/23 00:59	1
d7-N-MeFOSE-M	60.1		10 - 150	09/09/23 08:56	09/27/23 00:59	1
d9-N-EtFOSE-M	60.1		10 - 150	09/09/23 08:56	09/27/23 00:59	1
d5-NEtPFOSA	48.6		10 - 130	09/09/23 08:56	09/27/23 00:59	1
d3-NMePFOSA	54.4		15 - 130	09/09/23 08:56	09/27/23 00:59	1

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-141800-3

Date Collected: 09/05/23 12:30

Matrix: Water

Date Received: 09/07/23 10:26

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	ND		7.5	1.9	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoropentanoic acid	ND		3.7	0.93	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorohexanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoroheptanoic acid	ND		1.9	0.48	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorooctanoic acid	ND		1.9	0.60	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorononanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorodecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoroundecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorododecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorotridecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorotetradecanoic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorobutanesulfonic acid	ND		1.9	0.28	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoropentanesulfonic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorohexanesulfonic acid	ND		1.9	0.53	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoroheptanesulfonic acid	ND		1.9	0.37	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorooctanesulfonic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorononanesulfonic acid	ND		1.9	0.37	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorodecanesulfonic acid	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.9	0.84	ng/L		09/09/23 08:56	09/27/23 01:38	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-141800-3

Date Collected: 09/05/23 12:30

Matrix: Water

Date Received: 09/07/23 10:26

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		7.5	1.6	ng/L		09/09/23 08:56	09/27/23 01:38	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		7.5	2.3	ng/L		09/09/23 08:56	09/27/23 01:38	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		7.5	2.4	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluorooctanesulfonamide	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
NMeFOSA	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
N-ethylperfluoro-1-octanesulfonamide	ND		1.9	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
NMeFOSAA	ND		3.7	1.1	ng/L		09/09/23 08:56	09/27/23 01:38	1
NEtFOSAA	ND		1.9	0.65	ng/L		09/09/23 08:56	09/27/23 01:38	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.7	ng/L		09/09/23 08:56	09/27/23 01:38	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		19	4.7	ng/L		09/09/23 08:56	09/27/23 01:38	1
HFPO-DA	ND		7.5	1.9	ng/L		09/09/23 08:56	09/27/23 01:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	cn	7.5	1.4	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoro-3-methoxypropanoic acid	ND		3.7	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoro(4-methoxybutanoic acid)	ND		3.7	0.93	ng/L		09/09/23 08:56	09/27/23 01:38	1
Perfluoro-3,6-dioxaheptanoic acid	ND		3.7	0.93	ng/L		09/09/23 08:56	09/27/23 01:38	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		7.5	0.93	ng/L		09/09/23 08:56	09/27/23 01:38	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		7.5	1.9	ng/L		09/09/23 08:56	09/27/23 01:38	1
PFEESA	ND		3.7	0.47	ng/L		09/09/23 08:56	09/27/23 01:38	1
3:3 FTCA	ND		9.3	1.4	ng/L		09/09/23 08:56	09/27/23 01:38	1
5:3 FTCA	ND		47	9.3	ng/L		09/09/23 08:56	09/27/23 01:38	1
7:3 FTCA	ND		47	9.3	ng/L		09/09/23 08:56	09/27/23 01:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	83.4		10 - 130				09/09/23 08:56	09/27/23 01:38	1
13C5 PFPeA	91.2		35 - 150				09/09/23 08:56	09/27/23 01:38	1
13C5 PFHxA	96.5		55 - 150				09/09/23 08:56	09/27/23 01:38	1
13C4 PFHpA	93.8		55 - 150				09/09/23 08:56	09/27/23 01:38	1
13C8 PFOA	80.1		60 - 140				09/09/23 08:56	09/27/23 01:38	1
13C9 PFNA	83.0		55 - 140				09/09/23 08:56	09/27/23 01:38	1
13C6 PFDA	87.2		50 - 140				09/09/23 08:56	09/27/23 01:38	1
13C7 PFUnA	91.8		30 - 140				09/09/23 08:56	09/27/23 01:38	1
13C2-PFDoDA	94.1		10 - 150				09/09/23 08:56	09/27/23 01:38	1
13C2 PFTeDA	84.9		10 - 130				09/09/23 08:56	09/27/23 01:38	1
13C3 PFBS	93.2		55 - 150				09/09/23 08:56	09/27/23 01:38	1
13C3 PFHxS	86.6		55 - 150				09/09/23 08:56	09/27/23 01:38	1
13C8 PFOS	82.8		45 - 140				09/09/23 08:56	09/27/23 01:38	1
13C8 FOSA	83.7		30 - 130				09/09/23 08:56	09/27/23 01:38	1
d3-NMeFOSAA	81.0		45 - 200				09/09/23 08:56	09/27/23 01:38	1
d5-NEtFOSAA	78.8		10 - 200				09/09/23 08:56	09/27/23 01:38	1
M2-4:2 FTS	81.2		60 - 200				09/09/23 08:56	09/27/23 01:38	1
M2-6:2 FTS	93.6		60 - 200				09/09/23 08:56	09/27/23 01:38	1
M2-8:2 FTS	90.9		50 - 200				09/09/23 08:56	09/27/23 01:38	1

Client Sample Results

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-141800-3

Date Collected: 09/05/23 12:30

Matrix: Water

Date Received: 09/07/23 10:26

Method: EPA 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3 HFPO-DA	87.4		25 - 160	09/09/23 08:56	09/27/23 01:38	1
d7-N-MeFOSE-M	77.2		10 - 150	09/09/23 08:56	09/27/23 01:38	1
d9-N-EtFOSE-M	80.4		10 - 150	09/09/23 08:56	09/27/23 01:38	1
d5-NEtPFOSA	76.9		10 - 130	09/09/23 08:56	09/27/23 01:38	1
d3-NMePFOSA	72.7		15 - 130	09/09/23 08:56	09/27/23 01:38	1

Isotope Dilution Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (10-130)	PFPeA (35-150)	13C5PHA (55-150)	C4PFHA (55-150)	C8PFOA (60-140)	C9PFNA (55-140)	C6PFDA (50-140)	13C7PUA (30-140)
410-141800-1	MW06-GW-0823	68.4	87.7	90.3	87.1	81.3	82.1	85.7	83.2
410-141800-1 DU	MW06-GW-0823	82.7	83.6	84.7	83.0	76.6	82.2	89.9	91.8
410-141800-3	EB01-GW-0823	83.4	91.2	96.5	93.8	80.1	83.0	87.2	91.8
MB 410-417654/1-A	Method Blank	87.5	95.1	98.0	95.9	94.8	85.4	88.0	88.6

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDODA (10-150)	PFTDA (10-130)	C3PFBS (55-150)	C3PFHS (55-150)	C8PFOS (45-140)	PFOSA (30-130)	d3NMFOS (45-200)	d5NEFOS (10-200)
410-141800-1	MW06-GW-0823	75.6	64.2	97.7	88.8	81.5	80.0	69.0	71.4
410-141800-1 DU	MW06-GW-0823	91.9	78.8	94.7	86.5	82.8	79.7	75.3	71.8
410-141800-3	EB01-GW-0823	94.1	84.9	93.2	86.6	82.8	83.7	81.0	78.8
MB 410-417654/1-A	Method Blank	88.6	78.9	106	92.3	85.8	88.1	77.9	82.9

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M242FTS (60-200)	M262FTS (60-200)	M282FTS (50-200)	HFPODA (25-160)	NMFM (10-150)	NEFM (10-150)	d5NPFSA (10-130)	d3NMFSA (15-130)
410-141800-1	MW06-GW-0823	99.4	87.2	94.7	83.4	60.1	60.1	48.6	54.4
410-141800-1 DU	MW06-GW-0823	115	101	98.7	78.9	66.6	75.1	60.3	63.5
410-141800-3	EB01-GW-0823	81.2	93.6	90.9	87.4	77.2	80.4	76.9	72.7
MB 410-417654/1-A	Method Blank	86.1	98.5	90.9	89.8	72.4	80.3	68.9	66.1

Surrogate Legend

- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA
- C9PFNA = 13C9 PFNA
- C6PFDA = 13C6 PFDA
- 13C7PUA = 13C7 PFUnA
- PFDODA = 13C2-PFDODA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- C3PFHS = 13C3 PFHxS
- C8PFOS = 13C8 PFOS
- PFOSA = 13C8 FOSA
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- M242FTS = M2-4:2 FTS
- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- HFPODA = 13C3 HFPO-DA
- NMFM = d7-N-MeFOSE-M
- NEFM = d9-N-EtFOSE-M
- d5NPFSA = d5-NEtPFOSA
- d3NMFSA = d3-NMePFOSA

Isotope Dilution Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (10-130)	PFPeA (40-150)	¹³ C5PHA (40-150)	C4PFHA (40-150)	C8PFOA (30-140)	C9PFNA (30-140)	C6PFDA (20-140)	¹³ C7PUA (20-140)
LCS 410-417654/2-A	Lab Control Sample	90.3	90.1	94.4	88.6	86.2	90.1	90.6	92.1
LLCS 410-417654/3-A	Lab Control Sample	87.9	89.7	88.2	86.4	89.3	84.6	89.6	97.3

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFD _o DA (10-150)	PFTDA (10-130)	C3PFBS (25-150)	C3PFHS (25-150)	C8PFOS (20-140)	PFOSA (10-130)	d3NMFOS (10-200)	d5NEFOS (10-200)
LCS 410-417654/2-A	Lab Control Sample	87.9	68.3	92.1	84.8	91.2	84.0	77.7	81.6
LLCS 410-417654/3-A	Lab Control Sample	101	85.5	101	91.0	92.5	88.6	82.4	79.3

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M242FTS (25-200)	M262FTS (25-200)	M282FTS (25-200)	HFPODA (25-160)	NMFM (10-150)	NEFM (10-150)	d5NPFSA (10-130)	d3NMFSA (10-130)
LCS 410-417654/2-A	Lab Control Sample	76.3	88.8	84.8	84.5	72.6	74.7	62.3	60.1
LLCS 410-417654/3-A	Lab Control Sample	85.7	83.4	86.6	86.4	77.8	77.4	71.3	69.5

Surrogate Legend

PFBA = ¹³C4 PFBA
 PFPeA = ¹³C5 PFPeA
¹³C5PHA = ¹³C5 PFHxA
 C4PFHA = ¹³C4 PFHpA
 C8PFOA = ¹³C8 PFOA
 C9PFNA = ¹³C9 PFNA
 C6PFDA = ¹³C6 PFDA
¹³C7PUA = ¹³C7 PFUnA
 PFD_oDA = ¹³C2-PFD_oDA
 PFTDA = ¹³C2 PFTeDA
 C3PFBS = ¹³C3 PFBS
 C3PFHS = ¹³C3 PFHxS
 C8PFOS = ¹³C8 PFOS
 PFOSA = ¹³C8 FOSA
 d3NMFOS = d3-NMeFOSAA
 d5NEFOS = d5-NEtFOSAA
 M242FTS = M2-4:2 FTS
 M262FTS = M2-6:2 FTS
 M282FTS = M2-8:2 FTS
 HFPODA = ¹³C3 HFPO-DA
 NMFM = d7-N-MeFOSE-M
 NEFM = d9-N-EtFOSE-M
 d5NPFSA = d5-NEtPFOSA
 d3NMFSA = d3-NMePFOSA

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS

Lab Sample ID: MB 410-417654/1-A
 Matrix: Water
 Analysis Batch: 423888

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 417654

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid	ND		8.0	2.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoropentanoic acid	ND		4.0	1.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoroheptanoic acid	ND		2.0	0.52	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorooctanoic acid	ND		2.0	0.64	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorobutanesulfonic acid	ND		2.0	0.30	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoropentanesulfonic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorohexanesulfonic acid	ND		2.0	0.57	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoroheptanesulfonic acid	ND		2.0	0.40	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoronanesulfonic acid	ND		2.0	0.40	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorodecanesulfonic acid	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.0	0.90	ng/L		09/09/23 08:56	09/26/23 22:23	1
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		8.0	1.7	ng/L		09/09/23 08:56	09/26/23 22:23	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		8.0	2.5	ng/L		09/09/23 08:56	09/26/23 22:23	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		8.0	2.6	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluorooctanesulfonamide	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
NMeFOSA	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
N-ethylperfluoro-1-octanesulfonamide	ND		2.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
NMeFOSAA	ND		4.0	1.2	ng/L		09/09/23 08:56	09/26/23 22:23	1
NEtFOSAA	ND		2.0	0.70	ng/L		09/09/23 08:56	09/26/23 22:23	1
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		20	5.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		20	5.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
HFPO-DA	ND		8.0	2.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		8.0	1.5	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoro-3-methoxypropanoic acid	ND		4.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoro(4-methoxybutanoic acid)	ND		4.0	1.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
Perfluoro-3,6-dioxaheptanoic acid	ND		4.0	1.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		8.0	1.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		8.0	2.0	ng/L		09/09/23 08:56	09/26/23 22:23	1
PFEESA	ND		4.0	0.50	ng/L		09/09/23 08:56	09/26/23 22:23	1
3:3 FTCA	ND		10	1.5	ng/L		09/09/23 08:56	09/26/23 22:23	1
5:3 FTCA	ND		50	10	ng/L		09/09/23 08:56	09/26/23 22:23	1
7:3 FTCA	ND		50	10	ng/L		09/09/23 08:56	09/26/23 22:23	1

Eurofins Lancaster Laboratories Environment Testing, LLC

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	87.5		10 - 130	09/09/23 08:56	09/26/23 22:23	1
13C5 PFPeA	95.1		35 - 150	09/09/23 08:56	09/26/23 22:23	1
13C5 PFHxA	98.0		55 - 150	09/09/23 08:56	09/26/23 22:23	1
13C4 PFHpA	95.9		55 - 150	09/09/23 08:56	09/26/23 22:23	1
13C8 PFOA	94.8		60 - 140	09/09/23 08:56	09/26/23 22:23	1
13C9 PFNA	85.4		55 - 140	09/09/23 08:56	09/26/23 22:23	1
13C6 PFDA	88.0		50 - 140	09/09/23 08:56	09/26/23 22:23	1
13C7 PFUnA	88.6		30 - 140	09/09/23 08:56	09/26/23 22:23	1
13C2-PFDoDA	88.6		10 - 150	09/09/23 08:56	09/26/23 22:23	1
13C2 PFTeDA	78.9		10 - 130	09/09/23 08:56	09/26/23 22:23	1
13C3 PFBS	106		55 - 150	09/09/23 08:56	09/26/23 22:23	1
13C3 PFHxS	92.3		55 - 150	09/09/23 08:56	09/26/23 22:23	1
13C8 PFOS	85.8		45 - 140	09/09/23 08:56	09/26/23 22:23	1
13C8 FOSA	88.1		30 - 130	09/09/23 08:56	09/26/23 22:23	1
d3-NMeFOSAA	77.9		45 - 200	09/09/23 08:56	09/26/23 22:23	1
d5-NEtFOSAA	82.9		10 - 200	09/09/23 08:56	09/26/23 22:23	1
M2-4:2 FTS	86.1		60 - 200	09/09/23 08:56	09/26/23 22:23	1
M2-6:2 FTS	98.5		60 - 200	09/09/23 08:56	09/26/23 22:23	1
M2-8:2 FTS	90.9		50 - 200	09/09/23 08:56	09/26/23 22:23	1
13C3 HFPO-DA	89.8		25 - 160	09/09/23 08:56	09/26/23 22:23	1
d7-N-MeFOSE-M	72.4		10 - 150	09/09/23 08:56	09/26/23 22:23	1
d9-N-EtFOSE-M	80.3		10 - 150	09/09/23 08:56	09/26/23 22:23	1
d5-NEtPFOSA	68.9		10 - 130	09/09/23 08:56	09/26/23 22:23	1
d3-NMePFOSA	66.1		15 - 130	09/09/23 08:56	09/26/23 22:23	1

Lab Sample ID: LCS 410-417654/2-A

Matrix: Water

Analysis Batch: 423888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 417654

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid	50.1	43.2		ng/L		86	54 - 152
Perfluorohexanoic acid	25.0	20.5		ng/L		82	55 - 152
Perfluoroheptanoic acid	25.0	23.9		ng/L		96	54 - 154
Perfluorooctanoic acid	25.0	23.3		ng/L		93	52 - 161
Perfluorononanoic acid	25.0	24.2		ng/L		97	59 - 149
Perfluorodecanoic acid	25.0	23.5		ng/L		94	52 - 147
Perfluoroundecanoic acid	25.0	23.4		ng/L		93	48 - 159
Perfluorododecanoic acid	25.0	24.8		ng/L		99	64 - 142
Perfluorotridecanoic acid	25.0	24.0		ng/L		96	49 - 148
Perfluorotetradecanoic acid	25.0	23.6		ng/L		94	47 - 161
Perfluorobutanesulfonic acid	22.2	17.8		ng/L		80	62 - 144
Perfluoropentanesulfonic acid	23.6	20.9		ng/L		89	59 - 151
Perfluorohexanesulfonic acid	22.9	20.0		ng/L		87	57 - 146
Perfluoroheptanesulfonic acid	23.9	20.7		ng/L		87	55 - 152
Perfluorooctanesulfonic acid	23.2	18.1		ng/L		78	58 - 149
Perfluorononanesulfonic acid	24.1	19.9		ng/L		83	52 - 148
Perfluorodecanesulfonic acid	24.2	18.7		ng/L		78	51 - 147
Perfluorododecanesulfonic acid (PFDoS)	24.3	14.7		ng/L		61	36 - 145
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	93.9	84.9		ng/L		90	67 - 146

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 410-417654/2-A

Matrix: Water

Analysis Batch: 423888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 417654

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	95.2	78.7		ng/L		83	61 - 151
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	96.2	91.6		ng/L		95	63 - 152
Perfluorooctanesulfonamide	25.0	23.6		ng/L		94	61 - 148
NMeFOSA	25.0	28.3		ng/L		113	63 - 145
N-ethylperfluoro-1-octanesulfonamide	25.0	27.5		ng/L		110	65 - 139
NMeFOSAA	25.0	25.2		ng/L		100	58 - 144
NEtFOSAA	25.0	23.6		ng/L		94	59 - 146
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	250	263		ng/L		105	71 - 136
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	250	250		ng/L		100	69 - 137
HFPO-DA	100	109		ng/L		109	63 - 144
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.5	119		ng/L		126	68 - 146
Perfluoro-3-methoxypropanoic acid	50.1	51.5		ng/L		103	51 - 145
Perfluoro(4-methoxybutanoic acid)	50.1	57.8		ng/L		115	55 - 148
Perfluoro-3,6-dioxaheptanoic acid	50.1	75.8		ng/L		151	48 - 161
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	93.5	104		ng/L		111	56 - 156
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	94.5	94.7		ng/L		100	46 - 156
PFEESA	44.6	44.6		ng/L		100	56 - 151
3:3 FTCA	125	111		ng/L		89	62 - 129
5:3 FTCA	626	570		ng/L		91	63 - 134
7:3 FTCA	626	520		ng/L		83	50 - 138

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	90.3		10 - 130
13C5 PFPeA	90.1		40 - 150
13C5 PFHxA	94.4		40 - 150
13C4 PFHpA	88.6		40 - 150
13C8 PFOA	86.2		30 - 140
13C9 PFNA	90.1		30 - 140
13C6 PFDA	90.6		20 - 140
13C7 PFUnA	92.1		20 - 140
13C2-PFDoDA	87.9		10 - 150
13C2 PFTeDA	68.3		10 - 130
13C3 PFBS	92.1		25 - 150
13C3 PFHxS	84.8		25 - 150
13C8 PFOS	91.2		20 - 140
13C8 FOSA	84.0		10 - 130
d3-NMeFOSAA	77.7		10 - 200
d5-NEtFOSAA	81.6		10 - 200
M2-4:2 FTS	76.3		25 - 200

Eurofins Lancaster Laboratories Environment Testing, LLC

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LCS 410-417654/2-A

Matrix: Water

Analysis Batch: 423888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 417654

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-6:2 FTS	88.8		25 - 200
M2-8:2 FTS	84.8		25 - 200
13C3 HFPO-DA	84.5		25 - 160
d7-N-MeFOSE-M	72.6		10 - 150
d9-N-EtFOSE-M	74.7		10 - 150
d5-NEtPFOSA	62.3		10 - 130
d3-NMePFOSA	60.1		10 - 130

Lab Sample ID: LLCS 410-417654/3-A

Matrix: Water

Analysis Batch: 423888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 417654

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluorobutanoic acid	16.0	15.3		ng/L		96	44 - 157
Perfluoropentanoic acid	8.00	7.27		ng/L		91	57 - 148
Perfluorohexanoic acid	4.00	3.78		ng/L		94	62 - 149
Perfluoroheptanoic acid	4.00	3.78		ng/L		95	56 - 150
Perfluorooctanoic acid	4.00	3.55		ng/L		89	57 - 161
Perfluorononanoic acid	4.00	3.90		ng/L		97	53 - 157
Perfluorodecanoic acid	4.00	3.82		ng/L		96	43 - 158
Perfluoroundecanoic acid	4.00	3.61		ng/L		90	50 - 155
Perfluorododecanoic acid	4.00	3.94		ng/L		99	60 - 141
Perfluorotridecanoic acid	4.00	3.79		ng/L		95	52 - 140
Perfluorotetradecanoic acid	4.00	3.81		ng/L		95	52 - 156
Perfluorobutanesulfonic acid	3.55	2.97		ng/L		84	63 - 145
Perfluoropentanesulfonic acid	3.76	3.60		ng/L		96	58 - 144
Perfluorohexanesulfonic acid	3.66	3.39		ng/L		93	44 - 158
Perfluoroheptanesulfonic acid	3.81	3.32		ng/L		87	51 - 150
Perfluorooctanesulfonic acid	3.71	3.32		ng/L		89	43 - 162
Perfluorononanesulfonic acid	3.85	3.38		ng/L		88	46 - 151
Perfluorodecanesulfonic acid	3.86	3.57		ng/L		92	50 - 144
Perfluorododecanesulfonic acid (PFDoS)	3.88	3.07		ng/L		79	30 - 138
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	15.0	14.1		ng/L		94	52 - 158
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	15.2	16.5		ng/L		108	48 - 158
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	15.4	12.9		ng/L		84	46 - 165
Perfluorooctanesulfonamide	4.00	3.80		ng/L		95	47 - 163
NMeFOSA	4.00	4.24		ng/L		106	54 - 155
N-ethylperfluoro-1-octanesulfonamide	4.00	4.05		ng/L		101	49 - 156
NMeFOSAA	4.00	3.80	J	ng/L		95	32 - 160
NEtFOSAA	4.00	4.04		ng/L		101	51 - 154
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	40.0	39.7		ng/L		99	56 - 151
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	40.0	40.5		ng/L		101	60 - 147

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: LLCS 410-417654/3-A

Matrix: Water

Analysis Batch: 423888

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 417654

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
HFPO-DA	16.0	14.4		ng/L		90	58 - 154
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	15.1	17.4		ng/L		115	61 - 148
Perfluoro-3-methoxypropanoic acid	8.00	7.76		ng/L		97	48 - 150
Perfluoro(4-methoxybutanoic acid)	8.00	7.69		ng/L		96	49 - 154
Perfluoro-3,6-dioxaheptanoic acid	8.00	8.88		ng/L		111	47 - 160
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	15.0	14.0		ng/L		94	44 - 167
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	15.1	13.3		ng/L		88	36 - 158
PFEESA	7.12	6.88		ng/L		97	56 - 144
3:3 FTCA	20.0	17.3		ng/L		86	32 - 161
5:3 FTCA	100	89.2		ng/L		89	39 - 156
7:3 FTCA	100	93.1		ng/L		93	36 - 149

Isotope Dilution	LLCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	87.9		10 - 130
13C5 PFPeA	89.7		40 - 150
13C5 PFHxA	88.2		40 - 150
13C4 PFHpA	86.4		40 - 150
13C8 PFOA	89.3		30 - 140
13C9 PFNA	84.6		30 - 140
13C6 PFDA	89.6		20 - 140
13C7 PFUnA	97.3		20 - 140
13C2-PFDoDA	101		10 - 150
13C2 PFTeDA	85.5		10 - 130
13C3 PFBS	101		25 - 150
13C3 PFHxS	91.0		25 - 150
13C8 PFOS	92.5		20 - 140
13C8 FOSA	88.6		10 - 130
d3-NMeFOSAA	82.4		10 - 200
d5-NEtFOSAA	79.3		10 - 200
M2-4:2 FTS	85.7		25 - 200
M2-6:2 FTS	83.4		25 - 200
M2-8:2 FTS	86.6		25 - 200
13C3 HFPO-DA	86.4		25 - 160
d7-N-MeFOSE-M	77.8		10 - 150
d9-N-EtFOSE-M	77.4		10 - 150
d5-NEtPFOSA	71.3		10 - 130
d3-NMePFOSA	69.5		10 - 130

Lab Sample ID: 410-141800-1 DU

Matrix: Water

Analysis Batch: 423888

Client Sample ID: MW06-GW-0823

Prep Type: Total/NA

Prep Batch: 417654

Analyte	Sample Result	Sample Qualifier	DU		Unit	D	RPD	
			Result	Qualifier			RPD	Limit
Perfluorobutanoic acid	46		47.9		ng/L		3	30

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: 410-141800-1 DU

Matrix: Water

Analysis Batch: 423888

Client Sample ID: MW06-GW-0823

Prep Type: Total/NA

Prep Batch: 417654

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Perfluoropentanoic acid	23		22.1		ng/L		6	30
Perfluorohexanoic acid	4.9		4.47		ng/L		9	30
Perfluoroheptanoic acid	2.3		2.69		ng/L		14	30
Perfluorooctanoic acid	7.6		8.70		ng/L		14	30
Perfluorononanoic acid	0.81	J	0.778	J	ng/L		4	30
Perfluorodecanoic acid	ND		ND		ng/L		NC	30
Perfluoroundecanoic acid	ND		ND		ng/L		NC	30
Perfluorododecanoic acid	ND		ND		ng/L		NC	30
Perfluorotridecanoic acid	ND		ND		ng/L		NC	30
Perfluorotetradecanoic acid	ND		ND		ng/L		NC	30
Perfluorobutanesulfonic acid	1.6	J	1.60	J	ng/L		3	30
Perfluoropentanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorohexanesulfonic acid	2.0		2.17		ng/L		9	30
Perfluoroheptanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorooctanesulfonic acid	22		22.9		ng/L		5	30
Perfluorononanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorodecanesulfonic acid	ND		ND		ng/L		NC	30
Perfluorododecanesulfonic acid (PFDoS)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		ND		ng/L		NC	30
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		ND		ng/L		NC	30
Perfluorooctanesulfonamide	ND		ND		ng/L		NC	30
NMeFOSA	ND		ND		ng/L		NC	30
N-ethylperfluoro-1-octanesulfonamide	ND		ND		ng/L		NC	30
NMeFOSAA	ND		ND		ng/L		NC	30
NEtFOSAA	ND		ND		ng/L		NC	30
2-(N-methylperfluoro-1-octanesulfonamido) ethanol	ND		ND		ng/L		NC	30
2-(N-ethylperfluoro-1-octanesulfonamido) ethanol	ND		ND		ng/L		NC	30
HFPO-DA	ND		ND		ng/L		NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	cn	ND	cn	ng/L		NC	30
Perfluoro-3-methoxypropanoic acid	0.54	J	0.544	J	ng/L		1	30
Perfluoro(4-methoxybutanoic acid)	ND		ND		ng/L		NC	30
Perfluoro-3,6-dioxaheptanoic acid	ND		ND		ng/L		NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	ND		ND		ng/L		NC	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	ND		ND		ng/L		NC	30
PFEESA	ND		ND		ng/L		NC	30
3:3 FTCA	ND		ND		ng/L		NC	30

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method: 1633 - Per- and Polyfluoroalkyl Substances by LC/MS/MS (Continued)

Lab Sample ID: 410-141800-1 DU

Client Sample ID: MW06-GW-0823

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 423888

Prep Batch: 417654

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
5:3 FTCA	ND		ND		ng/L		NC	30
7:3 FTCA	ND		ND		ng/L		NC	30

Isotope Dilution	%Recovery	Qualifier	Limits
13C4 PFBA	82.7		10 - 130
13C5 PFPeA	83.6		35 - 150
13C5 PFHxA	84.7		55 - 150
13C4 PFHpA	83.0		55 - 150
13C8 PFOA	76.6		60 - 140
13C9 PFNA	82.2		55 - 140
13C6 PFDA	89.9		50 - 140
13C7 PFUnA	91.8		30 - 140
13C2-PFDoDA	91.9		10 - 150
13C2 PFTeDA	78.8		10 - 130
13C3 PFBS	94.7		55 - 150
13C3 PFHxS	86.5		55 - 150
13C8 PFOS	82.8		45 - 140
13C8 FOSA	79.7		30 - 130
d3-NMeFOSAA	75.3		45 - 200
d5-NEtFOSAA	71.8		10 - 200
M2-4:2 FTS	115		60 - 200
M2-6:2 FTS	101		60 - 200
M2-8:2 FTS	98.7		50 - 200
13C3 HFPO-DA	78.9		25 - 160
d7-N-MeFOSE-M	66.6		10 - 150
d9-N-EtFOSE-M	75.1		10 - 150
d5-NEtPFOSA	60.3		10 - 130
d3-NMePFOSA	63.5		15 - 130

QC Association Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

LCMS

Prep Batch: 417654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-141800-1	MW06-GW-0823	Total/NA	Water	1633	
410-141800-3	EB01-GW-0823	Total/NA	Water	1633	
MB 410-417654/1-A	Method Blank	Total/NA	Water	1633	
LCS 410-417654/2-A	Lab Control Sample	Total/NA	Water	1633	
LLCS 410-417654/3-A	Lab Control Sample	Total/NA	Water	1633	
410-141800-1 DU	MW06-GW-0823	Total/NA	Water	1633	

Analysis Batch: 423888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-141800-1	MW06-GW-0823	Total/NA	Water	1633	417654
410-141800-3	EB01-GW-0823	Total/NA	Water	1633	417654
MB 410-417654/1-A	Method Blank	Total/NA	Water	1633	417654
LCS 410-417654/2-A	Lab Control Sample	Total/NA	Water	1633	417654
LLCS 410-417654/3-A	Lab Control Sample	Total/NA	Water	1633	417654
410-141800-1 DU	MW06-GW-0823	Total/NA	Water	1633	417654



Lab Chronicle

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Client Sample ID: MW06-GW-0823

Lab Sample ID: 410-141800-1

Date Collected: 09/05/23 12:17

Matrix: Water

Date Received: 09/07/23 10:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1633			417654	K3UG	ELLE	09/09/23 08:56
Total/NA	Analysis	1633		1	423888	RPU6	ELLE	09/27/23 00:59

Client Sample ID: EB01-GW-0823

Lab Sample ID: 410-141800-3

Date Collected: 09/05/23 12:30

Matrix: Water

Date Received: 09/07/23 10:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1633			417654	K3UG	ELLE	09/09/23 08:56
Total/NA	Analysis	1633		1	423888	RPU6	ELLE	09/27/23 01:38

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	361	03-01-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1633	1633	Water	Perfluoro(4-methoxybutanoic acid)



Method Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Method	Method Description	Protocol	Laboratory
1633	Per- and Polyfluoroalkyl Substances by LC/MS/MS	EPA	ELLE
1633	Solid-Phase Extraction (SPE)	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St. - Main Campus

Job ID: 410-141800-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-141800-1	MW06-GW-0823	Water	09/05/23 12:17	09/07/23 10:26
410-141800-3	EB01-GW-0823	Water	09/05/23 12:30	09/07/23 10:26

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Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 410-141800-1

Login Number: 141800

List Number: 1

Creator: Ballard, Megan

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable, where thermal pres is required (<=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temp acceptable, where thermal pres is required (<=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	



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ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 10/3/2023 1:04:48 PM

JOB DESCRIPTION

Rockwell Collins - 35th St.

JOB NUMBER

310-265770-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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10/3/2023 1:04:48 PM

Authorized for release by
Zach Bindert, Client Service Manager
Zach.Bindert@et.eurofinsus.com
(319)277-2401



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	5
Detection Summary	6
Client Sample Results	7
Definitions	11
Surrogate Summary	12
QC Sample Results	13
QC Association	16
Chronicle	17
Certification Summary	18
Method Summary	19
Chain of Custody	20
Receipt Checklists	22

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Job ID: 310-265770-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-265770-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 9/27/2023 4:20 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice.

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-265770-1	TB01-GW-0923	Water	09/27/23 06:30	09/27/23 16:20
310-265770-2	Dup01-GW-0923	Water	09/27/23 13:00	09/27/23 16:20
310-265770-3	MW18-GW-0923	Water	09/27/23 14:25	09/27/23 16:20
310-265770-4	MW19-GW-0923	Water	09/27/23 15:05	09/27/23 16:20

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Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Client Sample ID: TB01-GW-0923

Lab Sample ID: 310-265770-1

No Detections.

Client Sample ID: Dup01-GW-0923

Lab Sample ID: 310-265770-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.48		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW18-GW-0923

Lab Sample ID: 310-265770-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.30		1.00		ug/L	1		8260D	Total/NA

Client Sample ID: MW19-GW-0923

Lab Sample ID: 310-265770-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Client Sample ID: TB01-GW-0923

Lab Sample ID: 310-265770-1

Date Collected: 09/27/23 06:30

Matrix: Water

Date Received: 09/27/23 16:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/29/23 20:43	1
Benzene	<0.500		0.500		ug/L			09/29/23 20:43	1
Bromodichloromethane	<1.00		1.00		ug/L			09/29/23 20:43	1
Bromoform	<5.00		5.00		ug/L			09/29/23 20:43	1
Bromomethane	<4.00		4.00		ug/L			09/29/23 20:43	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/29/23 20:43	1
Carbon disulfide	<1.00		1.00		ug/L			09/29/23 20:43	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/29/23 20:43	1
Chlorobenzene	<1.00		1.00		ug/L			09/29/23 20:43	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/29/23 20:43	1
Chloroethane	<4.00		4.00		ug/L			09/29/23 20:43	1
Chloroform	<3.00		3.00		ug/L			09/29/23 20:43	1
Chloromethane	<3.00		3.00		ug/L			09/29/23 20:43	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/29/23 20:43	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/29/23 20:43	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 20:43	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 20:43	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 20:43	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/29/23 20:43	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/29/23 20:43	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/29/23 20:43	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/29/23 20:43	1
Ethylbenzene	<1.00		1.00		ug/L			09/29/23 20:43	1
2-Hexanone	<10.0		10.0		ug/L			09/29/23 20:43	1
Methylene Chloride	<5.00		5.00		ug/L			09/29/23 20:43	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/29/23 20:43	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/29/23 20:43	1
Naphthalene	<5.00		5.00		ug/L			09/29/23 20:43	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/29/23 20:43	1
Tetrachloroethene	<1.00		1.00		ug/L			09/29/23 20:43	1
Toluene	<1.00		1.00		ug/L			09/29/23 20:43	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/29/23 20:43	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/29/23 20:43	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/29/23 20:43	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/29/23 20:43	1
Trichloroethene	<1.00		1.00		ug/L			09/29/23 20:43	1
Vinyl chloride	<1.00		1.00		ug/L			09/29/23 20:43	1
Xylenes, Total	<3.00		3.00		ug/L			09/29/23 20:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		80 - 120		09/29/23 20:43	1
Dibromofluoromethane (Surr)	102		80 - 128		09/29/23 20:43	1
Toluene-d8 (Surr)	96		80 - 120		09/29/23 20:43	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Client Sample ID: Dup01-GW-0923

Lab Sample ID: 310-265770-2

Date Collected: 09/27/23 13:00

Matrix: Water

Date Received: 09/27/23 16:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/29/23 23:59	1
Benzene	<0.500		0.500		ug/L			09/29/23 23:59	1
Bromodichloromethane	<1.00		1.00		ug/L			09/29/23 23:59	1
Bromoform	<5.00		5.00		ug/L			09/29/23 23:59	1
Bromomethane	<4.00		4.00		ug/L			09/29/23 23:59	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/29/23 23:59	1
Carbon disulfide	<1.00		1.00		ug/L			09/29/23 23:59	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/29/23 23:59	1
Chlorobenzene	<1.00		1.00		ug/L			09/29/23 23:59	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/29/23 23:59	1
Chloroethane	<4.00		4.00		ug/L			09/29/23 23:59	1
Chloroform	<3.00		3.00		ug/L			09/29/23 23:59	1
Chloromethane	<3.00		3.00		ug/L			09/29/23 23:59	1
cis-1,2-Dichloroethene	1.48		1.00		ug/L			09/29/23 23:59	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/29/23 23:59	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 23:59	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 23:59	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 23:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/29/23 23:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/29/23 23:59	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/29/23 23:59	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/29/23 23:59	1
Ethylbenzene	<1.00		1.00		ug/L			09/29/23 23:59	1
2-Hexanone	<10.0		10.0		ug/L			09/29/23 23:59	1
Methylene Chloride	<5.00		5.00		ug/L			09/29/23 23:59	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/29/23 23:59	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/29/23 23:59	1
Naphthalene	<5.00		5.00		ug/L			09/29/23 23:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/29/23 23:59	1
Tetrachloroethene	<1.00		1.00		ug/L			09/29/23 23:59	1
Toluene	<1.00		1.00		ug/L			09/29/23 23:59	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/29/23 23:59	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/29/23 23:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/29/23 23:59	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/29/23 23:59	1
Trichloroethene	<1.00		1.00		ug/L			09/29/23 23:59	1
Vinyl chloride	<1.00		1.00		ug/L			09/29/23 23:59	1
Xylenes, Total	<3.00		3.00		ug/L			09/29/23 23:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		09/29/23 23:59	1
Dibromofluoromethane (Surr)	102		80 - 128		09/29/23 23:59	1
Toluene-d8 (Surr)	96		80 - 120		09/29/23 23:59	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Client Sample ID: MW18-GW-0923

Lab Sample ID: 310-265770-3

Date Collected: 09/27/23 14:25

Matrix: Water

Date Received: 09/27/23 16:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/30/23 00:21	1
Benzene	<0.500		0.500		ug/L			09/30/23 00:21	1
Bromodichloromethane	<1.00		1.00		ug/L			09/30/23 00:21	1
Bromoform	<5.00		5.00		ug/L			09/30/23 00:21	1
Bromomethane	<4.00		4.00		ug/L			09/30/23 00:21	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/30/23 00:21	1
Carbon disulfide	<1.00		1.00		ug/L			09/30/23 00:21	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/30/23 00:21	1
Chlorobenzene	<1.00		1.00		ug/L			09/30/23 00:21	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/30/23 00:21	1
Chloroethane	<4.00		4.00		ug/L			09/30/23 00:21	1
Chloroform	<3.00		3.00		ug/L			09/30/23 00:21	1
Chloromethane	<3.00		3.00		ug/L			09/30/23 00:21	1
cis-1,2-Dichloroethene	1.30		1.00		ug/L			09/30/23 00:21	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/30/23 00:21	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/30/23 00:21	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/30/23 00:21	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/30/23 00:21	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/30/23 00:21	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/30/23 00:21	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/30/23 00:21	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/30/23 00:21	1
Ethylbenzene	<1.00		1.00		ug/L			09/30/23 00:21	1
2-Hexanone	<10.0		10.0		ug/L			09/30/23 00:21	1
Methylene Chloride	<5.00		5.00		ug/L			09/30/23 00:21	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/30/23 00:21	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/30/23 00:21	1
Naphthalene	<5.00		5.00		ug/L			09/30/23 00:21	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/30/23 00:21	1
Tetrachloroethene	<1.00		1.00		ug/L			09/30/23 00:21	1
Toluene	<1.00		1.00		ug/L			09/30/23 00:21	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/30/23 00:21	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/30/23 00:21	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/30/23 00:21	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/30/23 00:21	1
Trichloroethene	<1.00		1.00		ug/L			09/30/23 00:21	1
Vinyl chloride	<1.00		1.00		ug/L			09/30/23 00:21	1
Xylenes, Total	<3.00		3.00		ug/L			09/30/23 00:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		80 - 120		09/30/23 00:21	1
Dibromofluoromethane (Surr)	103		80 - 128		09/30/23 00:21	1
Toluene-d8 (Surr)	95		80 - 120		09/30/23 00:21	1

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Client Sample ID: MW19-GW-0923

Lab Sample ID: 310-265770-4

Date Collected: 09/27/23 15:05

Matrix: Water

Date Received: 09/27/23 16:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/30/23 00:43	1
Benzene	<0.500		0.500		ug/L			09/30/23 00:43	1
Bromodichloromethane	<1.00		1.00		ug/L			09/30/23 00:43	1
Bromoform	<5.00		5.00		ug/L			09/30/23 00:43	1
Bromomethane	<4.00		4.00		ug/L			09/30/23 00:43	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/30/23 00:43	1
Carbon disulfide	<1.00		1.00		ug/L			09/30/23 00:43	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/30/23 00:43	1
Chlorobenzene	<1.00		1.00		ug/L			09/30/23 00:43	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/30/23 00:43	1
Chloroethane	<4.00		4.00		ug/L			09/30/23 00:43	1
Chloroform	<3.00		3.00		ug/L			09/30/23 00:43	1
Chloromethane	<3.00		3.00		ug/L			09/30/23 00:43	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/30/23 00:43	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/30/23 00:43	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/30/23 00:43	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/30/23 00:43	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/30/23 00:43	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/30/23 00:43	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/30/23 00:43	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/30/23 00:43	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/30/23 00:43	1
Ethylbenzene	<1.00		1.00		ug/L			09/30/23 00:43	1
2-Hexanone	<10.0		10.0		ug/L			09/30/23 00:43	1
Methylene Chloride	<5.00		5.00		ug/L			09/30/23 00:43	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/30/23 00:43	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/30/23 00:43	1
Naphthalene	<5.00		5.00		ug/L			09/30/23 00:43	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/30/23 00:43	1
Tetrachloroethene	<1.00		1.00		ug/L			09/30/23 00:43	1
Toluene	<1.00		1.00		ug/L			09/30/23 00:43	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/30/23 00:43	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/30/23 00:43	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/30/23 00:43	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/30/23 00:43	1
Trichloroethene	<1.00		1.00		ug/L			09/30/23 00:43	1
Vinyl chloride	<1.00		1.00		ug/L			09/30/23 00:43	1
Xylenes, Total	<3.00		3.00		ug/L			09/30/23 00:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		80 - 120		09/30/23 00:43	1
Dibromofluoromethane (Surr)	106		80 - 128		09/30/23 00:43	1
Toluene-d8 (Surr)	94		80 - 120		09/30/23 00:43	1

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	TOL
		(80-120)	(80-128)	(80-120)
310-265770-1	TB01-GW-0923	105	102	96
310-265770-2	Dup01-GW-0923	106	102	96
310-265770-3	MW18-GW-0923	105	103	95
310-265770-4	MW19-GW-0923	103	106	94
LCS 310-400994/6	Lab Control Sample	101	99	101
LCS 310-400994/7	Lab Control Sample	105	102	97
MB 310-400994/5	Method Blank	105	98	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-400994/5

Matrix: Water

Analysis Batch: 400994

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			09/29/23 19:38	1
Benzene	<0.500		0.500		ug/L			09/29/23 19:38	1
Bromodichloromethane	<1.00		1.00		ug/L			09/29/23 19:38	1
Bromoform	<5.00		5.00		ug/L			09/29/23 19:38	1
Bromomethane	<4.00		4.00		ug/L			09/29/23 19:38	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/29/23 19:38	1
Carbon disulfide	<1.00		1.00		ug/L			09/29/23 19:38	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/29/23 19:38	1
Chlorobenzene	<1.00		1.00		ug/L			09/29/23 19:38	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/29/23 19:38	1
Chloroethane	<4.00		4.00		ug/L			09/29/23 19:38	1
Chloroform	<3.00		3.00		ug/L			09/29/23 19:38	1
Chloromethane	<3.00		3.00		ug/L			09/29/23 19:38	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/29/23 19:38	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/29/23 19:38	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 19:38	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 19:38	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/29/23 19:38	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/29/23 19:38	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/29/23 19:38	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/29/23 19:38	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/29/23 19:38	1
Ethylbenzene	<1.00		1.00		ug/L			09/29/23 19:38	1
2-Hexanone	<10.0		10.0		ug/L			09/29/23 19:38	1
Methylene Chloride	<5.00		5.00		ug/L			09/29/23 19:38	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/29/23 19:38	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/29/23 19:38	1
Naphthalene	<5.00		5.00		ug/L			09/29/23 19:38	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/29/23 19:38	1
Tetrachloroethene	<1.00		1.00		ug/L			09/29/23 19:38	1
Toluene	<1.00		1.00		ug/L			09/29/23 19:38	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/29/23 19:38	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/29/23 19:38	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/29/23 19:38	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/29/23 19:38	1
Trichloroethene	<1.00		1.00		ug/L			09/29/23 19:38	1
Vinyl chloride	<1.00		1.00		ug/L			09/29/23 19:38	1
Xylenes, Total	<3.00		3.00		ug/L			09/29/23 19:38	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	105		80 - 120		09/29/23 19:38	1
Dibromofluoromethane (Surr)	98		80 - 128		09/29/23 19:38	1
Toluene-d8 (Surr)	96		80 - 120		09/29/23 19:38	1

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-400994/6

Matrix: Water

Analysis Batch: 400994

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	38.66		ug/L		97	50 - 150
Benzene	20.0	18.75		ug/L		94	73 - 122
Bromodichloromethane	20.0	18.71		ug/L		94	72 - 121
Bromoform	20.0	17.88		ug/L		89	55 - 129
2-Butanone (MEK)	40.0	34.89		ug/L		87	50 - 150
Carbon disulfide	20.0	20.92		ug/L		105	58 - 131
Carbon tetrachloride	20.0	20.47		ug/L		102	67 - 132
Chlorobenzene	20.0	18.88		ug/L		94	69 - 121
Chlorodibromomethane	20.0	18.45		ug/L		92	69 - 122
Chloroform	20.0	19.69		ug/L		98	72 - 120
cis-1,2-Dichloroethene	20.0	19.15		ug/L		96	74 - 120
cis-1,3-Dichloropropene	20.0	18.91		ug/L		95	71 - 126
1,2-Dichlorobenzene	20.0	19.14		ug/L		96	68 - 120
1,3-Dichlorobenzene	20.0	19.41		ug/L		97	67 - 123
1,4-Dichlorobenzene	20.0	19.00		ug/L		95	67 - 120
1,1-Dichloroethane	20.0	20.69		ug/L		103	71 - 123
1,2-Dichloroethane	20.0	20.35		ug/L		102	70 - 124
1,1-Dichloroethene	20.0	19.33		ug/L		97	61 - 129
1,2-Dichloropropane	20.0	19.57		ug/L		98	73 - 121
Ethylbenzene	20.0	19.29		ug/L		96	69 - 122
2-Hexanone	40.0	37.95		ug/L		95	60 - 132
Methylene Chloride	20.0	20.81		ug/L		104	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	37.37		ug/L		93	62 - 130
Methyl tert-butyl ether	20.0	18.63		ug/L		93	68 - 127
Naphthalene	20.0	18.74		ug/L		94	50 - 150
1,1,1,2-Tetrachloroethane	20.0	18.36		ug/L		92	64 - 124
Tetrachloroethene	20.0	19.31		ug/L		97	69 - 131
Toluene	20.0	18.63		ug/L		93	72 - 121
trans-1,2-Dichloroethene	20.0	18.88		ug/L		94	68 - 125
trans-1,3-Dichloropropene	20.0	18.35		ug/L		92	68 - 124
1,1,1-Trichloroethane	20.0	19.73		ug/L		99	71 - 128
1,1,2-Trichloroethane	20.0	19.05		ug/L		95	70 - 124
Trichloroethene	20.0	19.18		ug/L		96	73 - 126
Xylenes, Total	40.0	38.25		ug/L		96	68 - 124

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	99		80 - 128
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCS 310-400994/7

Matrix: Water

Analysis Batch: 400994

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	17.27		ug/L		86	24 - 150
Chloroethane	20.0	18.46		ug/L		92	51 - 137
Chloromethane	20.0	19.54		ug/L		98	37 - 150

Eurofins Cedar Falls

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-400994/7

Matrix: Water

Analysis Batch: 400994

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	20.0	19.07		ug/L		95	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	102		80 - 128
Toluene-d8 (Surr)	97		80 - 120

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QC Association Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

GC/MS VOA

Analysis Batch: 400994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-265770-1	TB01-GW-0923	Total/NA	Water	8260D	
310-265770-2	Dup01-GW-0923	Total/NA	Water	8260D	
310-265770-3	MW18-GW-0923	Total/NA	Water	8260D	
310-265770-4	MW19-GW-0923	Total/NA	Water	8260D	
MB 310-400994/5	Method Blank	Total/NA	Water	8260D	
LCS 310-400994/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-400994/7	Lab Control Sample	Total/NA	Water	8260D	

- 1
- 2
- 3
- 4
- 5
- 6
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- 10
- 11
- 12
- 13
- 14
- 15

Lab Chronicle

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Client Sample ID: TB01-GW-0923

Lab Sample ID: 310-265770-1

Date Collected: 09/27/23 06:30

Matrix: Water

Date Received: 09/27/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	400994	WSE8	EET CF	09/29/23 20:43

Client Sample ID: Dup01-GW-0923

Lab Sample ID: 310-265770-2

Date Collected: 09/27/23 13:00

Matrix: Water

Date Received: 09/27/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	400994	WSE8	EET CF	09/29/23 23:59

Client Sample ID: MW18-GW-0923

Lab Sample ID: 310-265770-3

Date Collected: 09/27/23 14:25

Matrix: Water

Date Received: 09/27/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	400994	WSE8	EET CF	09/30/23 00:21

Client Sample ID: MW19-GW-0923

Lab Sample ID: 310-265770-4

Date Collected: 09/27/23 15:05

Matrix: Water

Date Received: 09/27/23 16:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	400994	WSE8	EET CF	09/30/23 00:43

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins - 35th St.

Job ID: 310-265770-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401





Environment Testing
America



310-265770 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Stantec</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>9/27/23</u>	<u>1620</u>	<u>SL</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:
Multiple Coolers?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?		<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
<u>All</u>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID:		<u>B</u>	Correction Factor (°C): <u>0</u>
* Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		<u>6.6</u>	Corrected Temp (°C): <u>6.6</u>
Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
	<u>HCl vial</u>		
Uncorrected Temp (°C):	<u>15.3</u>	<u>18.9</u>	
Corrected Temp (°C):	<u>15.3</u>	<u>18.9</u>	
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling?		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
a) If yes: Is there evidence that the chilling process began?		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?)		<input type="checkbox"/> Yes	<input type="checkbox"/> No
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 310-265770-1

Login Number: 265770

List Number: 1

Creator: Lage, Sydney

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ATTACHMENT F



Drilling Log

Soil Boring/Temporary Well **TW-29**

Project Rockwell Collins - 35th Street Main Plant Owner Rockwell Collins
 Location 35th Street & Eastern Avenue, Cedar Rapids, IA Project Number 193709720
 Surface Elev. 776.20 ft North NA East NA
 Top of Casing 776.08 ft Water Level Initial ▼ Static ▼ 766.02 09/05/23 12:24
 Hole Depth 15.0ft Screen: Diameter 1 in Length 10.0 ft Type/Size PVC/0.01 in
 Hole Diameter 3/2.875 Casing: Diameter 1 in Length 5.0 ft Type Schedule 40 PVC
 Drill Co. Below Ground Surface Inc. Drilling Method Hand Auger/Geoprobe Sand Pack 20-40
 Driller Doug Freund Driller Reg. # 6494 Log By E. Brady
 Start Date 9/1/2023 Completion Date 9/1/2023 Checked By Steve varsa

COMMENTS
 The soil boring was hand-augered to 5 feet below ground surface (bgs), and direct-push sampled the remaining depth.

Bentonite Grout
 Bentonite Granuals
 Grout
 Portland Cement
 Sand Pack
 Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Elevation (ft)
0						Concrete No Recovery.	776.20
2							776
4						Clayey soil, light to dark brown.	774
6					CL	Clay, dark brown, hard.	772
8					CL	Clay, olive to grey, medium stiff.	770
10					CL	Clay, dark brown, medium stiff.	768
10					SC	Sand, fine to medium grained, moist to saturated.	766
10					SC	Sand, well sorted, saturated.	766
12					CL	Sandy clay, moist.	764
12					CL	Clay, soft, moist to saturated.	764
14					CL	Clay, dark brown, very soft, moist.	762

Drilling Log: 35TH_STREET_LOGS_MERGE.GPJ MWH IA.GDT 1/8/24



Drilling Log

Monitoring Well **MW-18**

Page: 1 of 2

Project Rockwell Collins - 35th Street Main Plant Owner Rockwell Collins
 Location 35th Street & Eastern Avenue, Cedar Rapids, IA Project Number 193709720
 Surface Elev. 774.73 ft North NA East NA
 Top of Casing 774.34 ft Water Level Initial 766.9 09/19/23 15:35 Static 766.63 09/27/23 10:20
 Hole Depth 15.0ft Screen: Diameter 2 in Length 10.0 ft Type/Size PVC/0.01 in
 Hole Diameter 8.0 in Casing: Diameter 2 in Length 3.7 ft Type Schedule 40 PVC
 Drill Co. Below Ground Surface Inc. Drilling Method Hand Auger/Direct Push Sand Pack 12-20
 Driller Mike Ocsody Driller Reg. # 6494 Log By E. Brady
 Start Date 9/19/2023 Completion Date 9/19/2023 Checked By Steve varsa

COMMENTS
 The soil boring was vacuum-excavated to 8 feet below ground surface, with intermittent sampling completed using a hand auger.

Bentonite Grout
 Bentonite Granulals
 Grout
 Portland Cement
 Sand Pack
 Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion	Elevation (ft)
0						Grass No Recovery		774.73
2	0.5	MW18-S2-0923				Clay with slight gravel, medium stiffness, moist, black to dark grey color, no odor. Sample MW18-S2-0923 taken at 2'.		772
4	0.3				CL	Clay with slight gravel, soft, moist, medium grey to charcoal color, no odor.		770
6	0.1				SP	Sand, very fine grained with some clay, well sorted, loose, slightly moist, light grey, no odor.		768
8	0.1	MW18-S7-0923			SW	Sand, fine to coarse grained, poorly sorted, loose, wet, dark grey(10YR 4/1), no odor. Sample MW18-S7-0923 taken at 7'.		766
10	0.1				CL SC	Clay with fine to coarse grained sand, pebbles throughout, saturated, no odor.		764
12	0.1				CL SC	Clayey sand with fine gravel, very soft, saturated, no odor.		762
14	0.1				SW GW	Sand and gravel up to 2.5", poorly sorted, dense, saturated, no odor.		762
14	0.1				CL	Silty clay with some fine gravel and sand, stiff, moist, mottled at 14', no odor.		760
16						EOB = 15'		

Drilling Log: 35TH_STREET_LOCS_MERGE.GPJ MWH IA.GDT 11/1/23



Drilling Log

Monitoring Well **MW-19**

Page: 1 of 2

Project Rockwell Collins - 35th Street Main Plant Owner Rockwell Collins
 Location 35th Street & Eastern Avenue, Cedar Rapids, IA Project Number 193709720
 Surface Elev. 774.17 ft North NA East NA
 Top of Casing 773.83 ft Water Level Initial 765.67 09/20/23 12:20 Static 766.73 09/27/23 10:32
 Hole Depth 15.0ft Screen: Diameter 2 in Length 10.0 ft Type/Size PVC/0.01 in
 Hole Diameter 8.0 in Casing: Diameter 2 in Length 3.7 ft Type Schedule 40 PVC
 Drill Co. Below Ground Surface Inc. Drilling Method Hand Auger/Direct Push Sand Pack 12-20
 Driller Mike Ocsody Driller Reg. # 6494 Log By E. Brady
 Start Date 9/19/2023 Completion Date 9/19/2023 Checked By Steve varsa

COMMENTS
 The soil boring was vacuum-excavated to 8 feet below ground surface, with intermittent sampling completed using a hand auger.

Bentonite Grout
 Bentonite Granuals
 Grout
 Portland Cement
 Sand Pack
 Sand Pack

Depth (ft)	PID (ppm)	% Recovery	Blow Count Recovery	Graphic Log	USCS	Description (Color, Moisture, Texture, Structure, Odor) Geologic Descriptions are Based on the USCS.	Well Completion	Elevation (ft)
0						Grass No Recovery.		774.17 774
2	0.0					Clay, slightly sandy, black (5YR 2.5/1), very stiff, dry, rootlets, no odor.		772
4	0.0				CL SC	Clay, slightly sandy, dark greyish brown (10YR 4/2), medium stiff to stiff, dry to moist, low plasticity, orange mottling.		770
6					CL SC			768
8	0.0				SC	Sand, very few fine grains and clay, well sorted, yellowish brown (10YR 5/6), saturated, no odor.		766
10						Sandy clay, very fine grained, "sugar sand", strong brown (7.5yr 5/8), wet. Sandy clay with some silt, light grey (7.5YR 7/2), slightly moist. Sand with increasing silt to sandy siltstone, light grey (7.5YR 7/2), dense,		764
12					SC	Sand with increasing clay, weathered fragments, light grey (7.5YR 7/2), very stiff, orange mottling.		762
14					CL SC	Sand with clay, weathered fragments, light yellowish brown (2.5Y 6/3), very stiff, orange mottling.		760
16					CL SC	Sand with clay, weathered fragments, grey (2.5Y 6/1), very stiff to hard, orange mottling, effervesced in HCL. EOB = 15'		

Drilling Log 35TH_STREET_LOCS_MERGE.GPJ MWH IA.GDT 11/1/23

ATTACHMENT G



ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 9/19/2023 9:17:54 AM

JOB DESCRIPTION

35th St Groundwater Sampling

JOB NUMBER

310-264013-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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Authorized for release by
Zach Bindert, Client Service Manager
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Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	5
Detection Summary	6
Client Sample Results	7
Definitions	9
Surrogate Summary	10
QC Sample Results	11
QC Association	15
Chronicle	16
Certification Summary	17
Method Summary	18
Chain of Custody	19
Receipt Checklists	21

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Job ID: 310-264013-1

Laboratory: Eurofins Cedar Falls

Narrative

**Job Narrative
310-264013-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 9/5/2023 4:38 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-399402 recovered above the upper control limit for Chloroethane(38.8%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-399402/4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-264013-1	TW29-S-0923 at 3'-4'	Solid	09/01/23 10:16	09/05/23 16:38
310-264013-2	TW29-S-0923 at 9'-10'	Solid	09/01/23 10:16	09/05/23 16:38

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Client Sample ID: TW29-S-0923 at 3'-4'

Lab Sample ID: 310-264013-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.58		0.984		mg/Kg	5	✳	6020B	Total/NA

Client Sample ID: TW29-S-0923 at 9'-10'

Lab Sample ID: 310-264013-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.25		1.01		mg/Kg	5	✳	6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Client Sample ID: TW29-S-0923 at 3'-4'

Lab Sample ID: 310-264013-1

Date Collected: 09/01/23 10:16

Matrix: Solid

Date Received: 09/05/23 16:38

Percent Solids: 90.6

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.129	F1 F2	0.129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Benzene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Bromodichloromethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Bromoform	<0.0259		0.0259		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Bromomethane	<0.0517		0.0517		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
2-Butanone (MEK)	<0.0517	F2	0.0517		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Carbon disulfide	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Carbon tetrachloride	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Chlorobenzene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Chlorodibromomethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Chloroethane	<0.0517		0.0517		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Chloroform	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Chloromethane	<0.0517		0.0517		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
cis-1,2-Dichloroethene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
cis-1,3-Dichloropropene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,2-Dichlorobenzene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,3-Dichlorobenzene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,4-Dichlorobenzene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,1-Dichloroethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,2-Dichloroethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,1-Dichloroethene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,2-Dichloropropane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Ethylbenzene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
2-Hexanone	<0.0517		0.0517		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Methylene Chloride	<0.129		0.129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Methyl isobutyl ketone (MIBK)	<0.0517		0.0517		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Methyl tert-butyl ether	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Naphthalene	<0.0647		0.0647		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,1,2,2-Tetrachloroethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Tetrachloroethene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Toluene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
trans-1,2-Dichloroethene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
trans-1,3-Dichloropropene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,1,1-Trichloroethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
1,1,2-Trichloroethane	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Trichloroethene	<0.0129		0.0129		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Vinyl chloride	<0.0259		0.0259		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1
Xylenes, Total	<0.0259		0.0259		mg/Kg	✱	09/13/23 08:56	09/13/23 12:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		78 - 120	09/13/23 08:56	09/13/23 12:14	1
Dibromofluoromethane (Surr)	101		80 - 131	09/13/23 08:56	09/13/23 12:14	1
Toluene-d8 (Surr)	97		80 - 120	09/13/23 08:56	09/13/23 12:14	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.58		0.984		mg/Kg	✱	09/08/23 12:37	09/15/23 00:19	5

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Client Sample ID: TW29-S-0923 at 9'-10'

Lab Sample ID: 310-264013-2

Date Collected: 09/01/23 10:16

Matrix: Solid

Date Received: 09/05/23 16:38

Percent Solids: 82.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.128		0.128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Benzene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Bromodichloromethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Bromoform	<0.0257		0.0257		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Bromomethane	<0.0513		0.0513		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
2-Butanone (MEK)	<0.0513		0.0513		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Carbon disulfide	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Carbon tetrachloride	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Chlorobenzene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Chlorodibromomethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Chloroethane	<0.0513		0.0513		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Chloroform	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Chloromethane	<0.0513		0.0513		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
cis-1,2-Dichloroethene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
cis-1,3-Dichloropropene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,2-Dichlorobenzene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,3-Dichlorobenzene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,4-Dichlorobenzene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,1-Dichloroethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,2-Dichloroethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,1-Dichloroethene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,2-Dichloropropane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Ethylbenzene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
2-Hexanone	<0.0513		0.0513		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Methylene Chloride	<0.128		0.128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Methyl isobutyl ketone (MIBK)	<0.0513		0.0513		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Methyl tert-butyl ether	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Naphthalene	<0.0641		0.0641		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,1,2,2-Tetrachloroethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Tetrachloroethene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Toluene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
trans-1,2-Dichloroethene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
trans-1,3-Dichloropropene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,1,1-Trichloroethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
1,1,2-Trichloroethane	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Trichloroethene	<0.0128		0.0128		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Vinyl chloride	<0.0257		0.0257		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1
Xylenes, Total	<0.0257		0.0257		mg/Kg	✱	09/13/23 08:56	09/13/23 12:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		78 - 120	09/13/23 08:56	09/13/23 12:38	1
Dibromofluoromethane (Surr)	99		80 - 131	09/13/23 08:56	09/13/23 12:38	1
Toluene-d8 (Surr)	100		80 - 120	09/13/23 08:56	09/13/23 12:38	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.25		1.01		mg/Kg	✱	09/08/23 12:37	09/15/23 00:21	5

Eurofins Cedar Falls

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BFB (78-120)	DBFM (80-131)	TOL (80-120)
310-264013-1	TW29-S-0923 at 3'-4'	96	101	97
310-264013-1 MS	TW29-S-0923 at 3'-4'	92	101	99
310-264013-1 MSD	TW29-S-0923 at 3'-4'	98	99	102
310-264013-2	TW29-S-0923 at 9'-10'	100	99	100
LCS 310-399401/2-A	Lab Control Sample	99	106	99
MB 310-399401/1-A	Method Blank	94	99	92

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-399401/1-A
Matrix: Solid
Analysis Batch: 399402

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 399401

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<0.0982		0.0982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Benzene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Bromodichloromethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Bromoform	<0.0196		0.0196		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Bromomethane	<0.0393		0.0393		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
2-Butanone (MEK)	<0.0393		0.0393		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Carbon disulfide	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Carbon tetrachloride	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Chlorobenzene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Chlorodibromomethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Chloroethane	<0.0393		0.0393		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Chloroform	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Chloromethane	<0.0393		0.0393		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
cis-1,2-Dichloroethene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
cis-1,3-Dichloropropene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,2-Dichlorobenzene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,3-Dichlorobenzene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,4-Dichlorobenzene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,1-Dichloroethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,2-Dichloroethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,1-Dichloroethene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,2-Dichloropropane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Ethylbenzene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
2-Hexanone	<0.0393		0.0393		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Methylene Chloride	<0.0982		0.0982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Methyl isobutyl ketone (MIBK)	<0.0393		0.0393		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Methyl tert-butyl ether	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Naphthalene	<0.0491		0.0491		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,1,2,2-Tetrachloroethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Tetrachloroethene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Toluene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
trans-1,2-Dichloroethene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
trans-1,3-Dichloropropene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,1,1-Trichloroethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
1,1,2-Trichloroethane	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Trichloroethene	<0.00982		0.00982		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Vinyl chloride	<0.0196		0.0196		mg/Kg		09/13/23 08:56	09/13/23 11:01	1
Xylenes, Total	<0.0196		0.0196		mg/Kg		09/13/23 08:56	09/13/23 11:01	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	94		78 - 120	09/13/23 08:56	09/13/23 11:01	1
Dibromofluoromethane (Surr)	99		80 - 131	09/13/23 08:56	09/13/23 11:01	1
Toluene-d8 (Surr)	92		80 - 120	09/13/23 08:56	09/13/23 11:01	1

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-399401/2-A

Matrix: Solid

Analysis Batch: 399402

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 399401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	0.183	0.2278		mg/Kg		124	50 - 150
Benzene	0.0917	0.1036		mg/Kg		113	75 - 134
Bromodichloromethane	0.0917	0.09300		mg/Kg		101	73 - 125
Bromoform	0.0917	0.09352		mg/Kg		102	76 - 130
2-Butanone (MEK)	0.183	0.1894		mg/Kg		103	50 - 150
Carbon disulfide	0.0917	0.1063		mg/Kg		116	40 - 150
Carbon tetrachloride	0.0917	0.1055		mg/Kg		115	74 - 131
Chlorobenzene	0.0917	0.09423		mg/Kg		103	72 - 120
Chlorodibromomethane	0.0917	0.09332		mg/Kg		102	76 - 128
Chloroform	0.0917	0.09478		mg/Kg		103	70 - 131
cis-1,2-Dichloroethene	0.0917	0.1018		mg/Kg		111	76 - 133
cis-1,3-Dichloropropene	0.0917	0.09922		mg/Kg		108	78 - 132
1,2-Dichlorobenzene	0.0917	0.09378		mg/Kg		102	72 - 122
1,3-Dichlorobenzene	0.0917	0.09404		mg/Kg		103	70 - 121
1,4-Dichlorobenzene	0.0917	0.09448		mg/Kg		103	68 - 121
1,1-Dichloroethane	0.0917	0.09807		mg/Kg		107	73 - 138
1,2-Dichloroethane	0.0917	0.09611		mg/Kg		105	72 - 136
1,1-Dichloroethene	0.0917	0.1111		mg/Kg		121	57 - 150
1,2-Dichloropropane	0.0917	0.1026		mg/Kg		112	73 - 139
Ethylbenzene	0.0917	0.1014		mg/Kg		111	75 - 122
2-Hexanone	0.183	0.1830		mg/Kg		100	67 - 150
Methylene Chloride	0.0917	0.1059	J	mg/Kg		115	50 - 150
Methyl isobutyl ketone (MIBK)	0.183	0.1837		mg/Kg		100	69 - 145
Methyl tert-butyl ether	0.0917	0.1013		mg/Kg		111	72 - 140
Naphthalene	0.0917	0.09765		mg/Kg		107	50 - 150
1,1,1,2-Tetrachloroethane	0.0917	0.08679		mg/Kg		95	76 - 136
Tetrachloroethene	0.0917	0.09342		mg/Kg		102	70 - 120
Toluene	0.0917	0.09772		mg/Kg		107	76 - 120
trans-1,2-Dichloroethene	0.0917	0.1040		mg/Kg		113	69 - 139
trans-1,3-Dichloropropene	0.0917	0.09866		mg/Kg		108	75 - 134
1,1,1-Trichloroethane	0.0917	0.1073		mg/Kg		117	76 - 131
1,1,2-Trichloroethane	0.0917	0.09234		mg/Kg		101	74 - 134
Trichloroethene	0.0917	0.1006		mg/Kg		110	72 - 130
Xylenes, Total	0.183	0.1983		mg/Kg		108	69 - 126

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		78 - 120
Dibromofluoromethane (Surr)	106		80 - 131
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: 310-264013-1 MS

Matrix: Solid

Analysis Batch: 399402

Client Sample ID: TW29-S-0923 at 3'-4'

Prep Type: Total/NA

Prep Batch: 399401

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	<0.129	F1 F2	0.195	0.5788	F1	mg/Kg	☼	260	17 - 150
Benzene	<0.0129		0.0973	0.08881		mg/Kg	☼	91	42 - 141
Bromodichloromethane	<0.0129		0.0973	0.07772		mg/Kg	☼	80	34 - 139

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QC Sample Results

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-264013-1 MS

Matrix: Solid

Analysis Batch: 399402

Client Sample ID: TW29-S-0923 at 3'-4'

Prep Type: Total/NA

Prep Batch: 399401

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier					
Bromoform	<0.0259		0.0973	0.05875		mg/Kg	☼	60	12 - 146	
2-Butanone (MEK)	<0.0517	F2	0.195	0.1960		mg/Kg	☼	96	20 - 150	
Carbon disulfide	<0.0129		0.0973	0.09760		mg/Kg	☼	100	10 - 150	
Carbon tetrachloride	<0.0129		0.0973	0.07559		mg/Kg	☼	78	37 - 136	
Chlorobenzene	<0.0129		0.0973	0.06061		mg/Kg	☼	62	15 - 133	
Chlorodibromomethane	<0.0129		0.0973	0.06700		mg/Kg	☼	69	21 - 146	
Chloroform	<0.0129		0.0973	0.08913		mg/Kg	☼	92	41 - 137	
cis-1,2-Dichloroethene	<0.0129		0.0973	0.09811		mg/Kg	☼	101	40 - 144	
cis-1,3-Dichloropropene	<0.0129		0.0973	0.08261		mg/Kg	☼	85	19 - 150	
1,2-Dichlorobenzene	<0.0129		0.0973	0.04642		mg/Kg	☼	48	10 - 133	
1,3-Dichlorobenzene	<0.0129		0.0973	0.04770		mg/Kg	☼	49	10 - 130	
1,4-Dichlorobenzene	<0.0129		0.0973	0.04470		mg/Kg	☼	46	10 - 130	
1,1-Dichloroethane	<0.0129		0.0973	0.1021		mg/Kg	☼	105	48 - 147	
1,2-Dichloroethane	<0.0129		0.0973	0.09396		mg/Kg	☼	97	42 - 144	
1,1-Dichloroethene	<0.0129		0.0973	0.1087		mg/Kg	☼	112	35 - 150	
1,2-Dichloropropane	<0.0129		0.0973	0.08629		mg/Kg	☼	89	44 - 146	
Ethylbenzene	<0.0129		0.0973	0.07088		mg/Kg	☼	73	15 - 137	
2-Hexanone	<0.0517		0.195	0.1627		mg/Kg	☼	84	10 - 150	
Methylene Chloride	<0.129		0.0973	<0.122		mg/Kg	☼	117	10 - 150	
Methyl isobutyl ketone (MIBK)	<0.0517		0.195	0.1820		mg/Kg	☼	94	26 - 150	
Methyl tert-butyl ether	<0.0129		0.0973	0.1113		mg/Kg	☼	114	54 - 146	
Naphthalene	<0.0647		0.0973	<0.0608		mg/Kg	☼	50	10 - 150	
1,1,2,2-Tetrachloroethane	<0.0129		0.0973	0.06275		mg/Kg	☼	65	17 - 150	
Tetrachloroethene	<0.0129		0.0973	0.05574		mg/Kg	☼	54	22 - 130	
Toluene	<0.0129		0.0973	0.07159		mg/Kg	☼	74	27 - 132	
trans-1,2-Dichloroethene	<0.0129		0.0973	0.09897		mg/Kg	☼	102	37 - 144	
trans-1,3-Dichloropropene	<0.0129		0.0973	0.07611		mg/Kg	☼	78	19 - 148	
1,1,1-Trichloroethane	<0.0129		0.0973	0.08805		mg/Kg	☼	91	48 - 136	
1,1,2-Trichloroethane	<0.0129		0.0973	0.07796		mg/Kg	☼	80	35 - 147	
Trichloroethene	<0.0129		0.0973	0.07277		mg/Kg	☼	75	29 - 142	
Xylenes, Total	<0.0259		0.195	0.1244		mg/Kg	☼	64	14 - 138	

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	92		78 - 120
Dibromofluoromethane (Surr)	101		80 - 131
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: 310-264013-1 MSD

Matrix: Solid

Analysis Batch: 399402

Client Sample ID: TW29-S-0923 at 3'-4'

Prep Type: Total/NA

Prep Batch: 399401

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	Limits	RPD	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier								
Acetone	<0.129	F1 F2	0.176	0.2916	F2	mg/Kg	☼	124	17 - 150	66	40		
Benzene	<0.0129		0.0878	0.08629		mg/Kg	☼	98	42 - 141	3	31		
Bromodichloromethane	<0.0129		0.0878	0.08002		mg/Kg	☼	91	34 - 139	3	36		
Bromoform	<0.0259		0.0878	0.05704		mg/Kg	☼	65	12 - 146	3	40		
2-Butanone (MEK)	<0.0517	F2	0.176	0.1137	F2	mg/Kg	☼	59	20 - 150	53	40		
Carbon disulfide	<0.0129		0.0878	0.08825		mg/Kg	☼	100	10 - 150	10	40		

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-264013-1 MSD

Matrix: Solid

Analysis Batch: 399402

Client Sample ID: TW29-S-0923 at 3'-4'

Prep Type: Total/NA

Prep Batch: 399401

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
Carbon tetrachloride	<0.0129		0.0878	0.08125		mg/Kg	*	93	37 - 136	7	33
Chlorobenzene	<0.0129		0.0878	0.07127		mg/Kg	*	81	15 - 133	16	35
Chlorodibromomethane	<0.0129		0.0878	0.06987		mg/Kg	*	80	21 - 146	4	37
Chloroform	<0.0129		0.0878	0.08473		mg/Kg	*	96	41 - 137	5	30
cis-1,2-Dichloroethene	<0.0129		0.0878	0.09141		mg/Kg	*	104	40 - 144	7	30
cis-1,3-Dichloropropene	<0.0129		0.0878	0.08455		mg/Kg	*	96	19 - 150	2	35
1,2-Dichlorobenzene	<0.0129		0.0878	0.05666		mg/Kg	*	65	10 - 133	20	40
1,3-Dichlorobenzene	<0.0129		0.0878	0.05829		mg/Kg	*	66	10 - 130	20	40
1,4-Dichlorobenzene	<0.0129		0.0878	0.05660		mg/Kg	*	64	10 - 130	23	40
1,1-Dichloroethane	<0.0129		0.0878	0.09320		mg/Kg	*	106	48 - 147	9	30
1,2-Dichloroethane	<0.0129		0.0878	0.07861		mg/Kg	*	90	42 - 144	18	29
1,1-Dichloroethene	<0.0129		0.0878	0.09719		mg/Kg	*	111	35 - 150	11	35
1,2-Dichloropropane	<0.0129		0.0878	0.08406		mg/Kg	*	96	44 - 146	3	30
Ethylbenzene	<0.0129		0.0878	0.07511		mg/Kg	*	86	15 - 137	6	40
2-Hexanone	<0.0517		0.176	0.1082		mg/Kg	*	62	10 - 150	40	40
Methylene Chloride	<0.129		0.0878	0.1117		mg/Kg	*	127	10 - 150	2	35
Methyl isobutyl ketone (MIBK)	<0.0517		0.176	0.1214		mg/Kg	*	69	26 - 150	40	40
Methyl tert-butyl ether	<0.0129		0.0878	0.08338		mg/Kg	*	95	54 - 146	29	31
Naphthalene	<0.0647		0.0878	<0.0549		mg/Kg	*	57	10 - 150	3	40
1,1,2,2-Tetrachloroethane	<0.0129		0.0878	0.05200		mg/Kg	*	59	17 - 150	19	40
Tetrachloroethene	<0.0129		0.0878	0.06210		mg/Kg	*	67	22 - 130	11	33
Toluene	<0.0129		0.0878	0.07941		mg/Kg	*	90	27 - 132	10	32
trans-1,2-Dichloroethene	<0.0129		0.0878	0.09112		mg/Kg	*	104	37 - 144	8	33
trans-1,3-Dichloropropene	<0.0129		0.0878	0.07595		mg/Kg	*	86	19 - 148	0	37
1,1,1-Trichloroethane	<0.0129		0.0878	0.08763		mg/Kg	*	100	48 - 136	0	32
1,1,2-Trichloroethane	<0.0129		0.0878	0.07191		mg/Kg	*	82	35 - 147	8	32
Trichloroethene	<0.0129		0.0878	0.07536		mg/Kg	*	86	29 - 142	3	35
Xylenes, Total	<0.0259		0.176	0.1423		mg/Kg	*	81	14 - 138	13	40

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		78 - 120
Dibromofluoromethane (Surr)	99		80 - 131
Toluene-d8 (Surr)	102		80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-398768/1-A ^5

Matrix: Solid

Analysis Batch: 399677

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 398768

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	<0.991		0.991		mg/Kg		09/08/23 12:37	09/14/23 18:25	5

Lab Sample ID: LCS 310-398768/2-A ^20

Matrix: Solid

Analysis Batch: 399677

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 398768

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec
		Result	Qualifier				Limits
Arsenic	199	161.9		mg/Kg		82	80 - 120

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QC Association Summary

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

GC/MS VOA

Prep Batch: 399401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-264013-1	TW29-S-0923 at 3'-4'	Total/NA	Solid	5035	
310-264013-2	TW29-S-0923 at 9'-10'	Total/NA	Solid	5035	
MB 310-399401/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-399401/2-A	Lab Control Sample	Total/NA	Solid	5035	
310-264013-1 MS	TW29-S-0923 at 3'-4'	Total/NA	Solid	5035	
310-264013-1 MSD	TW29-S-0923 at 3'-4'	Total/NA	Solid	5035	

Analysis Batch: 399402

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-264013-1	TW29-S-0923 at 3'-4'	Total/NA	Solid	8260D	399401
310-264013-2	TW29-S-0923 at 9'-10'	Total/NA	Solid	8260D	399401
MB 310-399401/1-A	Method Blank	Total/NA	Solid	8260D	399401
LCS 310-399401/2-A	Lab Control Sample	Total/NA	Solid	8260D	399401
310-264013-1 MS	TW29-S-0923 at 3'-4'	Total/NA	Solid	8260D	399401
310-264013-1 MSD	TW29-S-0923 at 3'-4'	Total/NA	Solid	8260D	399401

Metals

Prep Batch: 398768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-264013-1	TW29-S-0923 at 3'-4'	Total/NA	Solid	3050B	
310-264013-2	TW29-S-0923 at 9'-10'	Total/NA	Solid	3050B	
MB 310-398768/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 310-398768/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 399677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-264013-1	TW29-S-0923 at 3'-4'	Total/NA	Solid	6020B	398768
310-264013-2	TW29-S-0923 at 9'-10'	Total/NA	Solid	6020B	398768
MB 310-398768/1-A ^5	Method Blank	Total/NA	Solid	6020B	398768
LCS 310-398768/2-A ^20	Lab Control Sample	Total/NA	Solid	6020B	398768

Lab Chronicle

Client: Stantec Consulting Services Inc
 Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Client Sample ID: TW29-S-0923 at 3'-4'

Lab Sample ID: 310-264013-1

Date Collected: 09/01/23 10:16

Matrix: Solid

Date Received: 09/05/23 16:38

Percent Solids: 90.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			399401	MZR8	EET CF	09/13/23 08:56
Total/NA	Analysis	8260D		1	399402	MZR8	EET CF	09/13/23 12:14
Total/NA	Prep	3050B			398768	DHM5	EET CF	09/08/23 12:37
Total/NA	Analysis	6020B		5	399677	DHM5	EET CF	09/15/23 00:19

Client Sample ID: TW29-S-0923 at 9'-10'

Lab Sample ID: 310-264013-2

Date Collected: 09/01/23 10:16

Matrix: Solid

Date Received: 09/05/23 16:38

Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			399401	MZR8	EET CF	09/13/23 08:56
Total/NA	Analysis	8260D		1	399402	MZR8	EET CF	09/13/23 12:38
Total/NA	Prep	3050B			398768	DHM5	EET CF	09/08/23 12:37
Total/NA	Analysis	6020B		5	399677	DHM5	EET CF	09/15/23 00:21

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

- 1
- 2
- 3
- 4
- 5
- 6
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- 8
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- 10
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- 13
- 14
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Method Summary

Client: Stantec Consulting Services Inc
Project/Site: 35th St Groundwater Sampling

Job ID: 310-264013-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
3050B	Preparation, Metals	SW846	EET CF
5035	Purge and Trap for Solids	SW846	EET CF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401





Environment Testing
America



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: stantec			
City/State:	CITY	STATE	Project:
		IA	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	9/15/23	1638	SC
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input checked="" type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Cooler ID:</i>			
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler # ____ of ____</i>			
Cooler Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No</i>			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No</i>			
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Which VOA samples are in cooler? ↓</i>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: 0		Correction Factor (°C): 0	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): 3.8		Corrected Temp (°C): 3.8	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) <i>If yes: Is there evidence that the chilling process began?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 310-264013-1

Login Number: 264013

List Number: 1

Creator: Lage, Sydney

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





ANALYTICAL REPORT

PREPARED FOR

Attn: Steve Varsa
Stantec Consulting Services Inc
11311 Aurora Avenue
Des Moines, Iowa 50322-7904

Generated 10/5/2023 8:15:59 AM

JOB DESCRIPTION

Rockwell Collins 35th St
SDG NUMBER 193709822

JOB NUMBER

310-265242-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



Generated
10/5/2023 8:15:59 AM

Authorized for release by
Zach Bindert, Client Service Manager
Zach.Bindert@et.eurofinsus.com
(319)277-2401



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	5
Detection Summary	6
Client Sample Results	7
Definitions	12
Surrogate Summary	13
QC Sample Results	14
QC Association	19
Chronicle	20
Certification Summary	21
Method Summary	22
Chain of Custody	23
Receipt Checklists	28

Case Narrative

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Job ID: 310-265242-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-265242-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 9/20/2023 5:20 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 6.4°C

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: MW18-S2-0923 (310-265242-1), MW18-S7-0923 (310-265242-2), MW19-S2-0923 (310-265242-3), MW19-S7-0923 (310-265242-4) and EB01-0923 (310-265242-5). This does not meet regulatory requirements. The client was contacted regarding this issue, and the laboratory was instructed to <CHOOSE_ONE> proceed with/cancel analysis.

GC/MS VOA

Method 8260D: Internal standard (ISTD) response for the CCV was outside of acceptance limits: Fluorobenzene. The LCS was within control limits for the associated internal standard; therefore, the data have been reported.

Method 8260D: Instrument mis-injected on the CCV. The following analytes were affected: 4-Bromofluorobenzene (Surrogate), Dibromofluoromethane (Surrogate), Toluene-d8 (Surrogate), Bromomethane, Chloroethane, Chloromethane, and Vinyl chloride. The LCS was within CCV criteria; therefore, the data have been reported.(CCV 310-400268/4)

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-400268 recovered outside of the control limits for Dibromofluoromethane (Surrogate) (-20.0%D), Carbon disulfide (-53.7%D), Carbon tetrachloride (-8.1%D), 2-Hexanone (-68.1%D), cis-1,3-Dichloropropene (-62.7%D), Acetone (-59.4%D), Dichlorobromomethane (-61.7%D), Benzene (-11.0%D), trans-1,3-Dichloropropene (-63.1%D), cis-1,2-Dichloroethene (-33.2%D), Toluene (-63.1%D), Chloroform (-28.9%D), Chlorodibromomethane (-65.4%D), 1,1,2-Trichloroethane (-64.6%D), Methylene chloride (-47.0%D), 1,1-Dichloroethene (-50.3%D), 1,2-Dichloroethane (-16.6%D), 4-Methyl-2-pentanone (-65.6%D), Tetrachloroethene (-61.6%D), 1,1,1-Trichloroethane (-24.6%D), Trichloroethene (-56.4%D), 2-Butanone (-44.3%D), 1,2-Dichloropropane (-60.2%D), Methyl tert-butyl ether (-50.3%D), trans-1,2-Dichloroethene (-45.7%D), 1,1-Dichloroethane 9-48.6%D), 1,3-Dichlorobenzene (27.2%D), 1,3,5-Trimethylbenzene (22.7%D), and tert-Butylbenzene (20.6%D). The LCS associated with this CCV passed CCV criteria for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-400268/3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-265242-1	MW18-S2-0923	Solid	09/19/23 08:55	09/20/23 17:20
310-265242-2	MW18-S7-0923	Solid	09/19/23 11:40	09/20/23 17:20
310-265242-3	MW19-S2-0923	Solid	09/19/23 12:15	09/20/23 17:20
310-265242-4	MW19-S7-0923	Solid	09/19/23 12:50	09/20/23 17:20
310-265242-5	EB01-0923	Water	09/19/23 13:40	09/20/23 17:20

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Detection Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Client Sample ID: MW18-S2-0923

Lab Sample ID: 310-265242-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.24		1.16		mg/Kg	5	⊛	6020B	Total/NA

Client Sample ID: MW18-S7-0923

Lab Sample ID: 310-265242-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.34		0.945		mg/Kg	5	⊛	6020B	Total/NA

Client Sample ID: MW19-S2-0923

Lab Sample ID: 310-265242-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.85		1.04		mg/Kg	5	⊛	6020B	Total/NA

Client Sample ID: MW19-S7-0923

Lab Sample ID: 310-265242-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	16.7		1.14		mg/Kg	5	⊛	6020B	Total/NA

Client Sample ID: EB01-0923

Lab Sample ID: 310-265242-5

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Client Sample ID: MW18-S2-0923

Lab Sample ID: 310-265242-1

Date Collected: 09/19/23 08:55

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 82.3

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.42		1.42		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Benzene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Bromodichloromethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Bromoform	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Bromomethane	<1.42		1.42		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
2-Butanone (MEK)	<2.13		2.13		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Carbon disulfide	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Carbon tetrachloride	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Chlorobenzene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Chlorodibromomethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Chloroethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Chloroform	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Chloromethane	<0.709		0.709		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
cis-1,2-Dichloroethene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
cis-1,3-Dichloropropene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,2-Dichlorobenzene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,3-Dichlorobenzene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,4-Dichlorobenzene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,1-Dichloroethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,2-Dichloroethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,1-Dichloroethene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,2-Dichloropropane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Ethylbenzene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
2-Hexanone	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Methylene Chloride	<0.709		0.709		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Methyl isobutyl ketone (MIBK)	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Methyl tert-butyl ether	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Naphthalene	<0.709		0.709		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,1,2,2-Tetrachloroethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Tetrachloroethene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Toluene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
trans-1,2-Dichloroethene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
trans-1,3-Dichloropropene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,1,1-Trichloroethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
1,1,2-Trichloroethane	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Trichloroethene	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Vinyl chloride	<0.284		0.284		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1
Xylenes, Total	<0.426		0.426		mg/Kg	✳	10/02/23 08:20	10/02/23 15:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120	10/02/23 08:20	10/02/23 15:21	1
Dibromofluoromethane (Surr)	96		80 - 120	10/02/23 08:20	10/02/23 15:21	1
Toluene-d8 (Surr)	96		80 - 120	10/02/23 08:20	10/02/23 15:21	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.24		1.16		mg/Kg	✳	09/25/23 11:17	10/02/23 13:43	5

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Client Sample ID: MW18-S7-0923

Lab Sample ID: 310-265242-2

Date Collected: 09/19/23 11:40

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 95.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.886		0.886		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Benzene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Bromodichloromethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Bromoform	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Bromomethane	<0.886		0.886		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
2-Butanone (MEK)	<1.33		1.33		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Carbon disulfide	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Carbon tetrachloride	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Chlorobenzene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Chlorodibromomethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Chloroethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Chloroform	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Chloromethane	<0.443		0.443		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
cis-1,2-Dichloroethene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
cis-1,3-Dichloropropene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,2-Dichlorobenzene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,3-Dichlorobenzene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,4-Dichlorobenzene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,1-Dichloroethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,2-Dichloroethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,1-Dichloroethene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,2-Dichloropropane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Ethylbenzene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
2-Hexanone	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Methylene Chloride	<0.443		0.443		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Methyl isobutyl ketone (MIBK)	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Methyl tert-butyl ether	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Naphthalene	<0.443		0.443		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,1,2,2-Tetrachloroethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Tetrachloroethene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Toluene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
trans-1,2-Dichloroethene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
trans-1,3-Dichloropropene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,1,1-Trichloroethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
1,1,2-Trichloroethane	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Trichloroethene	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Vinyl chloride	<0.177		0.177		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1
Xylenes, Total	<0.266		0.266		mg/Kg	☼	10/02/23 08:20	10/02/23 15:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120	10/02/23 08:20	10/02/23 15:44	1
Dibromofluoromethane (Surr)	95		80 - 120	10/02/23 08:20	10/02/23 15:44	1
Toluene-d8 (Surr)	92		80 - 120	10/02/23 08:20	10/02/23 15:44	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.34		0.945		mg/Kg	☼	09/25/23 11:17	10/02/23 13:45	5

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Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Client Sample ID: MW19-S2-0923

Lab Sample ID: 310-265242-3

Date Collected: 09/19/23 12:15

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 88.9

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.08		1.08		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Benzene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Bromodichloromethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Bromoform	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Bromomethane	<1.08		1.08		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
2-Butanone (MEK)	<1.62		1.62		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Carbon disulfide	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Carbon tetrachloride	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Chlorobenzene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Chlorodibromomethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Chloroethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Chloroform	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Chloromethane	<0.539		0.539		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
cis-1,2-Dichloroethene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
cis-1,3-Dichloropropene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,2-Dichlorobenzene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,3-Dichlorobenzene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,4-Dichlorobenzene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,1-Dichloroethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,2-Dichloroethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,1-Dichloroethene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,2-Dichloropropane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Ethylbenzene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
2-Hexanone	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Methylene Chloride	<0.539		0.539		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Methyl isobutyl ketone (MIBK)	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Methyl tert-butyl ether	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Naphthalene	<0.539		0.539		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,1,2,2-Tetrachloroethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Tetrachloroethene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Toluene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
trans-1,2-Dichloroethene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
trans-1,3-Dichloropropene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,1,1-Trichloroethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
1,1,2-Trichloroethane	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Trichloroethene	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Vinyl chloride	<0.215		0.215		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1
Xylenes, Total	<0.323		0.323		mg/Kg	✳	10/02/23 08:20	10/02/23 16:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120	10/02/23 08:20	10/02/23 16:06	1
Dibromofluoromethane (Surr)	98		80 - 120	10/02/23 08:20	10/02/23 16:06	1
Toluene-d8 (Surr)	95		80 - 120	10/02/23 08:20	10/02/23 16:06	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.85		1.04		mg/Kg	✳	09/25/23 11:17	10/02/23 13:47	5

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Client Sample ID: MW19-S7-0923

Lab Sample ID: 310-265242-4

Date Collected: 09/19/23 12:50

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 75.4

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.19		1.19		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Benzene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Bromodichloromethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Bromoform	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Bromomethane	<1.19		1.19		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
2-Butanone (MEK)	<1.78		1.78		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Carbon disulfide	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Carbon tetrachloride	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Chlorobenzene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Chlorodibromomethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Chloroethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Chloroform	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Chloromethane	<0.593		0.593		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
cis-1,2-Dichloroethene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
cis-1,3-Dichloropropene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,2-Dichlorobenzene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,3-Dichlorobenzene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,4-Dichlorobenzene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,1-Dichloroethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,2-Dichloroethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,1-Dichloroethene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,2-Dichloropropane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Ethylbenzene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
2-Hexanone	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Methylene Chloride	<0.593		0.593		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Methyl isobutyl ketone (MIBK)	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Methyl tert-butyl ether	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Naphthalene	<0.593		0.593		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,1,2,2-Tetrachloroethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Tetrachloroethene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Toluene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
trans-1,2-Dichloroethene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
trans-1,3-Dichloropropene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,1,1-Trichloroethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
1,1,2-Trichloroethane	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Trichloroethene	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Vinyl chloride	<0.237		0.237		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1
Xylenes, Total	<0.356		0.356		mg/Kg	✳	10/02/23 08:20	10/02/23 16:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120	10/02/23 08:20	10/02/23 16:29	1
Dibromofluoromethane (Surr)	100		80 - 120	10/02/23 08:20	10/02/23 16:29	1
Toluene-d8 (Surr)	98		80 - 120	10/02/23 08:20	10/02/23 16:29	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16.7		1.14		mg/Kg	✳	09/25/23 11:17	10/02/23 13:49	5

Eurofins Cedar Falls

Client Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Client Sample ID: EB01-0923

Lab Sample ID: 310-265242-5

Date Collected: 09/19/23 13:40

Matrix: Water

Date Received: 09/20/23 17:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			09/21/23 22:32	1
Benzene	<0.500		0.500		ug/L			09/21/23 22:32	1
Bromodichloromethane	<1.00		1.00		ug/L			09/21/23 22:32	1
Bromoform	<5.00		5.00		ug/L			09/21/23 22:32	1
Bromomethane	<4.00		4.00		ug/L			09/21/23 22:32	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/21/23 22:32	1
Carbon disulfide	<1.00		1.00		ug/L			09/21/23 22:32	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/21/23 22:32	1
Chlorobenzene	<1.00		1.00		ug/L			09/21/23 22:32	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/21/23 22:32	1
Chloroethane	<4.00		4.00		ug/L			09/21/23 22:32	1
Chloroform	<3.00		3.00		ug/L			09/21/23 22:32	1
Chloromethane	<3.00		3.00		ug/L			09/21/23 22:32	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/21/23 22:32	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/21/23 22:32	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/21/23 22:32	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/21/23 22:32	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/21/23 22:32	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/21/23 22:32	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/21/23 22:32	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/21/23 22:32	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/21/23 22:32	1
Ethylbenzene	<1.00		1.00		ug/L			09/21/23 22:32	1
2-Hexanone	<10.0		10.0		ug/L			09/21/23 22:32	1
Methylene Chloride	<5.00		5.00		ug/L			09/21/23 22:32	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/21/23 22:32	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/21/23 22:32	1
Naphthalene	<5.00		5.00		ug/L			09/21/23 22:32	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/21/23 22:32	1
Tetrachloroethene	<1.00		1.00		ug/L			09/21/23 22:32	1
Toluene	<1.00		1.00		ug/L			09/21/23 22:32	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/21/23 22:32	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/21/23 22:32	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/21/23 22:32	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/21/23 22:32	1
Trichloroethene	<1.00		1.00		ug/L			09/21/23 22:32	1
Vinyl chloride	<1.00		1.00		ug/L			09/21/23 22:32	1
Xylenes, Total	<3.00		3.00		ug/L			09/21/23 22:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		09/21/23 22:32	1
Dibromofluoromethane (Surr)	111		80 - 128		09/21/23 22:32	1
Toluene-d8 (Surr)	96		80 - 120		09/21/23 22:32	1

Definitions/Glossary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BFB (80-120)	DBFM (80-120)	TOL (80-120)
310-265242-1	MW18-S2-0923	98	96	96
310-265242-2	MW18-S7-0923	94	95	92
310-265242-3	MW19-S2-0923	99	98	95
310-265242-4	MW19-S7-0923	101	100	98
LCS 310-401123/2-A	Lab Control Sample	97	99	95
MB 310-401123/1-A	Method Blank	92	97	91

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BFB (80-120)	DBFM (80-128)	TOL (80-120)
310-265242-5	EB01-0923	99	111	96
LCS 310-400268/6	Lab Control Sample	97	107	99
LCS 310-400268/7	Lab Control Sample	109	112	95
MB 310-400268/5	Method Blank	100	108	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-400268/5
 Matrix: Water
 Analysis Batch: 400268

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			09/21/23 17:27	1
Benzene	<0.500		0.500		ug/L			09/21/23 17:27	1
Bromodichloromethane	<1.00		1.00		ug/L			09/21/23 17:27	1
Bromoform	<5.00		5.00		ug/L			09/21/23 17:27	1
Bromomethane	<4.00		4.00		ug/L			09/21/23 17:27	1
2-Butanone (MEK)	<10.0		10.0		ug/L			09/21/23 17:27	1
Carbon disulfide	<1.00		1.00		ug/L			09/21/23 17:27	1
Carbon tetrachloride	<2.00		2.00		ug/L			09/21/23 17:27	1
Chlorobenzene	<1.00		1.00		ug/L			09/21/23 17:27	1
Chlorodibromomethane	<5.00		5.00		ug/L			09/21/23 17:27	1
Chloroethane	<4.00		4.00		ug/L			09/21/23 17:27	1
Chloroform	<3.00		3.00		ug/L			09/21/23 17:27	1
Chloromethane	<3.00		3.00		ug/L			09/21/23 17:27	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			09/21/23 17:27	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			09/21/23 17:27	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			09/21/23 17:27	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			09/21/23 17:27	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			09/21/23 17:27	1
1,1-Dichloroethane	<1.00		1.00		ug/L			09/21/23 17:27	1
1,2-Dichloroethane	<1.00		1.00		ug/L			09/21/23 17:27	1
1,1-Dichloroethene	<2.00		2.00		ug/L			09/21/23 17:27	1
1,2-Dichloropropane	<1.00		1.00		ug/L			09/21/23 17:27	1
Ethylbenzene	<1.00		1.00		ug/L			09/21/23 17:27	1
2-Hexanone	<10.0		10.0		ug/L			09/21/23 17:27	1
Methylene Chloride	<5.00		5.00		ug/L			09/21/23 17:27	1
Methyl isobutyl ketone (MIBK)	<10.0		10.0		ug/L			09/21/23 17:27	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			09/21/23 17:27	1
Naphthalene	<5.00		5.00		ug/L			09/21/23 17:27	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			09/21/23 17:27	1
Tetrachloroethene	<1.00		1.00		ug/L			09/21/23 17:27	1
Toluene	<1.00		1.00		ug/L			09/21/23 17:27	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			09/21/23 17:27	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			09/21/23 17:27	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			09/21/23 17:27	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			09/21/23 17:27	1
Trichloroethene	<1.00		1.00		ug/L			09/21/23 17:27	1
Vinyl chloride	<1.00		1.00		ug/L			09/21/23 17:27	1
Xylenes, Total	<3.00		3.00		ug/L			09/21/23 17:27	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	100		80 - 120		09/21/23 17:27	1
Dibromofluoromethane (Surr)	108		80 - 128		09/21/23 17:27	1
Toluene-d8 (Surr)	101		80 - 120		09/21/23 17:27	1

QC Sample Results

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-400268/6

Matrix: Water

Analysis Batch: 400268

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	37.13		ug/L		93	50 - 150
Benzene	20.0	19.03		ug/L		95	73 - 122
Bromodichloromethane	20.0	18.86		ug/L		94	72 - 121
Bromoform	20.0	15.44		ug/L		77	55 - 129
2-Butanone (MEK)	40.0	32.82		ug/L		82	50 - 150
Carbon disulfide	20.0	18.31		ug/L		92	58 - 131
Carbon tetrachloride	20.0	22.23		ug/L		111	67 - 132
Chlorobenzene	20.0	19.12		ug/L		96	69 - 121
Chlorodibromomethane	20.0	18.90		ug/L		95	69 - 122
Chloroform	20.0	21.18		ug/L		106	72 - 120
cis-1,2-Dichloroethene	20.0	20.31		ug/L		102	74 - 120
cis-1,3-Dichloropropene	20.0	17.86		ug/L		89	71 - 126
1,2-Dichlorobenzene	20.0	18.68		ug/L		93	68 - 120
1,3-Dichlorobenzene	20.0	20.60		ug/L		103	67 - 123
1,4-Dichlorobenzene	20.0	18.22		ug/L		91	67 - 120
1,1-Dichloroethane	20.0	19.04		ug/L		95	71 - 123
1,2-Dichloroethane	20.0	20.46		ug/L		102	70 - 124
1,1-Dichloroethene	20.0	19.47		ug/L		97	61 - 129
1,2-Dichloropropane	20.0	18.54		ug/L		93	73 - 121
Ethylbenzene	20.0	19.01		ug/L		95	69 - 122
2-Hexanone	40.0	34.13		ug/L		85	60 - 132
Methylene Chloride	20.0	20.16		ug/L		101	50 - 150
Methyl isobutyl ketone (MIBK)	40.0	32.48		ug/L		81	62 - 130
Methyl tert-butyl ether	20.0	16.21		ug/L		81	68 - 127
Naphthalene	20.0	17.69		ug/L		88	50 - 150
1,1,1,2-Tetrachloroethane	20.0	17.35		ug/L		87	64 - 124
Tetrachloroethene	20.0	21.66		ug/L		108	69 - 131
Toluene	20.0	19.93		ug/L		100	72 - 121
trans-1,2-Dichloroethene	20.0	19.83		ug/L		99	68 - 125
trans-1,3-Dichloropropene	20.0	17.63		ug/L		88	68 - 124
1,1,1-Trichloroethane	20.0	20.42		ug/L		102	71 - 128
1,1,2-Trichloroethane	20.0	17.69		ug/L		88	70 - 124
Trichloroethene	20.0	18.91		ug/L		95	73 - 126
Xylenes, Total	40.0	38.04		ug/L		95	68 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	107		80 - 128
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: LCS 310-400268/7

Matrix: Water

Analysis Batch: 400268

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	17.53		ug/L		88	24 - 150
Chloroethane	20.0	21.04		ug/L		105	51 - 137
Chloromethane	20.0	18.59		ug/L		93	37 - 150

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QC Sample Results

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-400268/7

Matrix: Water

Analysis Batch: 400268

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Vinyl chloride	20.0	20.76		ug/L		104	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	109		80 - 120
Dibromofluoromethane (Surr)	112		80 - 128
Toluene-d8 (Surr)	95		80 - 120

Lab Sample ID: MB 310-401123/1-A

Matrix: Solid

Analysis Batch: 401192

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 401123

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<0.491		0.491		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Benzene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Bromodichloromethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Bromoform	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Bromomethane	<0.491		0.491		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
2-Butanone (MEK)	<0.737		0.737		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Carbon disulfide	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Carbon tetrachloride	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Chlorobenzene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Chlorodibromomethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Chloroethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Chloroform	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Chloromethane	<0.246		0.246		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
cis-1,2-Dichloroethene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
cis-1,3-Dichloropropene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,2-Dichlorobenzene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,3-Dichlorobenzene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,4-Dichlorobenzene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,1-Dichloroethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,2-Dichloroethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,1-Dichloroethene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,2-Dichloropropane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Ethylbenzene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
2-Hexanone	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Methylene Chloride	<0.246		0.246		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Methyl isobutyl ketone (MIBK)	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Methyl tert-butyl ether	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Naphthalene	<0.246		0.246		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,1,2,2-Tetrachloroethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Tetrachloroethene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Toluene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
trans-1,2-Dichloroethene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
trans-1,3-Dichloropropene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,1,1-Trichloroethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
1,1,2-Trichloroethane	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Trichloroethene	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-401123/1-A

Client Sample ID: Method Blank

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 401192

Prep Batch: 401123

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Vinyl chloride	<0.0982		0.0982		mg/Kg		10/02/23 08:20	10/02/23 11:36	1
Xylenes, Total	<0.147		0.147		mg/Kg		10/02/23 08:20	10/02/23 11:36	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	92		80 - 120	10/02/23 08:20	10/02/23 11:36	1
Dibromofluoromethane (Surr)	97		80 - 120	10/02/23 08:20	10/02/23 11:36	1
Toluene-d8 (Surr)	91		80 - 120	10/02/23 08:20	10/02/23 11:36	1

Lab Sample ID: LCS 310-401123/2-A

Client Sample ID: Lab Control Sample

Matrix: Solid

Prep Type: Total/NA

Analysis Batch: 401192

Prep Batch: 401123

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Acetone	1.86	1.870		mg/Kg		100	50 - 150
Benzene	0.932	0.9282		mg/Kg		100	80 - 130
Bromodichloromethane	0.932	0.8251		mg/Kg		89	74 - 129
Bromoform	0.932	0.9137		mg/Kg		98	63 - 128
2-Butanone (MEK)	1.86	1.714		mg/Kg		92	50 - 150
Carbon disulfide	0.932	0.9155		mg/Kg		98	51 - 149
Carbon tetrachloride	0.932	0.9467		mg/Kg		102	75 - 136
Chlorobenzene	0.932	0.9094		mg/Kg		98	79 - 125
Chlorodibromomethane	0.932	0.7932		mg/Kg		85	73 - 125
Chloroform	0.932	0.9183		mg/Kg		99	74 - 133
cis-1,2-Dichloroethene	0.932	0.9753		mg/Kg		105	76 - 136
cis-1,3-Dichloropropene	0.932	0.9321		mg/Kg		100	78 - 129
1,2-Dichlorobenzene	0.932	0.8596		mg/Kg		92	74 - 123
1,3-Dichlorobenzene	0.932	0.8818		mg/Kg		95	75 - 123
1,4-Dichlorobenzene	0.932	0.8439		mg/Kg		91	76 - 123
1,1-Dichloroethane	0.932	0.9381		mg/Kg		101	74 - 139
1,2-Dichloroethane	0.932	0.9267		mg/Kg		99	73 - 138
1,1-Dichloroethene	0.932	0.9350		mg/Kg		100	62 - 144
1,2-Dichloropropane	0.932	0.9146		mg/Kg		98	79 - 130
Ethylbenzene	0.932	0.8522		mg/Kg		91	80 - 128
2-Hexanone	1.86	1.662		mg/Kg		89	63 - 141
Methylene Chloride	0.932	1.060		mg/Kg		114	50 - 150
Methyl isobutyl ketone (MIBK)	1.86	1.610		mg/Kg		86	64 - 138
Methyl tert-butyl ether	0.932	0.9135		mg/Kg		98	70 - 138
Naphthalene	0.932	0.7902		mg/Kg		85	50 - 150
1,1,2,2-Tetrachloroethane	0.932	0.8134		mg/Kg		87	70 - 129
Tetrachloroethene	0.932	1.066		mg/Kg		114	77 - 133
Toluene	0.932	0.8285		mg/Kg		89	80 - 127
trans-1,2-Dichloroethene	0.932	0.9570		mg/Kg		103	70 - 136
trans-1,3-Dichloropropene	0.932	0.8264		mg/Kg		89	74 - 129
1,1,1-Trichloroethane	0.932	1.019		mg/Kg		109	77 - 136
1,1,2-Trichloroethane	0.932	0.9121		mg/Kg		98	74 - 130
Trichloroethene	0.932	1.009		mg/Kg		108	80 - 131
Xylenes, Total	1.86	1.732		mg/Kg		93	80 - 128

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QC Sample Results

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-401123/2-A
Matrix: Solid
Analysis Batch: 401192

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 401123

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
Toluene-d8 (Surr)	95		80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-400276/1-A ^5
Matrix: Solid
Analysis Batch: 401213

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 400276

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	<0.904		0.904		mg/Kg		09/25/23 11:17	10/02/23 13:32	5

Lab Sample ID: LCS 310-400276/2-A ^20
Matrix: Solid
Analysis Batch: 401213

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 400276

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Arsenic	198	233.7		mg/Kg		118	80 - 120

QC Association Summary

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

GC/MS VOA

Analysis Batch: 400268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-265242-5	EB01-0923	Total/NA	Water	8260D	
MB 310-400268/5	Method Blank	Total/NA	Water	8260D	
LCS 310-400268/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-400268/7	Lab Control Sample	Total/NA	Water	8260D	

Prep Batch: 401123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-265242-1	MW18-S2-0923	Total/NA	Solid	5035	
310-265242-2	MW18-S7-0923	Total/NA	Solid	5035	
310-265242-3	MW19-S2-0923	Total/NA	Solid	5035	
310-265242-4	MW19-S7-0923	Total/NA	Solid	5035	
MB 310-401123/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-401123/2-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 401192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-265242-1	MW18-S2-0923	Total/NA	Solid	8260D	401123
310-265242-2	MW18-S7-0923	Total/NA	Solid	8260D	401123
310-265242-3	MW19-S2-0923	Total/NA	Solid	8260D	401123
310-265242-4	MW19-S7-0923	Total/NA	Solid	8260D	401123
MB 310-401123/1-A	Method Blank	Total/NA	Solid	8260D	401123
LCS 310-401123/2-A	Lab Control Sample	Total/NA	Solid	8260D	401123

Metals

Prep Batch: 400276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-265242-1	MW18-S2-0923	Total/NA	Solid	3050B	
310-265242-2	MW18-S7-0923	Total/NA	Solid	3050B	
310-265242-3	MW19-S2-0923	Total/NA	Solid	3050B	
310-265242-4	MW19-S7-0923	Total/NA	Solid	3050B	
MB 310-400276/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 310-400276/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 401213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-265242-1	MW18-S2-0923	Total/NA	Solid	6020B	400276
310-265242-2	MW18-S7-0923	Total/NA	Solid	6020B	400276
310-265242-3	MW19-S2-0923	Total/NA	Solid	6020B	400276
310-265242-4	MW19-S7-0923	Total/NA	Solid	6020B	400276
MB 310-400276/1-A ^5	Method Blank	Total/NA	Solid	6020B	400276
LCS 310-400276/2-A ^20	Lab Control Sample	Total/NA	Solid	6020B	400276

Lab Chronicle

Client: Stantec Consulting Services Inc
 Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
 SDG: 193709822

Client Sample ID: MW18-S2-0923

Lab Sample ID: 310-265242-1

Date Collected: 09/19/23 08:55

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			401123	MZR8	EET CF	10/02/23 08:20
Total/NA	Analysis	8260D		1	401192	MZR8	EET CF	10/02/23 15:21
Total/NA	Prep	3050B			400276	DHM5	EET CF	09/25/23 11:17
Total/NA	Analysis	6020B		5	401213	A6US	EET CF	10/02/23 13:43

Client Sample ID: MW18-S7-0923

Lab Sample ID: 310-265242-2

Date Collected: 09/19/23 11:40

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 95.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			401123	MZR8	EET CF	10/02/23 08:20
Total/NA	Analysis	8260D		1	401192	MZR8	EET CF	10/02/23 15:44
Total/NA	Prep	3050B			400276	DHM5	EET CF	09/25/23 11:17
Total/NA	Analysis	6020B		5	401213	A6US	EET CF	10/02/23 13:45

Client Sample ID: MW19-S2-0923

Lab Sample ID: 310-265242-3

Date Collected: 09/19/23 12:15

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 88.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			401123	MZR8	EET CF	10/02/23 08:20
Total/NA	Analysis	8260D		1	401192	MZR8	EET CF	10/02/23 16:06
Total/NA	Prep	3050B			400276	DHM5	EET CF	09/25/23 11:17
Total/NA	Analysis	6020B		5	401213	A6US	EET CF	10/02/23 13:47

Client Sample ID: MW19-S7-0923

Lab Sample ID: 310-265242-4

Date Collected: 09/19/23 12:50

Matrix: Solid

Date Received: 09/20/23 17:20

Percent Solids: 75.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			401123	MZR8	EET CF	10/02/23 08:20
Total/NA	Analysis	8260D		1	401192	MZR8	EET CF	10/02/23 16:29
Total/NA	Prep	3050B			400276	DHM5	EET CF	09/25/23 11:17
Total/NA	Analysis	6020B		5	401213	A6US	EET CF	10/02/23 13:49

Client Sample ID: EB01-0923

Lab Sample ID: 310-265242-5

Date Collected: 09/19/23 13:40

Matrix: Water

Date Received: 09/20/23 17:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	400268	WSE8	EET CF	09/21/23 22:32

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: Stantec Consulting Services Inc
Project/Site: Rockwell Collins 35th St

Job ID: 310-265242-1
SDG: 193709822

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
3050B	Preparation, Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
5035	Closed System Purge and Trap	SW846	EET CF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401





Environment Testing
America



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Stantec</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>9/20/23</u>	<u>1720</u>	<u>SL</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # ____ of ____	
Cooler Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>P</u>	Correction Factor (°C):	<u>0</u>
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	<u>6.4</u>	Corrected Temp (°C):	<u>6.4</u>
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Company Stantec
 Send Report To Steve Varsa (Steve.Varsa@stantec.com)
 Address 1311 Ascarz Avenue
 City/State/Zip Code D.S. Moines, IA 50322
 Telephone Number 515-283-0830 Fax: _____
 Sampled by: (Print Name) Emma Brady
 (Signature) *Em Brady* 9/19/2023
 Your PO # _____
 Invoice To Steve Varsa
 Project Name Rockwell Collins 35th St
 Project Number 193709822
 Email Address Steve.Varsa@stantec.com
 CC _____

Sample ID	Date Sampled	Time Sampled	# of containers shipped	Grab	Composite	Field Filtered	Preservative					Matrix							Analyze For	RUSH TAT (Must call ahead)	Standard TAT	E-mail results	Fax Results	Send GC with report					
							Ice	HNO ₃ (Red & White Label)	HCl (Blue & White Label)	NaOH (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Black & White Label)	Other (Specify Methanol)	Groundwater	Wastewater	Drinking Water	Sludge							Soil	Other Specify Stormwater	8260 VOC's	8010 Aromatic	
MW18-52-0923	9/19/23	0955	6	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X						
MW18-57-0923	9/19/23	1140	6	X		X	X	X	X	X	X	X	X	X	X	X	X	X				X	X						
MW19-52-0923	9/19/23	1215	6	X		X	X	X	X	X	X	X	X	X	X	X	X	X				X	X						
MW19-57-0923	9/19/23	1250	6	X		X	X	X	X	X	X	X	X	X	X	X	X	X				X	X						
EB01-0923	9/19/23	1340	3	X		X											X					X	X						

NOTES: Please fill in shaded areas

NOTE: All turn around times are calculated from the time of receipt at TestAmerica.
 NOTE: Pre-Arrangements must be made AT LEAST 48 Hours in ADVANCE to receive results with RUSH turn around time commitments; additional charges may be assessed.
 NOTE: There may be a charge assessed for TestAmerica disposing of sample remainders.

Relinquished by: <i>[Signature]</i>	Date: <u>9/20/23</u>	Time: <u>1000</u>	Relinquished by: <i>[Signature]</i>	Date: <u>9/20/23</u>	Time: <u>13:45</u>
Received by: <i>[Signature]</i>	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____

Shipped Via _____
 Received for TestAmerica by SL 9/20/23 1720
 Laboratory Comments _____
 Shipped Via _____

Zachary Bindert

From: Varsa, Steve <steve.varsa@stantec.com>
Sent: Thursday, September 21, 2023 9:09 AM
To: Zachary Bindert
Cc: Buss, Samantha; Shawda, Angelique; Brady, Emma; Hansen, Scott
Subject: RE: Cooler Temperature - Eurofins Environment Testing North Central, LLC Sample Login Confirmation files from 310-265242-1 Rockwell Collins 35th St

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.

Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

This is disappointing and thought double or triple checking temps was a standard practice. The samples and temp blank were in our sample fridge overnight and I personally put them in ice when repacking the cooler yesterday am.

Yes – proceed.

From: Zachary Bindert <Zach.Bindert@et.eurofinsus.com>
Sent: Thursday, September 21, 2023 8:41 AM
To: Buss, Samantha <Samantha.Buss@stantec.com>; Shawda, Angelique <angelique.shawda@stantec.com>; Brady, Emma <Emma.Brady@stantec.com>; Hansen, Scott <scott.hansen@stantec.com>; Varsa, Steve <steve.varsa@stantec.com>
Subject: RE: Cooler Temperature - Eurofins Environment Testing North Central, LLC Sample Login Confirmation files from 310-265242-1 Rockwell Collins 35th St

According to the temp sheet, the samples were on ice.

Zach Bindert
Manager of Project Management

NEW DIRECT: 319-340-0514
Office: 319-595-2016
Cedar Falls Lab: 319-277-2401

Email: Zach.Bindert@ET.EurofinsUS.com

www.EurofinsUS.com/Env

Follow us!| [Facebook](#) | [LinkedIn](#)

From: Buss, Samantha <Samantha.Buss@stantec.com>
Sent: Thursday, September 21, 2023 8:39 AM
To: Zachary Bindert <Zach.Bindert@et.eurofinsus.com>; Shawda, Angelique <angelique.shawda@stantec.com>; Brady, Emma <Emma.Brady@stantec.com>; Hansen, Scott <scott.hansen@stantec.com>; Varsa, Steve <steve.varsa@stantec.com>
Subject: RE: Cooler Temperature - Eurofins Environment Testing North Central, LLC Sample Login Confirmation files from 310-265242-1 Rockwell Collins 35th St

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.

Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Yes, please proceed with analysis.

Can you confirm if there was still ice in the cooler?

Thank you,

Samantha Buss
(515) 251-1015
samantha.buss@stantec.com

From: Zach Bindert <Zach.Bindert@et.eurofinsus.com>
Sent: Thursday, September 21, 2023 8:36 AM
To: Shawda, Angelique <angelique.shawda@stantec.com>; Brady, Emma <Emma.Brady@stantec.com>; Buss, Samantha <Samantha.Buss@stantec.com>; Hansen, Scott <scott.hansen@stantec.com>; Varsa, Steve <steve.varsa@stantec.com>
Subject: Cooler Temperature - Eurofins Environment Testing North Central, LLC Sample Login Confirmation files from 310-265242-1 Rockwell Collins 35th St
Importance: High

Good Morning,

The following cooler temperature was 6.4°C. Unfortunately our login tech didn't take an additional cooler temperature off one of the sample bottles in the cooler. The criteria is 6°C or less do you want to proceed with the analysis? Please let me know.

Thank you,

Zach

Zach T Bindert
Client Services Manager

Eurofins Cedar Falls
Phone: 319-277-2401

E-mail: Zach.Bindert@et.eurofinsus.com
www.eurofinsus.com/env



Reference: [310-666889]
Attachments: 2

- 1
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Caution: This email originated from outside of Stantec. Please take extra precaution.

Attention: Ce courriel provient de l'extérieur de Stantec. Veuillez prendre des précautions supplémentaires.

Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

Caution: This email originated from outside of Stantec. Please take extra precaution.

Attention: Ce courriel provient de l'extérieur de Stantec. Veuillez prendre des précautions supplémentaires.

Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

Login Sample Receipt Checklist

Client: Stantec Consulting Services Inc

Job Number: 310-265242-1

SDG Number: 193709822

Login Number: 265242

List Number: 1

Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ATTACHMENT H



IOWA DEPARTMENT OF NATURAL RESOURCES

Abandoned Water Well
Plugging Record

1. Owner:

Name: Rockwell Collins, Attn: EH&S Phone: (319)263-3015
Address: 855 35th St NE
City: Cedar Rapids State: IA Zip: 52498

If this was a Public Water Supply Well, please provide:

PWSID Name: NA PWSID Number: NA

2. Location of Well (Cistern):

SW 1/4 of, SW 1/4 of, SW 1/4 of, Section 10, T 83 N, R 7 East West
County: Linn Describe well location on property: Southwestern parking lot.
GPS Well Location: Latitude: 42°00'38"N Longitude: 91°38'52"W

3. Well Description:

Well depth: 15.0 ft
Depth to water: 10.0 ft.
Casing depth: 15.0 ft. Casing Material: Steel Plastic Concrete Clay Brick Stone
Casing diameter: 1.0 in.
Year or decade constructed: 2023 Type of Construction: Drilled Driven Bored Augured Dug
Is this a Monitoring Well? Yes No Well ID: TW-29
Check if Cistern Depth: ft. Diameter: ft.

I certify this well has been plugged as required by rule 567-39.8 of the Iowa Administrative Code (IAC). I agree to provide any additional information the county or department may need concerning this well.

Signature of Owner Date Plugged: 9/21/2023

If plugged by certified well contractor, complete this box:

I have plugged this well as required by rule 567-39.8 of the Iowa Administrative Code (IAC).

Signature of Contractor: [Signature] Cert No: 6494

OR, If plugged by well owner, complete this box:

The property owner has plugged this well following requirements in rule 567-39.8 of the Iowa Administrative Code (IAC) with the oversight and assistance of the designated county agent.

Signature of County Agent: Date Approved:

Eligible for Grants-to-Counties cost share: Yes No (Determined by County Agent)

Complete one form for each well plugged and submit within 30 days to the local county agent:

OR, only if no county agent is available, to:

Linn County Health Department
Attn: Ruby Perin
1020 6th St SE
Cedar Rapids, IA 52404

Water Supply Section
Iowa Department of Natural Resources
502 E 9th St
Des Moines IA 50319-0034

ATTACHMENT I



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 08/28/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	0	0	
Gallons of Remediation Fluid Injected	0	0	
Drums of Waste Fluid Generated	0	0	
Soil Drums Generated	0	0	
Soil Borings Completed	0	0	Confirmation cores logged by Regenesis.
Temp Wells Completed	0	0	
Piezometers Installed	0	0	

WEATHER TODAY

- 80's Sunny

ACTIVITIES CONDUCTED TODAY

- Onsite comprehensive safety and scope of work meeting.
- Fire hydrant meter installed.
- Regenesis GPS mark injection points.
- Wrap caution fencing around FH meter.
-
-
-

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Begin injections.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
Scott Hansen
Steve Varsa
- Regenesis Seth Benson
Andrew Kavanaugh
- BGS Inc. None
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- Chris Hiatt to bring "bump ahead" signs and delineators.
-
-
-



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 08/29/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	8	8	
Gallons of Remediation Fluid Injected	1482	1482	
Drums of Waste Fluid Generated	1	1	
Soil Drums Generated	1	1	
Soil Borings Completed	1	1	
Temp Wells Completed	0	0	
Piezometers Installed	0	0	

WEATHER TODAY

- 70-80's Sunny

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Background soil boring near loading dock.
- Groundwater parameter monitoring out of MW7.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - aim for 16 in one day.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
Scott Hansen
- Regenesis Seth Benson
Andrew Kavanaugh
- BGS Inc. Doug Freund
Daniel Freund
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- One injection point with minor surfcing, redistributed volume to surrounding points.
 - Injecting from 18-10' BGS.
-



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 08/30/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	16	24	
Gallons of Remediation Fluid Injected	2963	4445	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	1	
Soil Borings Completed	0	1	
Temp Wells Completed	0	0	
Piezometers Installed	0	0	

WEATHER TODAY

- 50-70's, cloudy/overcast.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Completed 16 injection points in 3DME line onsite.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - finish line before pumphouse then move to source area.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
Scott Hansen
Chris Hiatt
- Regenesys Seth Benson
Andrew Kavanaugh
- BGS Inc. Doug Freund
Craig Hewins
Daniel Freund
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- Move PFAS pilot test points to MW6 area due to 3DME migration in MW7.
- Background GWS from MW6 on Tuesday 9/5
- Put up "bump ahead" signs on Eastern Ave.
- Adjust points in grass behind MW7 to 10' spacing due to larger than expected ROI.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 08/31/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	10	34	
Gallons of Remediation Fluid Injected	2778	7223	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	1	
Soil Borings Completed	0	1	
Temp Wells Completed	0	0	
Piezometers Installed	0	0	

WEATHER TODAY

- 50-70's, cloudy/overcast.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Completed 10 injection points in grass near MW7.
- Plywood used for grass preservation.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - focusing on 7 points in grass area North of pump house. Offsite by noon for travel.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesis Seth Benson
Andrew Kavanaugh
- BGS Inc. Doug Freund
Craig Hewins
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- Lay down tarps/plywood boards to protect grass in area near MW7.
 - 3 points prepped for injection North of pump house, stickup covered by cones.
 - Regenesis trailer moved to North side of lot to reach source grid next week.
-



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/01/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	7	41	
Gallons of Remediation Fluid Injected	1296	8519	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	1	
Soil Borings Completed	1	2	
Temp Wells Completed	1	1	
Piezometers Installed	0	0	

WEATHER TODAY

- 50-70's, cloudy/overcast.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Completed 7 injection points in grass North of pump house.
- Installed TW29 between MW6 and M5.
- Half day for travel.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - focusing on source grid outside gated area.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesys Seth Benson
Andrew Kavanaugh
- BGS Inc. Doug Freund
Craig Hewins
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- None.
-



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/05/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	0	41	
Gallons of Remediation Fluid Injected	0	8519	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	1	
Soil Borings Completed	0	2	
Temp Wells Completed	0	1	
Piezometers Installed	0	0	

WEATHER TODAY

- 50-70's, cloudy/overcast.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Emma Brady sample MW5, MW6, and TW29.
- ERB drive samples to Cedar Falls for Rush processing.
- Regenesys onsite walk through and transfer between crews.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - focusing on source grid outside gated area.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesys James Stuart Seth Benson
Sean O'Meara
- BGS Inc. None
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- None.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/06/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	14	55	
Gallons of Remediation Fluid Injected	2771	11290	
Drums of Waste Fluid Generated	1	2	
Soil Drums Generated	1	2	
Soil Borings Completed	0	2	
Temp Wells Completed	0	1	
Piezometers Installed	0	0	

WEATHER TODAY

- 50-70's, cloudy/overcast.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Continue injections focusing on source grid area outside gated area.
- Finish North portion of 3DME line onsite.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - focusing on source grid inside gated area.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesys James Stuart Seth Benson
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Costlow
- Others None

SITE VISITORS AND AFFILIATION

- None.

ADDITIONAL NOTES/COMMENTS

- None.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/07/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	11	66	
Gallons of Remediation Fluid Injected	3045	14335	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	2	
Soil Borings Completed	0	2	
Temp Wells Completed	0	1	
Piezometers Installed	0	0	

WEATHER TODAY

- 50-70's, cloudy/overcast.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Continue injections focusing on source grid area inside gated area.
- Site safety meeting/walk through with Rob Malcomson.
- Move/restage Regenesis equipment/trails to South end near MW6.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - focusing on PFAS pilot test and 3DME barrier near MW6.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesis James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Costlow
- Others None

SITE VISITORS AND AFFILIATION

- Rob Malcomson - Stantec Health and Safety Officer

ADDITIONAL NOTES/COMMENTS

- 5 points within grid hit refusal while hand augering. Points abandoned and volume redistributed.
 - Minor surfacing in source grid area through crack in asphalt - adjusted pump rate.
-



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 09/08/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	4	70	
Gallons of Remediation Fluid Injected	1456	15791	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	1	3	
Soil Borings Completed	1	3	
Temp Wells Completed	0	1	
Piezometers Installed	2	2	

WEATHER TODAY

- 60-80's, sunny.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Continue injections focusing on PFAS pilot test area around MW6.
- 2 piezometers installed and soil core logged from installation of deeper PZ.
- Break concrete and prep points in front of loading dock.
- Monitor groundwater parameters before, throughout, and after injections in PZ1, PZ2, and MW6.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - complete loading dock injections as a half day onsite.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesys James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Costlow
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- Minor surfacing in pilot test area through large gaps/cracks in concrete. Adjusted pump rate.
 - Most of day spent working withRRS design team on injection volumes in PFAS pilot test area.
-



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/09/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	8	78	
Gallons of Remediation Fluid Injected	1482	17273	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	3	
Soil Borings Completed	0	3	
Temp Wells Completed	0	1	
Piezometers Installed	0	2	

WEATHER TODAY

- 50-70's Sunny.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Continue injections focusing on points in front of loading dock.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Begin injections in Eastern Ave assuming ROW permit is approved.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regensis James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Costlow
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- Change in plans for Eastern Ave injections discussed with present team.



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 09/11/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	4	82	
Gallons of Remediation Fluid Injected	2534	19807	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	2	5	
Soil Borings Completed	1	4	
Temp Wells Completed	0	1	
Piezometers Installed	2	4	

WEATHER TODAY

- 50-70's Cloudy.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Continue injections focusing in PFAS pilot test area around MW6.
- Setup traffic control plan and tear down at end of day.
- Meet with new Regenesis, BGS, and Stantec staff onsite to discuss Eastern Ave injection plan.
- Insert two piezometers in Eastern Ave and log soil core (SC2) to determine injection intervals.
- Monitor groundwater parameters before and during injections in PZ1, PZ2, and MW6.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections - finish last interval of PFAS pilot points and then focus on injection points in street.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady Scott Hansen
 Chris Hiatt Steve Varsa

- Regenesis James Stuart Jaren Miller
 Sean O'Meara Neal Wang

- BGS Inc. Jamie Woolard
 Mike Costlow
 Douglas Freund

- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- Minor surfacing in pilot test area through large gaps/cracks in concrete. Slowed pumping rate.
 - Last 4 points left to settle overnight with one interval left.
-



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 09/12/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	15	97	
Gallons of Remediation Fluid Injected	5396	25203	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	1	6	
Soil Borings Completed	2	6	
Temp Wells Completed	0	1	
Piezometers Installed	4	8	

WEATHER TODAY

- 50-70's Cloudy.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Finish last four injections in PFAS pilot test area around MW6.
- Setup traffic control plan and tear down at end of day.
- Monitor groundwater parameters before and after injections from piezometers.
- Insert four piezometers in Eastern Ave (2 central, 2 Northern).

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections in Eastern Ave moving towards the South.

OPERATIONAL ISSUES/CONCERNS

- Lightning monitored in the area around 1425, 30 minute break taken.

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
 Chris Hiatt
- Regensis James Stuart Jaren Miller
 Sean O'Meara Neal Wang
- BGS Inc. Jamie Woolard
 Mike Costlow
 Douglas Freund
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- Vanguard onsite to remark electric lines in ROW
- Plan to backfill points in Eastern Ave with bentonite before injection to help with cement repair later on.
- Two points abandoned by North Crew, volume redistributed
- All points North of Center St have been completed, can move to only block off Eastern Ave.



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 09/13/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	25	122	
Gallons of Remediation Fluid Injected	9316	34519	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	6	
Soil Borings Completed	0	6	
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 50-70's Cloudy.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Move empty poly totes to waste staging area for Heritage to retrieve.
- Setup traffic control plan and tear down at end of day.
- Monitor groundwater parameters before and after injections from piezometers.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections in Eastern Ave moving towards the South.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady Chris Hiatt
 Sean Clary
- Regenesis James Stuart Jaren Miller
 Sean O'Meara Neal Wang
- BGS Inc. Jamie Woolard
 Mike Costlow
 Douglas Freund
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- USIC onsite to remark communications lines in ROW.
- Plan to backfill points in Eastern Ave with bentonite before injection to help with cement repair later on.
- Two points abandoned by North Crew, volume redistributed
- All points North of Center St have been completed, can move to only block off Eastern Ave.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/14/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	22	144	
Gallons of Remediation Fluid Injected	8008	42527	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	6	
Soil Borings Completed	0	6	
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 50-80's Cloudy.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Move empty poly totes to waste staging area for Heritage to retrieve.
- Setup traffic control plan and tear down at end of day.
- Monitor groundwater parameters before and after injections from piezometers.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Continue injections in Eastern Ave moving towards the South.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady Chris Hiatt
 Sean Clary
- Regenesis James Stuart Jaren Miller
 Sean O'Meara Neal Wang
- BGS Inc. Jamie Woolard
 Mike Costlow
 Douglas Freund
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- Residents closest to intersection of Eastern Ave and 32nd St parking in Collins parking lot.



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 09/15/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	4	148	
Gallons of Remediation Fluid Injected	2406	44933	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	1	7	
Soil Borings Completed	2	8	Confirmation cores logged by Regenesis.
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 60-80's Sunny.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Complete four double-volume injection points in Eastern Ave.
- Confirmation cores taken in Northern portion of Eastern ave and near PFAS pilot test.
- Northern Regenesis crew teardown, cleaned trailer and work area.
- MW17 flushed by regenesis.
- MW5, MW7, MW8, and MW17 vaults cleaned and bolts replaced and/or greased.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Mobilize to site, GPRS utility locate around new MW locations.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
 Sean Clary
- Regenesis James Stuart Jaren Miller
 Sean O'Meara Neal Wang
- BGS Inc. Jamie Woolard
 Mike Costlow
 Douglas Freund
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- None.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/18/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	0	148	
Gallons of Remediation Fluid Injected	0	44933	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	7	
Soil Borings Completed	0	8	Confirmation cores logged by Regenesis.
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 60-80's Sunny.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Mobilize to site.
- GPRS utility locate around new MW locations.
- BGS remove concrete pads around C-Ave well vaults to be replaced.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Complete 9 remaining pointsonsite install MW18 and MW19.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesis James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Oscody
Aleks C.
Craig Hewins
- Others John Goossen - GPRS

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- None.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/19/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	9	157	
Gallons of Remediation Fluid Injected	2700	47633	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	1	8	
Soil Borings Completed	0	8	Confirmation cores logged by Regenesis.
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 60-80's Sunny with light rain.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Complete remaining points in Eastern Ave.
- Install MW18 and MW19 in Eastern Ave ROW.
- Develop MW18.
- Survey TW29, MW18, and MW19.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Complete 6 remaining points onsite, set well vaults for MW7 and MW9.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
Chris Hiatt
- Regenesis James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Oscody
Aleks C.
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- None.



**DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA**

Date: 09/20/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	6	163	
Gallons of Remediation Fluid Injected	144	47777	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	1	9	
Soil Borings Completed	2	10	Confirmation cores logged by Regenesis.
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 60-80's Sunny with light rain.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Complete remaining 3DME points onsite.
- Take two confirmation core in Eastern Ave.
- Develop MW19.
- Survey soil cores logged by Stantec in Eastern Ave.
- C-Ave well vaults replaced.

ACTIVITIES PLANNED FOR NEXT WORK DAY (9/27/2023)

- Cleanup onsite, replace well vaults for MW7 and MW9 onsite, demobilize.

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesis James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
- Others None

SITE VISITORS AND AFFILIATION

- None

ADDITIONAL NOTES/COMMENTS

- Work with Collins and Heritage to complete profile of empty totes and dispose.



DAILY REPORTING FORM
GROUNDWATER REMEDIATION ACTIVITIES
ROCKWELL COLLINS - 35th St/Main Plant, CEDAR RAPIDS, IA

Date: 09/21/23
Completed by: Emma Brady

Stantec Project Number: 193709720.100.004
Completed on: 9/28/2023

QUANTITIES GENERATED

	<u>Today</u>	<u>TOTAL</u>	<u>COMMENTS/NOTES</u>
Injection Points Completed	0	163	
Gallons of Remediation Fluid Injected	0	47777	
Drums of Waste Fluid Generated	0	1	
Soil Drums Generated	0	9	
Soil Borings Completed	0	10	Confirmation cores logged by Regenesis.
Temp Wells Completed	0	1	
Piezometers Installed	0	8	

WEATHER TODAY

- 60-80's Sunny with light rain.

ACTIVITIES CONDUCTED TODAY

- Onsite safety and scope of work meeting.
- Fill points in Eastern ave with concrete.
- Regenesis trailer packed up and offsite.
- BGS packed up and offsite.
- Traffic control materials picked up.
- Spill containment picked up.
- Fire hydrant meter picked up.

ACTIVITIES PLANNED FOR NEXT WORK DAY

- Sample MW18 and MW19

OPERATIONAL ISSUES/CONCERNS

- None

HEALTH AND SAFETY ISSUES/CONCERNS

- none

CONTRACTORS AND PERSONNEL ONSITE

- Stantec Emma Brady
- Regenesis James Stuart
Sean O'Meara
- BGS Inc. Jamie Woolard
Mike Oscody
Alex C.
- Others None



SITE VISITORS AND AFFILIATION



- None



ADDITIONAL NOTES/COMMENTS

- None

ATTACHMENT J

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa
Photograph ID: 1			
Photo Location: Eastern Avenue.			
Direction: Looking North.			
Survey Date: 8/3/2023			
Comments: Utility locate walk-through with GPRS representative.			
Photograph ID: 2			
Photo Location: Grass area on side of Collins Main Plant.			
Direction: Looking South.			
Survey Date: 8/23/2023			
Comments: Proposed injection points measured and marked onsite.			

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa
Photograph ID: 3			
Photo Location: Regenesis intake office.			
Direction: Unknown.			
Survey Date: 10/3/2023			
Comments: Example of a flux tracer provided by Regenesis and deployed in MW-12.			
Photograph ID: 4			
Photo Location: West parking lot of Collins Main Plant.			
Direction: Looking North.			
Survey Date: 8/28/2023			
Comments: Spill containment around Regenesis injection trailer.			

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa
Photograph ID: 5			
Photo Location:			
Direction:			
Survey Date:			
Comments:	Spill control socks in front of storm drain intake.		
Photograph ID: 6			
Photo Location:			
Direction:			
Survey Date:			
Comments:	Utility clearance via hand augering prior to advancing probe tooling.		

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa
Photograph ID: 7			
Photo Location: Eastern Avenue.			
Direction: Looking South.			
Survey Date: 9/12/2023			
Comments: Temporary piezometers installed prior to injecting.			
Photograph ID: 8			
Photo Location: West parking lot of Collins Main Plant.			
Direction: Looking East.			
Survey Date: 9/29/2023			
Comments: PID readings taken while soil boring.			

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa

Photograph ID: 9	
Photo Location: West parking lot of Collins Main Plant.	
Direction: Looking North.	
Survey Date: 9/6/2023	
Comments: Active injections onsite.	

Photograph ID: 10	
Photo Location: Eastern Avenue.	
Direction: Looking North.	
Survey Date: 9/15/2023	
Comments: Direct-push crew conducting injection activities in Eastern Avenue NE.	

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa
Photograph ID: 11			
Photo Location:			
Direction:			
Survey Date:			
Comments:			
Photograph ID: 12			
Photo Location:			
Direction:			
Survey Date:			
Comments:			

Client:	Rockwell Collins	Project:	193709720
Site Name:	35th St - Main Plant	Site Location:	Cedar Rapids, Iowa
Photograph ID: 13			
Photo Location: Eastern Avenue.			
Direction: Looking North.			
Survey Date: 9/26/2023			
Comments: Cement truck onsite to repair roadway in Eastern Avenue with City of Cedar Rapids approved cement.			
Photograph ID: 14			
Photo Location: West parking lot of Collins Main Plant.			
Direction: Looking South.			
Survey Date: 9/29/2023			
Comments: Site after injections and crews offsite.			

ATTACHMENT K



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10/13/2023

REGENESIS Proposal No. Owm74032

Stantec

SUBJECT: Application Summary Report for the Rockwell Collins 35th Street Plant

Steve Varsa,

REGENESIS Remediation Services (RRS) has recently completed an in-situ injection application of PlumeStop, S-MicroZVI, 3-D Microemulsion and BDI Plus at the Rockwell Collins 35th Street Plant Site located at 855 35th street NE, Cedar Rapids, IA 52498. The goal of the application was to remediate chlorinated volatile organic compounds (CVOC) at the project site.

RRS mobilized a pickup truck, injection trailer, and personnel to the site on Sunday, August 27th, 2023, and a second crew on Tuesday, September 5th, 2023. RRS began by performing a health and safety tailgate, walking the site to identify hazards, and selecting an optimal equipment staging area. On Tuesday, August 29th, 2023, RRS started injections in the On-Site Barrier. All injections including the On-Site Barrier, On-Site Grid, Western Permeable Barrier, and Per- and polyfluoroalkyl substances PFAS Pilot were concluded on Wednesday, September 20th, 2023. RRS cleaned the site, packed, and demobilized on Thursday, September 21st.

Please review the attached application summary report, injection logs, injection location maps, and photo log for more details on the application.

If you need additional information regarding the application process or attached field notes, please contact Project Manager Andrew Kavanagh, 574-304-4353, or Project Supervisor Sean O'Meara, 859-399-7473.

RRS appreciates the opportunity to work at this site with Stantec.

Sincerely,

Sean O'Meara
Env. Staff Scientist
REGENESIS – RRS

Andrew Kavanagh, LPG
Central Region Project Manager
REGENESIS -RRS

Application Summary



OVERVIEW

Client: Stantec
Client PM: Steve Varsa
RRS Project Manager: Andrew Kavanagh

Site Address: 855 35th St NE, Cedar Rapids, IA,
52498
Project Name: Rockwell Collins 35th Street
Plant Site
Project Dates: 8/28/2023 – 9/20/2023

Treatment Technology

RRS applied PlumeStop, Sulfidated-Micro Zero Valent Iron (S-MZVI), Bio-Dechlor Inoculum (BDI), and 3-D MicroEmulsion (3DME) to mitigate CVOC migration spanning two barriers and a source area, as well as a PFAS test pilot.

PlumeStop liquid activated carbon coats aquifer soil particles with a very thin layer of carbon. PlumeStop begins working quickly by allowing sorption of contaminants from the dissolved phase to the thin layer of carbon resulting in rapid reductions of contaminant concentrations from groundwater. The design of this reactive zone is to provide adsorption of CVOC for a long-term period (≥ 5 years) via sorption alone.

Bio-Dechlor INOCULUM Plus (BDI Plus) is designed for use at sites where chlorinated contaminants are present and unable to be completely biodegraded via the existing microbial communities. BDI Plus is an enriched, natural microbial consortium containing species of *Dehalococcoides sp.* (DHC) which are capable of completely dechlorinating contaminants during *in situ* anaerobic bioremediation processes. This microbial consortium accelerates the extant rate of chlorinated contaminant degradation from parent compounds to intermediates (like dichloroethene (DCE) and vinyl chloride (VC)) and completely through to harmless end products such as ethene and ethane.

S-MicroZVI[®] is an advanced zero-valent iron (ZVI) product proven to accomplish *In Situ* Chemical Reduction (ISCR) of contaminants within the subsurface environment. S-MicroZVI is delivered as a colloidal suspension 40% ZVI by weight in glycerol with a particle size of less than 5 microns. S-MicroZVI is manufactured using a state-of-the-art sulfidation process resulting in a particle coating which increases activation toward specific contaminants and extends performance longevity. S-MicroZVI destroys contaminants abiotically and is applied to stimulate ISCR-enhanced bioremediation.

3-D Microemulsion[®] is an injectable liquid material specifically designed for *in situ* remediation projects where the anaerobic biodegradation of chlorinated compounds through the enhanced reductive

dechlorination (ERD) process is possible. ERD is the primary anaerobic biological process by which problematic chlorinated solvents such as tetrachloroethylene (PCE) and trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) in groundwater are biologically transformed into less harmful end products such as ethene.

Site Preparations

Site Recon

Fluxtracer

Prior to the application, Fluxtracers were deployed in MW-12 to measure the contaminant mass flux and darcy velocity across the well screen interval. The results of the Fluxtracer survey indicated that the contaminants were not present in the upper treatment interval and groundwater velocity was consistent with our pre-application assumption. Based on these results and field observations of the soil profile (i.e., depth of saturation), the treatment interval was modified.

Equipment Staging

- A connex storage container was staged on-site before RRS's arrival on the north side of Rockwell Collins parking lot to safely store product and extra injection equipment.
- RRS arrived onsite on 8/28/23 and staged an injection trailer on the north side of the project to be able to begin injections in the On-site Barrier.
- RRS restaged the trailer on 9/7/23 closer to the PFAS Pilot test, to keep constant watch on the injection points while pumping.
- A Portable toilet was Staged on the north side of the project for field staff use.

Sensitive Receptors

- RRS located any sensitive receptors (storm drains, manholes, cracks in concrete) prior to beginning injections in each area. When these receptors were present near injection points, a shop vacuum was deployed, and absorbent socks were set up to prevent any surfaced material migrating to them.
- RRS injection trailers were staged within secondary spill containments to prevent migration of any potential reagent spills. These containments were inspected daily.

Utility locates

- Utility locates were completed prior to injections on the project and overhead utilities were discussed in daily safety tailgates.
- Prior to starting every section RRS would mark out injection points and conduct a walkthrough with Stantec and it's direct push subcontractor Below Ground Surface, Inc. (BGS) to determine if points were able to be drilled. When points were not able to be drilled due to location or hazards, they were moved with the concurrence of Stantec and BGS to ensure safety.
- Injection points were hand cleared prior to driving down each point.
- See Field Maps and Injection logs for more details.

Reagent Delivery & Storage

Product and Equipment Shipping

- All the products were received by Stantec prior to injections beginning.
- All products were stored in a Conex Box onsite provided by RRS. The product was removed from the box and staged near the injection site daily during setup.
- In total, 18,000 lbs. of PlumeStop, 6,000 lbs. of 3DME, 6,500 lbs. of S-MZVI, and 70 L of BDI Plus were shipped to site.

On Site Equipment

- RRS Injection Trailer
 - Supplied by RRS
- Forklift for maneuvering product and water
 - Supplied by RRS
- Conex Box for product storage
 - Supplied by RRS
- Geoprobe Drilling Rig for direct push
 - Supplied by BGS
- Depth to water meter
 - Supplied by Stantec
- YSI meter
 - Supplied by Stantec

Health and Safety Compliance

Prior to any onsite work being performed, a daily safety tailgate meeting was held every morning covering any and all H&S concerns as well as scope of work. Safety topics discussed include daily weather patterns, traffic concerns, required personal protective equipment (PPE), stop work authority (SWA), trip hazards, and utility locations. Depending on daily identified hazards, individuals were tasked with mitigation of these hazards (i.e., having to shut down a road, we have a designated person for traffic control to ensure a safe working environment).

Deviations from Original Proposal

RegenesiS adhered to remediation design specifications as outlined in the proposal. Design changes were made after coordination with Stantec and the RegenesiS technical team based on observations in the field. Further details of deviations will be described in the area specific deviations section as well as the logbooks and field maps.

General Application Information

The remediation reagent was prepared and applied via an RRS custom injection trailer. The injection trailer is fully enclosed and contains 350-gallon poly mix tanks, pumps and a delivery system equipped for direct connection to the injection wells. The RRS injection trailer used for the completion of this project contains the following components:

- Complete drain conical mixing tanks
- Vortex/Cyclone mixer
- Application Pump
- Multiple fluid delivery lines
- Self-sufficient, dedicated power
- Slip- resistant and chemical resistant flooring
- Flow and pressure controls
- Backflow prevention
- Pressure bypass controls
- Emergency eyewash and First-Aid station

The application pump is a multiple diaphragm positive displacement pump designed to prevent pulsation of the reagent while being applied. The application pump can deliver the remediation reagent at up to 250 pounds per square inch (psi) at up to 20 gallons per minute (gpm) to overcome potential hydraulic limitations. Mechanisms capable of maintaining and controlling injection pressures and injection

flowrates per injection point have been installed to achieve and maintain desired application pressure and flowrates. Safety bypass mechanisms are also installed to release back pressure in the event injection pressures exceed desired application ranges. Our application delivery system can deliver the remediation reagent at up to four (4) separate delivery lines simultaneously, each having the capability of monitoring injection pressures and injection flowrates/ totals at any given time. Each delivery line can reach beyond the injection trailer of at least 100 linear feet, limiting the need to move the injection trailer from point to point or in this case limiting the need to move the trailer several times each day. Additional lines were utilized when necessary to increase the trailers range without being moved.

The remediation reagent solutions were prepared in two (2) 350-gallon conical tanks that are configured with chemically resistant materials. This system setup allows for the remediation reagent solutions to be injected while mixing and preparing the second tank so that downtime is limited to water supply and continuous pumping can occur. A vortex/ cyclone mixer mounted to the mixing tanks rated with a liquid movement of 1800 gpm in water is outfitted with a shaft and propellers capable of sustaining a homogenous mixture was used to help mix the reagents properly. For each batch, mixed water was supplied via a hydrant before turning the mixer on. Once the water filled to the appropriate volume per the design concentration the remedial reagent was transferred from each technology's respective container. Each tote was measured and marked to show volumetric measurements to ensure accurate reagent dosing. Boreholes were backfilled with bentonite after injections were complete. When surfacing or daylighting was observed, the flowrates were adjusted, points redrilled, and volume was occasionally redistributed to accommodate. **See Injection Logs for details.**

TREATMENT AREAS

There were 4 treatment areas: On-site Barrier, On-site Source Grid, Western Permeable Reactive Barrier (WPRB), and PFAS Pilot. Each section is detailed below in their respective section as well as in the attached logs and field maps.

On-Site Barrier

A total of 11,009 gallons of the product mix was applied with a 3.90 dilution factor, with a total of 3,880 pounds of 3DME, 1401 pounds S-MZVI, and 27.75 Liters of BDI Plus in the area.

Application Method: Bottom-up direct push drilling with expendable tips or 2' retractable screens.

Injection Depth: Injection Interval: 8 to 10 feet, with total depths ranging up to 20 feet below ground surface (bgs); total injection depth and interval was shortened depending on surface elevation or probe refusal.

Number of Injection Points: 59 IPs

Average Injection Flowrate: 3.11 GPM

Average Injection Pressure: 13 PSI

Observations:

1. RRS observed daylighting while injecting in the uppermost interval within the On-Site Barrier. This could often be combatted by lowering flow rates to 2.0 gpm or lower and packing the troublesome boreholes.
2. If injection points were adjacent, or close in proximity, flow rates and pressure readings seemed "jumpy" indicating injection points were influencing each other in the subsurface.
3. Product influence was found in MW-07 while injecting on nearby injection points.



Figure 1: Active injection points in the On-site Barrier

Deviations From Proposal:

1. • The treatment interval changed from 5'-15' to Bedrock up 8' going no deeper than 20'. This was changed after a pre-injection soil core showed depth to water at 10' bgs, with moisture at 9'.
2. • OSB-29 was abandoned due to proximity to an underground utility line. Product redistributed to On-Site Source Grid
3. • On-site Treatment Line IPs 65-67 were abandoned to reduce impact of the drilling rig on the grass section. Product allocated IPs 56-65
4. • On-site Treatment Line IPs 52-55 were removed at the north end. Product allocated to IPs 56-65 and Source Area
5. • The 10 On-site Treatment Line IPs 56-65 were given 15 IPs worth of volume and spaced 15' apart.
6. • 2 tanks worth of product (47.76 lbs. ZVI, 119.4 lbs. 3DME, .463 L BDI) moved from treatment lines to Onsite Grid.
7. • On-site Treatment Line IPs 1-6 were moved downgradient of MW-6 to avoid interference with the PFAS Pilot results, while still treating VOCs. Only 3DME was injected in these IPs at a higher concentration.
8. • ZVI and BDI for IPs 1-6 were allocated to the PFAS Pilot injection area.

On-Site Source Grid

A total of 5,077 gallons of the product mix was applied with a 5.11 dilution factor, with a total of 2,120 pounds of 3DME, 1,548 pounds S-MZVI and 18.926 liters of BDI Plus in the area.

Application Method: Bottom-up direct push drilling with expendable tips.

Injection Depth: Injection Interval: 12 feet with injection depths up to 20 feet bgs; interval shortened if probe refusal was encountered shallower than 20 feet bgs.

Number of Injection Points: 25 IPs

Average Injection Flowrate: 3.11 GPM

Average Injection Pressure: 19 PSI

Observations:

1. RRS saw higher pressures in lower intervals. Pressures observed were roughly 27 psi in the lower intervals but dropped in later intervals.
2. RRS saw slight back pressure from some injection points, but the pressure was quickly dissipated and did not cause major delays.
3. RRS saw visual confirmation of product in MW-17 while injecting on OSS- 9.



Figure 2: A bailer sample from MW-17 showing visual product influence.

4. While injecting OSS-6, RRS observed surfacing through nearby cracks in the concrete.

Deviations From Proposal:

1. • 119.4 lbs. of 3DME, 47.76 lbs. of S-MZVI, and .463 Liters of BDI were redistributed from OSB: 52-55, to the On-Site Source Grid
2. • RRS utilized an external manifold to be able to inject on 5 injection points simultaneously.
3. • OSS: 8,10, 12 and 14 were abandoned at the request of Stantec due to an unidentified underground obstruction. Product was redistributed evenly to OSS: 6,11,13 and 15.
4. • OSS-15 was relocated 4.5' southeast due to the unidentified underground obstruction noted above.

Western Permeable Reactive Barrier

A total of 27,603 gallons of the product mix was applied with a 12,500 PlumeStop injection concentration, with a total of 14,141 pounds of PlumeStop, 3,419 pounds S-MZVI and 21 liters of BDI Plus in the area.

Application Method: Bottom-up direct push drilling with 2' retractable screens.

Injection Depth: Injection Interval: 8 feet, with a maximum depth of 16 feet bgs; injection interval shortened if probe refusal was encountered shallower than 16 feet bgs

Number of Injection Points: 69 IPs

Average Injection Flowrate: 3.59 GPM

Average Injection Pressure: 15.5 PSI

Observations:

1. • While injecting in the northern section of WPRB, RRS observed surfacing through PZ-9 and PZ-10 as well as the cracks in the concrete.
2. • RRS saw an episode of daylighting through the borehole of WPRB- 3 while injecting on WPRB-5. RRS was able to replug the borehole and continue injections.
3. • RRS observed product influence in PZ-3 after 23 gallons injected into WPRB-23. The sample taken showed a concentration of 2,000 ppm of activated carbon.

- 4. RRS observed product influence in PZ-4 after 125 gallons injected in WPRB- 23. The sample taken showed a concentration of 3,800 ppm of activated carbon.

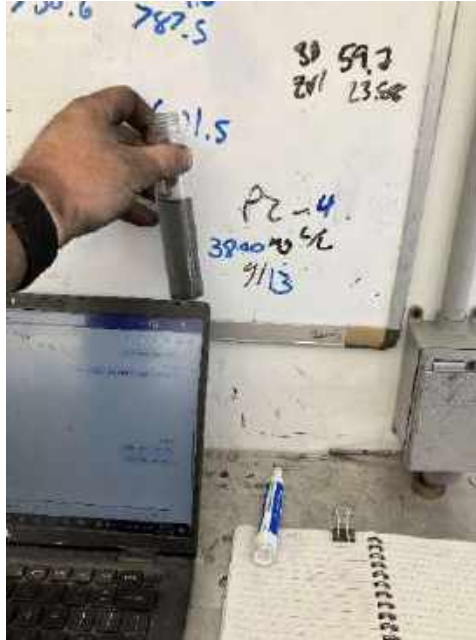


Figure 3: A concentration test from PZ-4 showing a sample containing 3800 ppm of activated carbon.

- 5. While injecting on the final interval (8'-9' bgs) of WPRB-24, RRS observed minor surfacing through the borehole of WPRB-23. RRS was able to replug the borehole and continue injections.
- 6. RRS saw visual product confirmation in PZ-7 and PZ-8 while injecting on WPRB-38. Samples taken after WPRB-38 was complete showed 3900 ppm of activated carbon from PZ-7 and 14,000 ppm of activated carbon from PZ-8.
- 7. Daylighting along nearby concrete cracks was observed during injection of WPRB-61 and 62.

Deviations From Proposal:

- 1. WPRB was moved to the eastern side of Eastern Ave at the request of Stantec.
- 2. Due to recognized utility conflicts, the number of injection points were reduced to 71 with 19 injection points receiving double volume. See **APPENDIX A-3** for details on individual injection points.
- 3. 150 gallons of reagent mix at the PFAS Pilot concentration was redistributed from the PFAS Pilot test to WPRB- 34,35,40,41.
- 4. Injection concentration changed to a 12,500 PlumeStop Concentration after a pattern of surfacing was present in the northern section of WPRB.

- 5. • Due to repeated surfacing unable to be mitigated, a portion of product from WPRB: 61-65 was redistributed to WPRB:42-53
- 6. • 50 gallons from WPRB-39 were redistributed to WPRB- 37 to surfacing in the final interval.
- 7. • PZ-5/6 were not installed due to observing adequate distribution with the other Piezometers within the WPRB.

PFAS Test Pilot

A total of 3,858 gallons of the product mix was applied with a 22,000 PlumeStop injection concentration, with a total of 3,858 pounds of PlumeStop, 139 pounds S-MZVI and 2.784 liters of BDI Plus in the area.

Application Method: Bottom-up direct push drilling with 2' retractable screens.

Injection Depth: 16 to 6 feet bgs

Number of Injection Points: 12 IPs

Average Injection Flowrate: 3.66 GPM

Average Injection Pressure: 16 PSI

Observations:

- 1. • While injecting on PP: 1,2,7,9 RRS observed product influence on PZ-2 and MW-06 as early as 27 gallons into injections. Samples taken from PZ-2 showed a concentration of 300 ppm of activated carbon while MW-6 showed 2,900 ppm of activated carbon.
- 2. • Roughly 65 minutes into injections PZ-1 showed product influence. The first sample taken showed a concentration of 200 ppm of activated carbon.
- 3. • RRS observed a daylighting episode through MW-6. RRS was able to tighten the J plug and continue injections.

4. In the final injection points RRS observed surfacing through concrete cracks near the PFAS Pilot as well as the sand pack of MW-6.



Figure 4: Daylighting episode surfacing through cracks in concrete.

Deviations From Proposal:

1. PFAS Pilot Test was relocated from MW-07 to MW-06 to isolate it from potential 3DME influence from the On-Site Barrier. Because 3DME will take up sorption sites on the carbon and given the widespread distribution of 3DME observed in the original pilot area, RegenesiS and Stantec moved the PFAS pilot to a new PFAS impacted well.
2. After taking a pre-injection soil core, the treatment interval was changed to 6'-16' bgs to ensure coverage of the saturated zone of the screen of MW-06
3. Injection point layout was changed to an arc pattern to cover the apparent non-linear groundwater flow near MW-06
4. 144 lbs of S-MZVI, and 2,784 liters of BDI Plus were added to the PFAS Pilot to treat CVOC's in MW-06. This product was redistributed from OSB: 1-6.
5. 150 gallons were redistributed from PFAS Pilot to WPRB: 34,35,40 and 41 due to consistent surfacing from MW-06.



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Appendix A-1:

On-Site Barrier Injection Logs



Stantec-Rockwell-Collins
 Injection Summary Log
 On-Site Treatment Lines
 Table 1



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of 3DME per Interval	Pounds of MicroZVI per Interval	Total Gallons Per Location	Pounds of 3DME Per Location	Pounds of S-Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
1	9/20/2023	10:27	18-16	13	3.09	0.0	6	6.1	15	0	24.0	60	0	0.000	Injected with a higher concentration	Expendable Tip
	9/20/2023	10:28	16-14	0	1.64	6.1	12	5.9	15	0						
	9/20/2023	10:33	14-12	0	1.85	12.0	18	6.0	15	0						
	9/20/2023	10:36	12-10	0	2.09	18.0	24	6.0	15	0						
2	9/20/2023	10:47	18-16	23	1.78	0.0	6.0	6.0	15	0	24.0	60	0	0.000	Injected with a higher concentration	Expendable Tip
	9/20/2023	10:50	16-14	17	1.79	6.0	12.0	6.0	15	0						
	9/20/2023	10:56	14-12	0	2.02	12.0	18.0	6.0	15	0						
	9/20/2023	10:59	12-10	0	1.92	18.0	24.0	6.0	15	0						
3	9/20/2023	11:09	17-15	21	1.80	0.0	6	6.0	15	0	24.0	60	0	0.000	Injected with a higher concentration	Expendable Tip
	9/20/2023	11:14	15-13	4	1.97	6.0	12	6.0	15	0						
	9/20/2023	11:17	13-11	0	2.02	12.0	18	6.0	15	0						
	9/20/2023	11:21	11-9	0	2.04	18.0	24	6.0	15	0						
4	9/20/2023	11:31	18-16	50	1.47	0.0	6.0	6.0	15	0	24.0	60	0	0.000	Injected with a higher concentration	Expendable Tip
	9/20/2023	11:37	16-14	3	1.96	6.0	12.0	6.0	15	0						
	9/20/2023	11:40	14-12	0	2.02	12.0	18.0	6.0	15	0						
	9/20/2023	11:44	12-10	0	2.03	18.0	24.0	6.0	15	0						
5	9/20/2023	11:56	18-16	50	1.32	0.0	6	6.0	15	0	24.0	60	0	0.000	Injected with a higher concentration	Expendable Tip
	9/20/2023	12:03	16-14	6	1.89	6.0	12	6.0	15	0						
	9/20/2023	12:08	14-12	0	2.12	12.0	18	6.0	15	0						
	9/20/2023	12:13	12-10	0	2.15	18.0	24	6.0	15	0						
6	9/20/2023	12:25	18-16	52	1.53	0.0	6.0	6.0	15	0	24.0	60	0	0.000	Injected with a higher concentration	Expendable Tip
	9/20/2023	12:29	16-14	0	2.11	6.0	12.0	6.0	15	0						
	9/20/2023	12:35	14-12	0	2.14	12.0	18.0	6.0	15	0						
	9/20/2023	12:39	12-10	0	2.21	18.0	24.0	6.0	15	0						
7	9/9/2023	11:21	17-15	25	3.83	0.0	46	46.1	15	6	185.2	60	24	0.121		Expendable Tip
	9/9/2023	11:41	15-13	17	4.22	46.1	93	46.8	15	6						
	9/9/2023	11:58	13-11	10	4.36	92.9	139	46.3	15	6						
	9/9/2023	12:18	11-9	7	2.52	139.2	185	46.0	15	6						
8	9/9/2023	11:21	17-15	42	4.89	0.0	47.2	47.2	15	6	185.2	60	24	0.121		Expendable Tip
	9/9/2023	11:41	15-13	18	4.31	47.2	92.2	45.0	15	6						
	9/9/2023	11:58	13-11	13	4.04	92.2	138.9	46.7	15	6						
	9/9/2023	12:18	11-9	6	2.61	138.9	185.2	46.3	15	6						
9	9/9/2023	11:21	16-14	27	4.03	0.0	46	46.2	15	6	185.2	60	24	0.121		Expendable Tip
	9/9/2023	11:41	14-12	11	4.48	46.2	92	45.9	15	6						
	9/9/2023	11:58	12-10	10	4.66	92.1	139	47.3	15	6						
	9/9/2023	12:18	10-8	11	2.09	139.4	185	45.8	15	6						
10	9/9/2023	11:21	16-14	20	3.89	0.0	46.7	46.7	15	6	185.2	60	24	0.121		Expendable Tip
	9/9/2023	11:41	14-12	16	4.06	46.7	92.2	45.5	15	6						
	9/9/2023	11:58	12-10	13	4.16	92.2	138.6	46.4	15	6						
	9/9/2023	12:18	10-8	0	2.49	138.6	185.2	46.6	15	6						
11	9/9/2023	9:16	16-14	22	3.14	0.0	47	46.5	15	6	185.2	60	24	0.121		Expendable Tip
	9/9/2023	9:44	14-12	10	3.81	46.5	92	45.5	15	6						
	9/9/2023	10:07	12-10	8	3.84	92.0	141	49.1	16	6						
	9/9/2023	10:36	10-8	0	2.51	141.1	185	44.1	14	6						
12	9/9/2023	9:16	19-17	55	4.52	0.0	46.6	46.6	15	6	185.2	60	24	0.121		Expendable Tip
	9/9/2023	9:44	17-15	27	4.24	46.6	92.7	46.1	15	6						
	9/9/2023	10:07	15-13	9	3.75	92.7	142.1	49.4	16	6						
	9/9/2023	10:36	13-11	3	2.71	142.1	185.2	43.1	14	6						



Stantec-Rockwell-Collins
 Injection Summary Log
 On-Site Treatment Lines
 Table 1



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of 3DME per Interval	Pounds of MicroZVI per Interval	Total Gallons Per Location	Pounds of 3DME Per Location	Pounds of S-Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
13	9/9/2023	9:16	17-15	16	2.67	0.0	47	46.6	15	6	185.2	60	24	0.121	Expendable Tip	
	9/9/2023	9:44	15-13	7	3.75	46.6	93	46.4	15	6				0.121		
	9/9/2023	10:07	13-11	6	3.91	93.0	143	50.3	16	6				0.121		
	9/9/2023	10:36	11-9	2	2.87	143.3	185	41.9	13	5				0.121		
14	9/9/2023	9:17	19-17	32	3.57	0.0	46.6	46.6	15	6	185.2	60	24	0.121	Expendable Tip	
	9/9/2023	9:45	17-15	27	5.18	46.6	92.6	46.0	15	6				0.121		
	9/9/2023	10:07	15-13	6	3.80	92.6	142.4	49.8	16	6				0.121		
	9/9/2023	10:36	13-11	0	2.35	142.4	185.2	42.8	14	6				0.121		
15						0.0	0.0	0	0	0.0	0	0	0.000	Abandoned and redistributed to IP-56-65		
16	8/29/2023	12:06	15-13	1	2.20	0.0	46.4	46.4	15	6	186.5	60	24	0.121	2-Foot Screen	
	8/29/2023	12:31	13-11	6	3.80	46.4	101.6	55.2	18	7				0.121		
	8/29/2023	12:48	11-9	4	2.00	101.6	138.9	37.3	12	5				0.121		
	8/29/2023	13:11	9-7	11	3.40	138.9	186.5	47.6	15	6				0.121		
17	8/30/2023	9:55	15-13	5	3.30	0.0	47	46.6	15	6	185.2	60	24	0.121	2-Foot Screen	
	8/30/2023	10:12	13-11	9	4.10	46.6	93	46.2	15	6				0.121		
	8/30/2023	10:29	11-9	13	3.90	92.8	140	46.7	15	6				0.121		
	8/30/2023	11:00	9-7	6	2.20	139.5	185	45.7	15	6				0.121		
18	8/29/2023	12:06	14.5-12.5	1	1.90	0.0	46.4	46.4	15	6	190.9	62	25	0.121	2-Foot Screen	
	8/29/2023	12:31	12.5-10.5	3	2.10	46.4	91.4	45.0	15	6				0.121		
	8/29/2023	12:48	10.5-8.5	12	3.00	91.4	139.2	47.8	15	6				0.121		
	8/29/2023	13:11	8.5-6.5	9	2.70	139.2	190.9	51.7	17	7				0.121		
19	8/30/2023	9:55	15-13	4	3.50	0.0	46	46.3	15	6	185.2	60	24	0.121	2-Foot Screen	
	8/30/2023	10:12	13-11	10	4.10	46.3	93	46.6	15	6				0.121		
	8/30/2023	10:29	11-9	12	3.70	92.9	139	46.3	15	6				0.121		
	8/30/2023	11:00	9-7	3	1.80	139.2	185	46.0	15	6				0.121		
20	8/29/2023	12:07	15-13	1	2.00	0.0	46.3	46.3	15	6	174.0	56	22	0.121	2-Foot Screen	
	8/29/2023	12:32	13-11	6	2.70	46.3	96.0	49.7	16	6				0.121		
	8/29/2023	12:48	11-9	8	2.40	96.0	139.4	43.4	14	6				0.121		
	8/29/2023	13:11	9-7	5	2.30	139.4	174.0	34.6	11	4				0.121		
21	8/30/2023	9:56	17-15	4	3.20	0.0	47.0	47.0	15	6	185.2	60	24	0.121	2-Foot Screen	
	8/30/2023	10:12	15-13	9	3.70	47.0	94.6	47.6	15	6				0.121		
	8/30/2023	10:29	13-11	9	3.50	94.6	140.0	45.4	15	6				0.121		
	8/30/2023	11:00	11-9	8	2.00	140.0	185.2	45.2	15	6				0.121		
22	8/29/2023	12:07	16-14	1	2.00	0.0	46.2	46.2	15	6	189.4	61	24	0.121	2-Foot Screen	
	8/29/2023	12:32	14-12	5	2.90	46.2	94.0	47.8	15	6				0.121		
	8/29/2023	12:49	12-10	8	2.40	94.0	139.7	45.7	15	6				0.121		
	8/29/2023	13:12	10-8	6	2.30	139.7	189.4	49.7	16	6				0.121		
23	8/30/2023	9:56	18-16	16	3.40	0.0	46.8	46.8	15	6	185.2	60	24	0.121	2-Foot Screen	
	8/30/2023	10:12	16-14	11	3.30	46.8	93.0	46.2	15	6				0.121		
	8/30/2023	10:30	14-12	15	4.00	93.0	139.0	46.0	15	6				0.121		
	8/30/2023	11:00	12-10	5	1.70	139.0	185.2	46.2	15	6				0.121		
24	8/29/2023	14:40	18'-16'	19	2.30	0.0	46.8	46.8	15	6	188.7	61	24	0.121	2-Foot Screen	
	8/29/2023	15:19	16'-14'	4	2.90	46.8	93.5	46.7	15	6				0.121		
	8/29/2023	15:46	14'-12'	15	2.60	93.5	139.2	45.7	15	6				0.121		
	8/29/2023	16:07	12'-10'	10	1.60	139.2	188.7	49.5	16	6				0.121		
25	8/30/2023	12:10	18-16	1	1.20	0.0	44.4	44.4	14	6	185.2	60	24	0.121	2-Foot Screen	
	8/30/2023	12:16	16-14	12	2.50	44.4	93.0	48.6	16	6				0.121		
	8/30/2023	12:34	14-12	14	3.50	93.0	138.0	45.0	15	6				0.121		
	8/30/2023	12:48	12-10	13	2.30	138.0	185.2	47.2	15	6				0.121		
26	8/29/2023	14:40	18'-16'	14	2.40	0.0	47.1	47.1	15	6	190.4	61	25	0.121	2-Foot Screen	
	8/29/2023	15:20	16'-14'	10	2.60	47.1	92.6	45.5	15	6				0.121		
	8/29/2023	15:46	14'-12'	13	3.00	92.6	138.9	46.3	15	6				0.121		
	8/29/2023	16:07	12'-10'	6	2.00	138.9	190.4	51.5	17	7				0.121		
27	8/30/2023	12:10	18-16	34	3.00	0.0	45.0	45.0	15	6	185.2	60	24	0.121	Expendable Tip	
	8/30/2023	12:16	16-14	4	3.80	45.0	94.5	49.5	16	6				0.121		
	8/30/2023	12:34	14-12	5	3.70	94.5	139.9	45.4	15	6				0.121		
	8/30/2023	12:48	12-10	9	2.10	139.9	185.2	45.3	15	6				0.121		
28	8/29/2023	14:40	18'-16'	10	2.50	0.0	47.9	47.9	15	6	189.6	61	24	0.121	2-Foot Screen	
	8/29/2023	15:20	16'-14'	12	2.80	47.9	92.9	45.0	15	6				0.121		
	8/29/2023	15:46	14'-12'	10	2.80	92.9	139.4	46.5	15	6				0.121		
	8/29/2023	16:07	12'-10'	8	1.70	139.4	189.6	50.2	16	6				0.121		
29						0.0	0.0	0	0	0.0	0	0	0.121	Point abandoned due to proximity of utility line		
30	8/29/2023	14:41	18'-16'	2	3.50	0.0	46.8	46.8	15	6	172.0	55	22	0.121	2-Foot Screen	
	8/29/2023	15:20	16'-14'	11	2.80	46.8	93.6	46.8	15	6				0.121		
	8/29/2023	15:47	14'-12'	12	3.00	93.6	139.8	46.2	15	6				0.121		
	8/29/2023	16:07	12'-10'	7	2.40	139.8	172.0	32.2	10	4				0.121		



Stantec-Rockwell-Collins
Injection Summary Log
On-Site Treatment Lines

Table 1



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of 3DME per Interval	Pounds of MicroZVI per Interval	Total Gallons Per Location	Pounds of 3DME Per Location	Pounds of S-Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
31	8/30/2023	12:10	18-16	3	2.60	0.0	46.0	46.0	15	6	185.2	60	24	0.121		2-Foot Screen
	8/30/2023	12:16	16-14	9	4.10	46.0	95.1	49.1	16	6						
	8/30/2023	12:34	14-12	16	3.90	95.1	139.5	44.4	14	6						
	8/30/2023	12:48	12-10	3	1.80	139.5	185.2	45.7	15	6						
32	8/30/2023	14:48	17-15	27	4.60	0.0	45.1	45.1	15	6	142.4	46	18	0.121		2-Foot Screen
	8/30/2023	15:05	15-13	13	3.20	45.1	92.8	47.7	15	6						
	8/30/2023	15:19	13-11	26	4.70	92.8	138.7	45.9	15	6						
	8/30/2023	15:38	11-9	8	2.10	0.0	3.7	3.7	1	0						
33	8/30/2023	12:10	17-15	12	2.50	0.0	46.0	46.0	15	6	185.2	60	24	0.121		2-Foot Screen
	8/30/2023	12:16	15-13	5	4.10	46.0	93.2	47.2	15	6						
	8/30/2023	12:34	13-11	16	3.90	93.2	138.0	44.8	14	6						
	8/30/2023	12:48	11-9	10	1.90	138.0	185.2	47.2	15	6						
34	8/30/2023	17:06	17-15	23	5.70	0.0	50.0	50.0	16	6	138.9	45	18	0.121		2-Foot Screen
	8/30/2023	17:08	15-13	26	5.10	50.0	93.0	43.0	14	6						
	8/30/2023	17:25	13-11	18	4.00	93.0	138.9	45.9	15	6						
35	8/30/2023	17:48	11-9	1	0.00	138.9	138.9	0.0	0	0	201.4	65	26	0.121	1/8 gal of surfacing from bore hole. Rods tightened, borehole repacked with benseal	2-Foot Screen
	8/30/2023	14:48	17-15	9	2.70	0.0	50.0	50.0	16	6						
	8/30/2023	15:05	15-13	15	3.70	50.0	94.4	44.4	14	6						
	8/30/2023	15:19	13-11	20	4.40	94.4	138.9	44.5	14	6						
	8/30/2023	15:39	11-9	7	2.00	0.0	62.5	62.5	20	8						
36	8/30/2023	14:49	16-14	28	3.80	0.0	46.5	46.5	15	6	200.0	64	26	0.121		Expendable Tip
	8/30/2023	15:05	14-12	22	4.20	46.5	92.6	46.1	15	6						
	8/30/2023	15:20	12-10	15	3.60	92.6	139.1	46.5	15	6						
	8/30/2023	15:39	10-8	7	2.00	0.0	60.9	60.9	20	8						
37	8/30/2023	17:06	16-14	13	3.60	0.0	50.0	50.0	16	6	200.6	65	26	0.121		Expendable Tip
	8/30/2023	17:08	14-12	12	3.70	50.0	96.0	46.0	15	6						
	8/30/2023	17:25	12-10	5	2.00	96.0	138.9	42.9	14	6						
	8/30/2023	17:48	10-8	8	2.90	0.0	61.7	61.7	20	8						
38	8/30/2023	14:49	16-14	27	4.50	0.0	46.6	46.6	15	6	198.3	64	26	0.121		Expendable Tip
	8/30/2023	15:05	14-12	16	4.10	46.6	92.6	46.0	15	6						
	8/30/2023	15:20	12-10	12	3.10	92.6	140.3	47.7	15	6						
	8/30/2023	15:39	10-8	7	2.00	0.0	58.0	58.0	19	7						
39	9/6/2023	10:05	17-15	18	3.00	0.0	48.1	48.1	16	6	185.2	60	24	0.121		Expendable Tip
	9/6/2023	10:47	15-13	22	4.30	48.1	94.0	45.9	15	6						
	9/6/2023	11:16	13-11	22	4.70	94.0	139.0	45.0	15	6						
	9/6/2023	11:36	11-9	10	2.20	139.0	185.2	46.2	15	6						
40	8/30/2023	17:06	16-14	13	2.40	0.0	49.0	49.0	16	6	200.6	65	26	0.121		Expendable Tip
	8/30/2023	17:08	14-12	19	4.20	49.0	95.5	46.5	15	6						
	8/30/2023	17:25	12-10	12	2.80	95.5	138.9	43.4	14	6						
	8/30/2023	17:48	10-8	3	2.80	0.0	61.7	61.7	20	8						
41	9/6/2023	10:25	18-16	0	1.80	0.0	48.4	48.4	16	6	185.2	60	24	0.121		Expendable Tip
	9/6/2023	10:55	16-14	12	4.40	48.4	92.8	44.4	14	6						
	9/6/2023	11:16	14-12	8	3.90	92.8	138.9	46.1	15	6						
	9/6/2023	11:36	12-10	10	2.70	138.9	185.2	46.3	15	6						
42	8/30/2023	17:06	16-14	14	3.40	0.0	48.0	48.0	15	6	200.6	65	26	0.121		2-Foot Screen
	8/30/2023	17:08	14-12	10	2.20	48.0	97.7	49.7	16	6						
	8/30/2023	17:25	12-10	18	4.10	97.7	138.9	41.2	13	5						
	8/30/2023	17:49	10-8	13	2.60	0.0	61.7	61.7	20	8						
43	9/6/2023	10:29	17-15	19	2.80	0.0	46.4	46.4	15	6	185.2	60	24	0.121		Expendable Tip
	9/6/2023	10:55	15-13	16	3.70	46.4	94.1	47.7	15	6						
	9/6/2023	11:16	13-11	22	4.30	94.1	140.1	46.0	15	6						
	9/6/2023	11:36	11-9	12	2.40	140.1	185.2	45.1	15	6						
44	9/6/2023	10:38	18-16	10	4.00	0.0	47.4	47.4	15	6	185.2	60	24	0.121		Expendable Tip
	9/6/2023	11:00	16-14	7	3.30	47.4	95.3	47.9	15	6						
	9/6/2023	11:16	14-12	15	4.00	95.3	139.1	43.8	14	6						
	9/6/2023	11:36	12-10	10	2.50	139.1	185.2	46.1	15	6						
45	9/1/2023	8:52	17-15	15	2.40	0.0	46.7	46.7	15	6	185.2	60	24	0.121		Expendable Tip
	9/1/2023	9:01	15-13	6	2.90	46.7	92.6	45.9	15	6						
	9/1/2023	9:19	13-11	16	4.30	92.6	139.3	46.7	15	6						
	9/1/2023	9:35	11-9	9	2.30	139.3	185.2	45.9	15	6						
46	9/1/2023	8:52	17-15	3	2.20	0.0	46.5	46.5	15	6	185.2	60	24	0.121		Expendable Tip
	9/1/2023	9:01	15-13	13	2.60	46.5	92.7	46.2	15	6						
	9/1/2023	9:19	13-11	16	4.10	92.7	139.5	46.8	15	6						
	9/1/2023	9:36	11-9	10	2.30	139.5	185.2	45.7	15	6						
47	9/1/2023	10:14	18-16	20	3.90	0.0	43.6	43.6	14	6	90.0	29	12	0.121	2 gal of surfacing from the IP-48 bore hole. Bore hole packed and IP-47 lifted to next interval	Expendable Tip
	9/1/2023	10:28	16-14	18	3.50	43.6	57.4	13.8	4	2						
	9/1/2023	10:50	14-12	15	2.80	57.4	78.5	21.1	7	3						
	9/1/2023	11:09	12-10	10	2.00	78.5	90.0	11.5	4	1						



Stantec-Rockwell-Collins
 Injection Summary Log
 On-Site Treatment Lines
 Table 1



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of 3DME per Interval	Pounds of MicroZVI per Interval	Total Gallons Per Location	Pounds of 3DME Per Location	Pounds of S-Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
48	9/1/2023	8:52	17-15	12	2.00	0.0	46.8	46.8	15	6	185.2	60	24	0.121	Expendable Tip	
	9/1/2023	9:01	15-13	13	2.90	46.8	93.0	46.2	15	6						
	9/1/2023	9:19	13-11	15	3.50	93.0	141.1	48.1	16	6						
	9/1/2023	9:36	11-9	10	2.10	141.1	185.2	44.1	14	6						
49	9/1/2023	10:14	18-16	17	3.30	0.0	46.0	46.0	15	6	232.8	75	30	0.121	1 gal of surfacing from IP-50 bore hole. Bore hole repacked	
	9/1/2023	10:28	16-14	14	3.20	46.0	107.0	61.0	20	8						
	9/1/2023	10:50	14-12	13	3.20	107.0	169.0	62.0	20	8						
	9/1/2023	11:09	12-10	11	2.70	169.0	232.8	63.8	21	8						
50	9/1/2023	8:52	17-15	12	1.30	0.0	48.0	48.0	15	6	185.2	60	24	0.121	Expendable Tip	
	9/1/2023	9:01	15-13	13	3.60	48.0	93.6	45.6	15	6						
	9/1/2023	9:19	13-11	11	3.30	93.6	139.3	45.7	15	6						
	9/1/2023	9:36	11-9	5	2.30	139.3	185.2	45.9	15	6						
51	9/1/2023	10:14	18-16	24	4.40	0.0	46.8	46.8	15	6	232.8	75	30	0.121	1 gal of surfacing from IP-50 bore hole. Bore hole repacked	
	9/1/2023	10:28	16-14	15	3.00	46.8	107.0	60.2	19	8						
	9/1/2023	10:50	14-12	15	3.70	107.0	169.0	62.0	20	8						
	9/1/2023	11:09	12-10	7	2.60	169.0	232.8	63.8	21	8						
52						0.0	0.0	0	0	0.0	0	0	0	Point abandoned and redistributed to IP56-65		
53						0.0	0.0	0	0	0.0	0	0	0	Point abandoned and redistributed to IP56-65		
54						0.0	0.0	0	0	0.0	0	0	0	Point abandoned and redistributed to IP56-65		
55						0.0	0.0	0	0	0.0	0	0	0	Point abandoned and redistributed to IP56-65		
56	8/31/2023	10:01	21-19	37	3.90	0.0	69.8	69.8	23	9	290.0	93	37	0.174	Expendable Tip	
	8/31/2023	10:22	19-17	18	2.80	69.8	140.0	70.2	23	9						
	8/31/2023	10:51	17-15	23	4.70	140.0	208.7	68.7	22	9						
	8/31/2023	11:10	15-13	12	2.80	208.7	290.0	81.3	26	10						
57	8/31/2023	10:02	21-19	23	3.80	0.0	69.5	69.5	22	9	290.0	93	37	0.174	Expendable Tip	
	8/31/2023	10:22	19-17	9	3.30	69.5	143.0	73.5	24	9						
	8/31/2023	10:51	17-15	17	3.80	143.0	208.8	65.8	21	8						
	8/31/2023	11:10	15-13	4	3.00	208.8	290.0	81.2	26	10						
58	8/31/2023	10:02	21-19	28	3.50	0.0	70.0	70.0	23	9	290.0	93	37	0.174	2-Foot Screen	
	8/31/2023	10:22	19-17	25	3.80	70.0	139.0	69.0	22	9						
	8/31/2023	10:51	17-15	18	3.70	139.0	209.0	70.0	23	9						
	8/31/2023	11:11	15-13	14	3.20	209.0	290.0	81.0	26	10						
59	8/31/2023	10:02	21-19	27	3.30	0.0	69.7	69.7	22	9	290.0	93	37	0.174	2-Foot Screen	
	8/31/2023	10:22	19-17	30	5.00	69.7	139.1	69.4	22	9						
	8/31/2023	10:51	17-15	17	3.60	139.1	209.0	69.9	23	9						
	8/31/2023	11:11	15-13	15	2.80	209.0	290.0	81.0	26	10						
60	8/31/2023	13:12	21-19	31	4.20	0.0	69.9	69.9	23	9	290.0	93	37	0.174	Expendable Tip	
	8/31/2023	13:39	19-17	19	3.50	69.9	138.9	69.0	22	9						
	8/31/2023	13:58	17-15	22	4.20	138.9	209.1	70.2	23	9						
	8/31/2023	14:22	15-13	12	2.50	209.1	290.0	80.9	26	10						
61	8/31/2023	13:12	20-18	18	3.70	0.0	69.8	69.8	23	9	290.0	93	37	0.174	Trouble with starting flow on IP. Lifted an additional foot	
	8/31/2023	13:39	18-16	18	3.50	69.8	139.3	69.5	22	9						
	8/31/2023	13:58	16-14	18	3.70	139.3	208.5	69.2	22	9						
	8/31/2023	14:22	14-12	11	2.40	208.5	290.0	81.5	26	11						
62	8/31/2023	13:12	21-19	28	4.50	0.0	69.6	69.6	22	9	290.0	93	37	0.174	Expendable Tip	
	8/31/2023	13:39	19-17	23	3.90	69.6	139.1	69.5	22	9						
	8/31/2023	13:59	17-15	22	3.70	139.1	209.0	69.9	23	9						
	8/31/2023	14:22	15-13	12	2.30	209.0	290.0	81.0	26	10						
63	8/31/2023	13:12	20-18	23	3.70	0.0	70.1	70.1	23	9	290.0	93	37	0.174	Trouble with starting flow on IP. Lifted an additional foot	
	8/31/2023	13:39	18-16	21	4.50	70.1	139.0	68.9	22	9						
	8/31/2023	13:59	16-14	17	3.60	139.0	209.0	70.0	23	9						
	8/31/2023	14:22	14-12	15	2.50	209.0	290.0	81.0	26	10						
64	8/31/2023	15:36	21-19	25	5.00	0.0	70.0	70.0	23	9	290.0	93	37	0.174	Expendable Tip	
	8/31/2023	15:42	19-17	25	4.60	70.0	139.1	69.1	22	9						
	8/31/2023	15:59	17-15	28	5.40	139.1	209.0	69.9	23	9						
	8/31/2023	16:54	15-13	20	3.00	209.0	290.0	81.0	26	10						
65	8/31/2023	15:36	21.5-19.5	23	4.60	0.0	70.1	70.1	23	9	290.0	93	37	0.174	Expendable Tip	
	8/31/2023	15:42	19.5-17.5	15	5.00	70.1	139.5	69.4	22	9						
	8/31/2023	15:59	17.5-15.5	25	5.00	139.5	208.9	69.4	22	9						
	8/31/2023	16:54	15.5-13.5	21	3.00	208.9	290.0	81.1	26	10						

Total Gallons:	Total Lbs. of 3DME:	Total Lbs. of S-Micro ZVI:	Total Liters of BDI:
11008.7	3880.6	1401.1	27.753



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Appendix A-2:

On-Site Source Grid Injection logs



Stantec-Rockwell-Collins
 Injection Summary Log
 On-Site Source Grid
 Table 2



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of 3DME per Interval	Pounds of MicroZVI per Interval	Total Gallons Per Location	Pounds of 3DME Per Location	Pounds of S-Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
1	9/7/2023	8:29	20-18	34	1.90	0.0	53	53.4	22	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	9:21	18-16	30	4.00	53.4	104	50.3	21	15						
	9/7/2023	9:53	16-14	19	2.70	103.7	153	49.3	21	15						
	9/7/2023	10:18	14-12	19	2.90	153.0	203	50.1	21	15						
2	9/7/2023	11:46	20-18	9	1.70	0.0	51.3	51.3	21	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	12:33	18-16	17	3.10	51.3	101.5	50.2	21	15						
	9/7/2023	13:18	16-14	32	3.70	101.5	152.3	50.8	21	15						
	9/7/2023	13:57	14-12	3	1.40	152.3	203.1	50.9	21	16						
3	9/7/2023	8:31	19-17	47	2.60	0.0	52	51.9	22	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	9:21	17-15	24	3.70	51.9	102	50.4	21	15						
	9/7/2023	9:53	15-13	20	3.60	102.3	152	50.1	21	15						
	9/7/2023	10:19	13-11	15	3.00	152.4	203	50.7	21	15						
4	9/7/2023	11:46	20-18	41	2.60	0.0	51.2	51.2	21	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	12:33	18-16	23	3.60	51.2	101.5	50.3	21	15						
	9/7/2023	13:18	16-14	17	3.20	101.5	152.3	50.8	21	15						
	9/7/2023	13:57	14-12	11	1.80	152.3	203.1	50.9	21	16						
5	9/7/2023	8:34	20-18	32	2.70	0.0	52	51.8	22	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	9:21	18-16	24	3.50	51.8	102	50.2	21	15						
	9/7/2023	9:53	16-14	24	3.60	102.0	153	51.3	21	16						
	9/7/2023	10:19	14-12	13	2.30	153.3	203	49.8	21	15						
6	9/7/2023	11:46	20-18	36	2.50	0.0	101.8	101.8	42	31	406.2	170	124	0.378	To Receive double volume due to having to abandon OSS-8 13:25 Surfacing from cracks in the asphalt, reduced flowrate	Expendable Tip
	9/7/2023	12:33	18-16	33	5.30	101.8	205.8	104.0	43	32						
	9/7/2023	13:17	16-14	21	3.50	205.8	304.9	99.1	41	30						
	9/7/2023	14:09	14-12	12	1.50	304.9	406.2	101.3	42	31						
7	9/7/2023	8:51	20-18	26	3.60	0.0	53	53.3	22	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	9:21	18-16	20	3.70	53.3	106	53.0	22	16						
	9/7/2023	9:54	16-14	18	3.60	106.3	156	50.0	21	15						
	9/7/2023	10:19	14-12	16	3.50	156.3	203	46.8	20	14						
8						0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000	Abandoned and redistributed to OSS-6		
9	9/7/2023	8:51	19-17	26	3.60	0.0	54	53.5	22	16	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/7/2023	9:21	17-15	20	3.70	53.5	106	52.8	22	16						
	9/7/2023	9:54	15-13	18	3.60	106.3	156	50.0	21	15						
	9/7/2023	10:19	13-11	16	3.50	156.3	203	46.8	20	14						
10						0.0	0.0	0.0	0.0	0.0	0.0	0.000	Abandoned and redistributed to OSS-11			
11	9/7/2023	11:45	19-17	27	2.00	0.0	107	106.7	45	33	406.2	170	124	0.378	Receiving double volume redistributed from OSS-10	Expendable Tip
	9/7/2023	12:33	17-15	22	3.80	106.7	203	96.3	40	29						
	9/7/2023	13:17	15-13	16	3.20	203.0	310	107.3	45	33						
	9/7/2023	14:20	13-11	8	1.70	310.3	406	95.9	40	29						
12						0.0	0.0	0.0	0.0	0.0	0.0	0.000	Abandoned and redistributed to OSS-13			
13	9/7/2023	11:45	19-17	27	2.00	0.0	107	106.7	45	33	406.2	170	124	0.378	Receiving double volume redistributed from OSS-12	Expendable Tip
	9/7/2023	12:33	17-15	22	3.80	106.7	203	96.3	40	29						
	9/7/2023	13:17	15-13	16	3.20	203.0	310	107.3	45	33						
	9/7/2023	14:20	13-11	8	1.70	310.3	406	95.9	40	29						
14						0.0	0.0	0.0	0.0	0.0	0.0	0.000	Abandoned and redistributed to OSS- 15			
15	9/7/2023	14:52	19-17	32	4.90	0.0	102	102.0	43	31	406.2	170	124	0.378	Receiving double volume due to having to abandon OSS-14	Expendable Tip
	9/7/2023	15:19	17-15	37	5.00	102.0	203	101.4	42	31						
	9/7/2023	15:46	15-13	29	4.60	203.4	305	101.7	42	31						
	9/7/2023	16:08	13-11	30	5.10	305.1	406	101.1	42	31						
16	9/6/2023	14:35	18-16	35	2.90	0.0	51.5	51.5	21	16	203.1	85	62	0.189	Holding slight back pressure between intervals	Expendable Tip
	9/6/2023	14:58	16-14	29	4.40	51.5	101.6	50.1	21	15						
	9/6/2023	15:27	14-12	15	3.60	101.6	153.0	51.4	21	16						
	9/6/2023	15:51	12-10	11	2.60	153.0	203.1	50.1	21	15						
17	9/6/2023	14:30	18-16	24	2.10	0.0	51	50.8	21	15	203.1	85	62	0.189	Holding roughly 10 PSI of back pressure between intervals	Expendable Tip
	9/6/2023	14:58	16-14	19	3.70	50.8	102	51.2	21	16						
	9/6/2023	15:27	14-12	14	3.20	102.0	153	50.9	21	16						
	9/6/2023	15:52	12-10	9	3.10	152.9	203	50.2	21	15						



Stantec-Rockwell-Collins
 Injection Summary Log
 On-Site Source Grid
 Table 2



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of 3DME per Interval	Pounds of MicroZVI per Interval	Total Gallons Per Location	Pounds of 3DME Per Location	Pounds of S-Micro ZVI Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
18	9/6/2023	11:48	20-18	52	2.90	0.0	52.1	52.1	22	16	203.1	85	62	0.189		Expendable Tip
	9/6/2023	12:19	18-16	5	3.40	52.1	102.3	50.2	21	15				0.189		
	9/6/2023	12:49	16-14	3	3.00	102.3	154.2	51.9	22	16				0.189		
	9/6/2023	13:15	14-12	12	2.30	154.2	203.1	48.9	20	15				0.189		
19	9/6/2023	14:29	20-18	29	1.70	0.0	51	51.3	21	16	203.1	85	62	0.189		Expendable Tip
	9/6/2023	14:58	18-16	9	3.30	51.3	102	50.7	21	15				0.189		
	9/6/2023	15:26	16-14	9	2.70	102.0	153	50.8	21	15				0.189		
	9/6/2023	15:52	14-12	16	3.70	152.8	203	50.3	21	15				0.189		
20	9/6/2023	11:48	18-16	27	3.10	0.0	52.2	52.2	22	16	203.1	85	62	0.189	Daylighting > 1 gallon due to loose pressure relief valve. Tightened screw and continued	Expendable Tip
	9/6/2023	12:19	16-14	8	3.20	52.2	102.1	49.9	21	15				0.189		
	9/6/2023	12:49	14-12	20	3.80	102.1	153.4	51.3	21	16				0.189		
	9/6/2023	13:15	12-10	13	2.60	153.4	203.1	49.7	21	15				0.189		
21	9/6/2023	11:48	18-16	27	3.00	0.0	51.8	51.8	22	16	203.1	85	62	0.189	Injection point holding backpressure after interval Complete	Expendable Tip
	9/6/2023	12:20	16-14	24	3.90	51.8	102.0	50.2	21	15				0.189		
	9/6/2023	12:49	14-12	8	3.50	102.0	152.4	50.4	21	15				0.189		
	9/6/2023	13:15	12-10	13	2.70	152.4	203.1	50.7	21	15				0.189		
22	9/6/2023	14:28	18-16	9	1.20	0.0	51.8	51.8	22	16	203.1	85	62	0.189		Expendable Tip
	9/6/2023	14:58	16-14	14	3.70	51.8	101.9	50.1	21	15				0.189		
	9/6/2023	15:26	14-12	13	3.80	101.9	152.7	50.8	21	15				0.189		
	9/6/2023	15:52	12-10	10	3.10	152.7	203.1	50.4	21	15				0.189		
23	9/6/2023	14:28	20-18	36	1.20	0.0	51.8	51.8	22	16	203.1	85	62	0.189		Expendable Tip
	9/6/2023	14:58	18-16	14	3.70	51.8	101.8	50.0	21	15				0.189		
	9/6/2023	15:26	16-14	13	3.80	101.8	152.8	51.0	21	16				0.189		
	9/6/2023	15:52	14-12	10	3.10	152.8	203.1	50.3	21	15				0.189		
24	9/6/2023	11:48	17-15	7	2.40	0.0	51.7	51.7	22	16	203.1	85	62	0.189		Expendable Tip
	9/6/2023	12:20	15-13	12	3.25	51.7	101.9	50.2	21	15				0.189		
	9/6/2023	12:50	13-11	10	3.50	101.9	153.0	51.1	21	16				0.189		
	9/6/2023	13:16	11-9	6	2.50	153.0	203.1	50.1	21	15				0.189		
25	9/6/2023	11:48	20-18	7	2.40	0.0	51.7	51.7	22	16	203.1	85	62	0.189		Expendable Tip
	9/6/2023	12:20	18-16	12	3.25	51.7	101.9	50.2	21	15				0.189		
	9/6/2023	12:50	16-14	10	3.50	101.9	153.0	51.1	21	16				0.189		
	9/6/2023	13:16	14-12	6	2.50	153.0	203.1	50.1	21	15				0.189		
											Total Gallons:	Total Lbs. of 3DME	Total Lbs. of S-Micro ZVI	Total Liters of BDI		
											5077.5	2119.6	1547.9	18,926		



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Appendix A-3:

Western Permeable Barrier Injection Logs



Stantec-Rockwell-Collins
 Injection Summary Log
 WPRB
 Table 3



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of MicroZVI per Interval	Pounds of Plumestop Per Interval	Total Gallons Per Location	Pounds of S-Micro ZVI Per Location	Pounds of Plumestop Injected Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
1	9/19/2023	9:00	14-12	21	4.77	0.0	100	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/19/2023	9:40	12-10	14	4.22	100.3	201	100.3	13	52				0.078		
	9/19/2023	10:09	10-8	11	4.22	200.5	301	100.3	13	52				0.078		
2	9/14/2023	15:05	14-12	24	4.89	0.0	100.3	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/14/2023	15:24	12-10	24	2.51	100.3	200.0	99.7	13	52				0.078		
	9/14/2023	16:32	10-8	9	3.36	200.0	300.8	100.8	13	52				0.078		
3	9/19/2023	9:01	14-12	16	4.56	0.0	100	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/19/2023	9:40	12-10	14	4.34	100.3	201	100.3	13	52				0.078		
	9/19/2023	10:09	10-8	11	4.38	200.5	301	100.3	13	52				0.078		
4	9/14/2023	15:05	14-12	22	5.03	0.0	103.2	103.2	13	53	300.8	38	156	0.078	2-Foot Screen	
	9/14/2023	15:25	12-10	23	4.85	103.2	200.0	96.8	12	50				0.078		
	9/14/2023	16:31	10-8	12	3.78	200.0	300.8	100.8	13	52				0.078		
5	9/19/2023	11:22	14-12	20	4.82	0.0	100	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/19/2023	11:52	12-10	15	4.08	100.3	201	100.3	13	52				0.078		
	9/19/2023	12:47	10-8	14	4.27	200.5	301	100.3	13	52				0.078		
6	9/13/2023	14:58	14-12	13	3.68	0.0	100.0	100.0	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/13/2023	15:33	12-10	23	4.51	100.0	200.5	100.5	13	52				0.078		
	9/13/2023	16:10	10-8	14	3.48	200.5	300.8	100.3	13	52				0.078		
7	9/14/2023	15:05	14-12	18	5.12	0.0	102	102.0	13	53	300.8	38	156	0.078	2-Foot Screen	
	9/14/2023	15:25	12-10	22	5.09	102.0	200	98.0	12	51				0.078		
	9/14/2023	16:31	10-8	7	3.61	200.0	301	100.8	13	52				0.078		
8	9/15/2023	8:24	14-12	18	3.55	0.0	200.5	200.5	25	104	601.5	76	311	0.156	Scheduled to receive double volume	
	9/15/2023	9:24	12-10	20	4.70	200.5	401.0	200.5	25	104				0.156		
	9/15/2023	10:22	10-8	16	4.19	401.0	601.5	200.5	25	104				0.156		
9	9/15/2023	8:26	14-12	16	3.49	0.0	201	200.5	25	104	601.5	76	311	0.156	Scheduled to receive double volume	
	9/15/2023	9:24	12-10	23	4.80	200.5	401	200.5	25	104				0.156		
	9/15/2023	10:22	10-8	17	4.23	401.0	602	200.5	25	104				0.156		
10	9/19/2023	9:01	14-12	23	4.61	0.0	100.3	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/19/2023	9:40	12-10	14	3.41	100.3	200.5	100.3	13	52				0.078		
	9/19/2023	10:09	10-8	19	4.25	200.5	300.8	100.3	13	52				0.078		
11	9/13/2023	14:57	14-12	12	3.64	0.0	100	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/13/2023	15:33	12-10	24	4.82	100.3	201	100.3	13	52				0.078		
	9/13/2023	16:10	10-8	14	3.81	200.5	301	100.3	13	52				0.078		
12	9/15/2023	8:29	14-12	18	3.51	0.0	200.5	200.5	25	104	601.5	76	311	0.156	Scheduled to receive double volume	
	9/15/2023	9:24	12-10	10	4.70	200.5	401.0	200.5	25	104				0.156		
	9/15/2023	10:22	10-8	7	4.22	401.0	601.5	200.5	25	104				0.156		
13	9/13/2023	11:37	14-12	14	3.68	0.0	200	200.2	25	104	601.5	76	311	0.156	Scheduled to receive double volume	
	9/13/2023	12:36	12-10	11	4.81	200.2	401	201.1	25	104				0.156		
	9/13/2023	13:52	10-8	10	4.73	401.2	602	200.3	25	104				0.156		
14	9/14/2023	15:05	14-12	17	5.14	0.0	101.1	101.1	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/14/2023	15:25	12-10	11	4.52	101.1	200.0	98.9	12	51				0.078		
	9/14/2023	16:31	10-8	8	3.45	200.0	300.8	100.8	13	52				0.078		
15	9/13/2023	14:58	14-12	20	3.47	0.0	100	100.0	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/13/2023	15:33	12-10	24	5.02	100.0	201	100.5	13	52				0.078		
	9/13/2023	16:11	10-8	18	3.91	200.5	301	100.3	13	52				0.078		
16	9/15/2023	8:31	14-12	20	3.51	0.0	200.5	200.5	25	104	601.5	76	311	0.156	Scheduled to receive double volume	
	9/15/2023	9:24	12-10	18	4.70	200.5	401.0	200.5	25	104				0.156		
	9/15/2023	10:22	10-8	10	4.45	401.0	601.5	200.5	25	104				0.156		
17	9/13/2023	11:39	14-12	22	3.64	0.0	200	200.1	25	104	601.5	76	311	0.156	Scheduled to receive double volume	
	9/13/2023	12:36	12-10	21	4.88	200.1	401	201.0	25	104				0.156		
	9/13/2023	13:52	10-8	20	4.83	401.1	602	200.4	25	104				0.156		
18	9/19/2023	9:01	14-12	24	4.83	0.0	100.3	100.3	13	52	300.8	38	156	0.078	2-Foot Screen	
	9/19/2023	9:40	12-10	16	2.61	100.3	200.5	100.3	13	52				0.078		
	9/19/2023	10:08	10-8	20	4.32	200.5	300.8	100.3	13	52				0.078		



Stantec-Rockwell-Collins
Injection Summary Log
WPRB
Table 3



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of MicroZVI per Interval	Pounds of PlumeStop Per Interval	Total Gallons Per Location	Pounds of S-Micro ZVI Per Location	Pounds of PlumeStop Injected Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
19	9/14/2023	12:04	15-13	28	4.94	0.0	75	75.0	9	39	300.8	38	156	0.058		2-Foot Screen
	9/14/2023	12:33	13-11	20	4.74	75.0	150	75.0	9	39				0.058		
	9/14/2023	13:08	11-9	13	3.15	150.0	225	75.0	9	39				0.058		
	9/14/2023	13:27	9-8	9	2.12	225.0	301	75.8	10	39				0.058		
20	9/13/2023	14:54	16-14	25	3.47	0.0	75.1	75.1	9	39	300.8	38	156	0.058		2-Foot Screen
	9/13/2023	15:18	14-12	21	4.15	75.1	150.0	74.9	9	39				0.058		
	9/13/2023	16:11	12-10	18	3.79	150.0	225.0	75.0	9	39				0.058		
	9/13/2023	16:30	10-8	20	3.98	225.0	300.8	75.8	10	39				0.058		
21	9/14/2023	12:03	15-13	28	4.93	0.0	75.0	75.0	9	39	300.8	38	156	0.058		2-Foot Screen
	9/14/2023	12:33	13-11	23	4.68	75.0	150.0	75.0	9	39				0.058		
	9/14/2023	13:08	11-9	13	4.00	150.0	225.0	75.0	9	39				0.058		
	9/14/2023	13:27	9-8	11	2.40	225.0	300.8	75.8	10	39				0.058		
22	9/13/2023	11:41	15-13	30	3.61	0.0	174.2	174.2	22	90	601.5	76	311	0.116	Scheduled to receive double volume	2-Foot Screen
	9/13/2023	12:36	13-11	23	4.54	174.2	343.9	169.8	21	88				0.116		
	9/13/2023	13:52	11-9	19	4.13	343.9	515.6	171.6	22	89				0.116		
	9/13/2023	14:20	9-8	21	4.78	515.6	601.5	85.9	11	44				0.116		
23	9/13/2023	11:42	14-12	25	3.51	0.0	200.1	200.1	25	103	601.5	76	311	0.156	20 gallons injected seeing Colormetric influence in PZ-3 (Deep)	2-Foot Screen
	9/13/2023	12:36	12-10	21	4.71	200.1	400.1	200.0	25	103				0.156		
	9/13/2023	13:52	10-8	16	4.13	400.1	601.5	201.4	25	104				0.156		
24	9/14/2023	12:03	15-13	26	4.75	0.0	75.0	75.0	9	39	300.8	38	156	0.058	Began to surface through B orehole of IP-23 with 30 gallons remaining	2-Foot Screen
	9/14/2023	12:34	13-11	19	4.76	75.0	150.0	75.0	9	39				0.058		
	9/14/2023	13:09	11-9	14	3.11	150.0	225.0	75.0	9	39				0.058		
	9/14/2023	13:27	9-8	13	1.98	225.0	300.8	75.8	10	39				0.058		
25	9/13/2023	8:48	15-13	25	3.60	0.0	85.9	85.9	11	44	300.8	38	156	0.058		2-Foot Screen
	9/13/2023	9:24	13-11	19	4.16	85.9	171.9	86.0	11	44				0.058		
	9/13/2023	9:59	11-9	17	3.45	171.9	258.0	86.1	11	45				0.058		
	9/13/2023	10:28	9-8	5	2.34	258.0	300.8	42.8	5	22				0.058		
26	9/14/2023	12:03	14-12	30	4.91	0.0	100.0	100.0	13	52	300.8	38	156	0.078		2-Foot Screen
	9/14/2023	12:34	12-10	17	4.68	100.0	200.0	100.0	13	52				0.078		
	9/14/2023	13:27	10-8	6	2.93	200.0	300.8	100.8	13	52				0.078		
27	9/13/2023	8:45	14-12	26	3.57	0.0	101.0	101.0	13	52	300.8	38	156	0.078		2-Foot Screen
	9/13/2023	9:24	12-10	17	4.55	101.0	202.6	101.6	13	53				0.078		
	9/13/2023	9:59	10-8	11	4.04	202.6	300.8	98.2	12	51				0.078		
28	9/19/2023	11:22	15-13	19	3.97	0.0	85.0	85.0	11	44	300.8	38	156	0.058		2-Foot Screen
	9/19/2023	11:53	13-11	25	4.07	85.0	171.0	86.0	11	44				0.058		
	9/19/2023	12:47	11-9	17	4.27	171.0	261.0	90.0	11	47				0.058		
	9/19/2023	13:17	9-8	6	2.88	261.0	300.8	39.8	5	21				0.058		
29	9/13/2023	8:43	15-13	25	3.49	0.0	87.0	87.0	11	45	300.7	38	156	0.058		2-Foot Screen
	9/13/2023	9:24	13-11	14	4.05	87.0	172.1	85.1	11	44				0.058		
	9/13/2023	9:59	11-9	11	3.16	172.1	257.9	85.8	11	44				0.058		
	9/13/2023	10:28	9-8	4	2.17	257.9	300.7	42.8	5	22				0.058		
30	9/14/2023	9:05	14-12	24	4.21	0.0	101.5	101.5	13	52	300.8	38	156	0.078		2-Foot Screen
	9/14/2023	9:53	12-10	20	4.92	101.5	200.0	98.5	12	51				0.078		
	9/14/2023	10:23	10-8	18	4.62	200.0	300.8	100.8	13	52				0.078		



Stantec-Rockwell-Collins
 Injection Summary Log
 WPRB
 Table 3



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of MicroZVI per Interval	Pounds of Plumestop Per Interval	Total Gallons Per Location	Pounds of S-Micro ZVI Per Location	Pounds of Plumestop Injected Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons injected Per Interval								
31	9/13/2023	8:40	14-12	25	2.41	0.0	100.3	100.3	13	52	300.8	38	156	0.078		2-Foot Screen
	9/13/2023	9:23	12-10	19	4.39	100.3	200.6	100.3	13	52						
	9/13/2023	9:59	10-8	15	4.29	200.6	300.8	100.1	13	52						
32	9/19/2023	11:22	14-12	20	4.21	0.0	100.3	100.3	13	52	300.8	38	156	0.078		2-Foot Screen
	9/19/2023	11:53	12-10	20	4.64	100.3	200.5	100.3	13	52						
	9/19/2023	12:47	10-8	23	4.03	200.5	300.8	100.3	13	52						
33	9/14/2023	9:08	14-12	24	3.54	0.0	100.3	100.3	13	52	300.8	38	156	0.078		2-Foot Screen
	9/14/2023	9:53	12-10	18	4.84	100.3	200.0	99.7	13	52						
	9/14/2023	10:24	10-8	18	4.91	200.0	300.8	100.8	13	52						
34	9/12/2023	11:46	15-13	8	2.06	0.0	104.7	104.7	8	42	692.7	82	346	0.116	37.5 Gallons at PFAS Pilot concentration, Remaining at design New set at new concentration	2-Foot Screen
	9/12/2023	13:11	15-13	17	4.34	0.0	168.2	168.2	21	87						
	9/12/2023	14:02	13-11	14	3.99	168.2	308.8	140.5	18	73						
	9/12/2023	14:42	11-9	3	2.91	308.8	508.8	200.0	25	103						
	9/12/2023	15:49	9-8	8	3.23	508.8	588.0	79.2	10	41						
35	9/12/2023	11:46	15-13	0	1.98	0.0	104.7	104.7	8	43	692.7	82	347	0.116	37.5 Gallons at PFAS Pilot concentration, Remaining at design New set at new concentration	2-Foot Screen
	9/12/2023	13:11	15-13	16	4.25	0.0	168.1	168.1	21	87						
	9/12/2023	14:03	13-11	12	3.61	168.1	293.5	125.5	16	65						
	9/12/2023	14:42	11-9	5	3.05	293.5	507.6	214.1	27	111						
	9/12/2023	15:49	9-8	11	3.22	507.6	588.0	80.4	10	42						
36	9/14/2023	9:10	15-13	28	3.44	0.0	77.3	77.3	10	39	300.8	38	155	0.058		2-Foot Screen
	9/14/2023	9:53	13-11	24	5.01	77.3	150.0	72.7	9	38						
	9/14/2023	10:24	11-9	20	4.68	150.0	225.0	75.0	9	39						
	9/14/2023	10:57	9-8	11	2.65	225.0	300.8	75.8	10	39						
	9/19/2023	14:43	16-14	14	2.34	0.0	75.0	75.0	9	39						
37	9/19/2023	14:44	14-12	26	5.24	75.0	150.0	75.0	9	39	250.0	31	129	0.058		2-Foot Screen
	9/19/2023	15:14	12-10	23	5.10	150.0	225.0	75.0	9	39						
	9/19/2023	15:42	10-8	42	4.82	225.0	250.0	25.0	3	13						
	9/19/2023	15:42	10-8	42	4.82	225.0	250.0	25.0	3	13						
38	9/14/2023	9:13	15-13	23	3.52	0.0	84.3	84.3	11	44	300.8	38	156	0.058	Colormetric influence in Deep piezo roughly 15 gallons injected	2-Foot Screen
	9/14/2023	9:53	13-11	22	5.21	84.3	150.0	65.7	8	34						
	9/14/2023	10:24	11-9	18	4.64	150.0	225.0	75.0	9	39						
	9/14/2023	10:58	9-8	12	3.73	225.0	300.8	75.8	10	39						
39	9/19/2023	14:44	16-14	11	2.11	0.0	75.0	75.0	9	39	350.8	44	181	0.058		2-Foot Screen
	9/19/2023	14:44	14-12	26	4.91	75.0	150.0	75.0	9	39						
	9/19/2023	15:14	12-10	29	5.33	150.0	225.0	75.0	9	39						
	9/19/2023	15:42	10-8	25	4.95	225.0	350.8	125.8	16	65						
40	9/12/2023	11:46	16-14	17	1.11	0.0	104.7	104.7	8	43	692.7	82	347	0.116	37.5 Gallons at PFAS Pilot concentration, Remaining at design New set at new concentration	2-Foot Screen
	9/12/2023	13:11	16-14	29	4.27	0.0	138.5	138.5	17	72						
	9/12/2023	14:03	14-12	24	3.79	138.5	268.5	130.0	16	67						
	9/12/2023	14:43	12-10	6	2.53	268.5	439.7	171.2	22	89						
	9/12/2023	15:49	10-8	12	3.25	439.7	588.0	148.3	19	77						
41	9/12/2023	11:46	16-14	12	2.55	0.0	104.7	104.7	8	46	692.7	82	350	0.116	37.5 Gallons at PFAS Pilot concentration, Remaining at design New set at new concentration	2-Foot Screen
	9/12/2023	13:11	16-14	22	4.58	0.0	138.5	138.5	17	72						
	9/12/2023	14:03	14-12	25	5.01	138.5	289.7	151.2	19	78						
	9/12/2023	14:43	12-10	7	2.94	289.7	438.7	149.0	19	77						
	9/12/2023	15:50	10-8	13	3.54	438.7	588.0	149.3	19	77						



Stantec-Rockwell-Collins
Injection Summary Log



WPRB
Table 3

Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of MicroZVI per Interval	Pounds of Plumestop Per Interval	Total Gallons Per Location	Pounds of S-Micro ZVI Per Location	Pounds of Plumestop Injected Per Location	Liters of BDI Per Interval	Comments	Injection Tooling
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval								
42	9/14/2023	12:37	14-12	14	3.00	0.0	266.0	266.0	33	138	799.0	100	413	0.200	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	13:49	12-10	10	3.50	266.0	533.0	267.0	34	138						
	9/14/2023	14:37	10-8	13	3.30	533.0	799.0	266.0	33	138						
43	9/14/2023	9:52	14-12	11	3.10	0.0	133.0	133.0	17	69	399.8	50	207	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	10:38	12-10	12	3.30	133.0	266.0	133.0	17	69						
	9/14/2023	11:26	10-8	11	3.20	266.0	399.8	133.8	17	69						
44	9/14/2023	15:58	14-12	12	3.80	0.0	133.0	133.0	17	69	400.0	50	207	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	16:45	12-10	16	4.60	133.0	266.0	133.0	17	69						
	9/14/2023	17:19	10-8	21	5.80	266.0	400.0	134.0	17	69						
45	9/14/2023	13:02	14-12	8	3.20	0.0	133.0	133.0	17	69	399.0	50	206	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	13:50	12-10	7	3.20	133.0	266.0	133.0	17	69						
	9/14/2023	14:41	10-8	8	3.10	266.0	399.0	133.0	17	69						
46	9/14/2023	9:52	14-12	11	3.20	0.0	133.0	133.0	17	69	399.7	50	207	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	10:38	12-10	6	3.30	133.0	266.0	133.0	17	69						
	9/14/2023	11:26	10-8	5	3.00	266.0	399.7	133.7	17	69						
47	9/13/2023	16:09	14-12	22	3.10	0.0	100.5	100.5	13	52	300.3	38	155	0.120		2-Foot Screen
	9/13/2023	16:43	12-10	9	3.60	100.5	193.0	92.5	12	48						
	9/13/2023	17:11	10-8	15	4.20	193.0	300.3	107.3	13	55						
48	9/14/2023	13:03	14-12	10	3.30	0.0	136.0	136.0	17	70	399.0	50	206	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	13:50	12-10	10	3.00	136.0	266.0	133.0	16	67						
	9/14/2023	14:41	10-8	11	3.20	266.0	399.0	133.0	17	69						
49	9/14/2023	15:55	14-12	13	2.90	0.0	136.0	136.0	17	70	400.0	50	207	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	16:45	12-10	16	4.10	136.0	266.0	130.0	16	67						
	9/14/2023	17:20	10-8	20	5.50	266.0	400.0	134.0	17	69						
50	9/13/2023	14:43	14-12	8	3.00	0.0	101.2	101.2	13	52	300.5	38	155	0.120		2-Foot Screen
	9/13/2023	15:20	12-10	15	3.10	101.2	200.7	99.5	12	51						
	9/13/2023	15:58	10-8	15	3.40	200.7	300.5	99.8	13	52						
51	9/14/2023	9:53	14-12	15	3.10	0.0	133.1	133.1	17	69	399.6	50	207	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	10:38	12-10	12	3.40	133.1	266.1	133.0	17	69						
	9/14/2023	11:26	10-8	11	3.20	266.1	399.6	133.5	17	69						
52	9/14/2023	13:03	14-12	9	3.30	0.0	133.0	133.0	17	69	399.0	50	206	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	13:50	12-10	6	2.90	133.0	266.0	133.0	17	69						
	9/14/2023	14:41	10-8	8	3.40	266.0	399.0	133.0	17	69						
53	9/14/2023	9:53	14-12	11	3.40	0.0	133.2	133.2	17	69	399.7	50	207	0.100	Remaining volume from IPs 42-71 redistributed evenly to this area	2-Foot Screen
	9/14/2023	10:38	12-10	12	3.10	133.2	266.0	132.8	17	69						
	9/14/2023	11:26	10-8	6	3.30	266.0	399.7	133.7	17	69						
54	9/13/2023	14:32	14-12	15	3.10	0.0	100.1	100.1	13	52	300.2	38	155	0.120	x	2-Foot Screen
	9/13/2023	15:03	12-10	15	2.70	100.1	203.2	103.1	13	53						
	9/13/2023	15:41	10-8	11	3.30	203.2	300.2	97.0	12	50						
55	9/12/2023	13:56	14-12	13	2.10	0.0	200.5	200.5	25	104	600.2	75	310	0.240	Increased flowrate to ~4.5 gpm	2-Foot Screen
	9/12/2023	14:50	12-10	20	4.50	200.5	400.1	199.6	25	103						
	9/12/2023	16:36	10-8	17	4.90	400.1	550.0	149.9	19	78						
	9/13/2023	9:13	10-8	51	2.80	0.0	50.2	50.2	6	26						
59	9/13/2023	15:34	14-12	26	3.50	0.0	101.4	101.4	13	52	300.7	38	156	0.120		2-Foot Screen
	9/13/2023	16:08	12-10	22	3.00	101.4	199.5	98.1	12	51						
	9/13/2023	16:42	10-8	18	3.90	199.5	300.7	101.2	13	52						
57	9/13/2023	12:23	13-12	17	2.50	0.0	300.1	300.1	38	155	600.2	75	310	0.240	x	2-Foot Screen
	9/13/2023	14:12	12-10	20	3.40	300.1	450.4	150.3	19	78						
	9/13/2023	15:06	10-8	11	3.00	450.4	600.2	149.8	19	77						
58	9/12/2023	11:12	13-12	23	3.70	0.0	379.8	379.8	38	157	680.2	76	312	0.240		2-Foot Screen
	9/12/2023	13:33	12-10	3	2.10	0.0	150.3	150.3	19	78						
	9/12/2023	15:02	10-8	1	2.20	150.3	300.4	150.1	19	78						
56	9/12/2023	15:11	14-12	15	2.20	0.0	200.2	200.2	25	104	600.5	75	311	0.240	100 extra gallons in bottom. (redistribute from IP-62?)	2-Foot Screen
	9/13/2023	9:14	12-10	19	4.10	0.0	199.7	199.7	25	103						
	9/13/2023	10:49	10-8	15	3.70	199.7	400.3	200.6	25	104						



Stantec-Rockwell-Collins
 Injection Summary Log
 WPRB
 Table 3



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of MicroZVI per Interval	Pounds of PlumeStop Per Interval	Total Gallons Per Location	Pounds of S-Micro ZVI Per Location	Pounds of PlumeStop Injected Per Location	Liters of BDI Per Interval	Comments	Injection Tooling	
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval									
60	9/12/2023	11:12	14-12	16	3.50	0.0	187.6	187.6	19	78	337.6	38	156	0.120		2-Foot Screen	
	9/12/2023	13:33	12-10	2	2.00	0.0	75.1	75.1	9	39				0.060			
	9/12/2023	14:23	10-8	0	2.30	75.1	150.0	74.9	9	39				0.060			
61	9/13/2023	12:09	14-12	19	3.10	0.0	300.8	300.8	38	156	452.3	57	234	0.240	x	2-Foot Screen	
	9/13/2023	14:12	12-10	8	3.30	300.8	452.3	151.5	19	78				0.120			Surfacing from cement crack near IP-62. Abandon
62	9/12/2023	11:12	16-14	19	3.70	0.0	145.0	145.0	15	60	145.0	15	60	0.120	Surfacing from new concrete opening at IP-63.	2-Foot Screen	
63			16-14			0.0			0	0	0.0	0	0		Abandoned		
64			16-14			0.0			0	0	0.0	0	0		Abandoned		
65	9/12/2023	11:12	16-14	17	4.10	0.0	93.2	93.2	9	39	187.7	19	78	0.060		2-Foot Screen	
	9/12/2023	11:29	14-12	17	4.10	93.2	187.7	94.5	10	39				0.060			
66	9/13/2023	10:09	16-14	13	2.10	0.0	120.0	120.0	15	62	120.0	15	62	0.060	Surfacing from old borehole of IP-62 and cement crack. Resealed borehole with bentonite and decreased flowrate. Unable to seal. Abandon point.	2-Foot Screen	
	9/13/2023	11:06	16-14	19	2.40	0.0	150.2	150.2	19	78				0.120			
67	9/13/2023	12:37	14-12	13	2.80	150.2	303.1	152.9	19	79	775.0	97	401	0.120		2-Foot Screen	
	9/13/2023	13:30	12-10	12	3.20	303.1	450.2	147.1	18	76				0.120			
	9/13/2023	14:24	10-8	12	2.30	450.2	775.0	324.8	41	168				0.120			Additional volume in upper interval distributed from adjacent points.
	9/12/2023	13:57	16-14	13	2.40	0.0	75.0	75.0	9	39				0.060			
68	9/12/2023	14:47	14-12	6	2.30	75.0	150.2	75.2	9	39	300.1	38	155	0.060		2-Foot Screen	
	9/12/2023	15:17	12-10	9	3.00	150.2	225.1	74.9	9	39				0.060			
	9/12/2023	16:17	10-8	10	2.90	225.1	300.1	75.0	9	39				0.060			
	9/13/2023	9:15	16-14	11	2.00	0.0	75.2	75.2	9	39				0.060			
69	9/13/2023	9:51	14-12	10	2.80	75.2	150.0	74.8	9	39	301.3	38	156	0.060		2-Foot Screen	
	9/13/2023	10:21	12-10	7	2.90	150.0	225.1	75.1	9	39				0.060			
	9/13/2023	10:59	10-8	12	3.60	225.1	301.3	76.2	10	39				0.060			
	9/13/2023	11:47	16-14	23	3.30	0.0	75.1	75.1	9	39				0.060			
70	9/13/2023	12:37	14-12	15	3.00	75.1	150.5	75.4	9	39	302.1	38	156	0.060		2-Foot Screen	
	9/13/2023	12:58	12-10	12	3.20	150.5	225.2	74.7	9	39				0.060			
	9/13/2023	13:31	10-8	9	2.90	225.2	302.1	76.9	10	40				0.060			
71	9/13/2023	9:15	16-14	14	2.30	0.0	75.1	75.1	9	39	300.5	38	155	0.060		2-Foot Screen	
	9/13/2023	9:50	14-12	9	2.80	75.1	150.3	75.2	9	39				0.060			
	9/13/2023	10:21	12-10	9	2.10	150.3	225.3	75.0	9	39				0.060			
	9/13/2023	10:59	10-8	27	3.50	225.3	300.5	75.2	9	39				0.060			
											Total Gallons:	Total Lbs. of S-Micro ZVI	Total Lbs. of PlumeStop	Total Liters of BDI			
											27803.0	3419.0	14141.0	21.000			



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Appendix A-4:

PFAS Pilot Test Injection Logs



Stantec-Rockwell-Collins
Injection Summary Log
PFAS Pilot Test
Table 4



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of Solution Injected			Pounds of MicroZVI per Interval	Pounds of PlumeStop Per Interval	Pounds of EA Blend per Interval	Total Gallons Per Location	Pounds of S-Micro ZVI Per Location	Pounds of PlumeStop Injected Per Location	Liters of BDI Per Interval	Comments	Injection Tooling	
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval										
1	9/8/2023	11:47	16-14	28	1.70	0.0	74	74.5	2	68	0	364.0	12	333	0.046	Colormetric influence on PZ-2, MW-6 after 27 gallons injected	2-Foot Screen	
	9/8/2023	13:28	14-12	9	3.13	74.5	146	71.2	2	65	0							
	9/8/2023	14:14	12-10	9	2.78	145.7	218	72.3	2	66	0							
	9/8/2023	14:46	10-8	12	3.50	218.0	291	73.3	2	67	0							
	9/8/2023	15:06	8-6	8	2.76	291.3	364	72.7	2	67	0							
2	9/8/2023	11:52	16-14	40	3.48	0.0	72.3	72.3	2	66	0	364.0	12	333	0.046	Colormetric influence on PZ-2, MW-6 after 27 gallons injected	2-Foot Screen	
	9/8/2023	13:28	14-12	14	3.64	72.3	148.2	75.9	3	70	0							
	9/8/2023	14:14	12-10	9	2.84	148.2	219.8	71.6	2	66	0							
	9/8/2023	14:46	10-8	11	3.52	219.8	291.1	71.3	2	65	0							
	9/8/2023	15:06	8-6	9	2.81	291.1	364.0	72.9	2	67	0							
3	9/11/2023	10:52	16-14	34	5.26	0.0	73	72.6	2	66	0	329.0	11	301	0.046		2-Foot Screen	
	9/11/2023	11:17	14-12	19	5.07	72.6	145	72.7	2	67	0							
	9/11/2023	11:39	12-10	15	4.89	145.3	220	74.9	2	69	0							
	9/11/2023	12:02	10-8	15	4.16	220.1	292	71.4	2	65	0							
	9/11/2023	12:39	8-6	11	3.31	291.5	329	37.5	1	34	0							
4	9/11/2023	14:25	16-14	25	5.21	0.0	89.3	89.3	3	82	0	308.1	10	282	0.046		2-Foot Screen	
	9/11/2023	14:53	14-12	14	3.12	89.3	179.0	89.7	3	82	0							
	9/12/2023	7:34	12-10	9	2.88	179.0	268.0	89.0	3	82	0							
	9/12/2023	7:34	10-8	9	2.50	268.0	297.5	29.5	1	27	0							
	9/12/2023	10:52	10-8	7	2.46	0.0	10.6	10.6	0	10	0							
5	9/11/2023	10:52	16-14	30	4.60	0.0	72	72.4	2	66	0	324.0	11	297	0.046		2-Foot Screen	
	9/11/2023	11:17	14-12	23	4.98	72.4	145	72.7	2	67	0							
	9/11/2023	11:39	12-10	23	5.24	145.1	218	73.3	2	67	0							
	9/11/2023	12:02	10-8	15	4.40	218.4	291	72.9	2	67	0							
	9/11/2023	12:39	8-6	35	2.65	291.3	324	32.7	1	30	0							
6	9/11/2023	14:25	16-14	24	5.26	0.0	90.3	90.3	3	83	0	326.5	11	299	0.046		2-Foot Screen	
	9/11/2023	14:53	14-12	13	3.25	90.3	179.0	88.7	3	81	0							
	9/12/2023	7:34	12-10	19	3.01	179.0	268.0	89.0	3	82	0							
	9/12/2023	7:34	10-8	11	2.70	268.0	296.3	28.3	1	26	0							
	9/12/2023	10:52	10-8	7	2.36	0.0	30.2	30.2	1	28	0							
7	9/8/2023	11:54	16-14	34	3.46	0.0	77	77.3	3	71	0	364.0	12	333	0.046	Colormetric influence on PZ-2, MW-6 after 27 gallons injected	2-Foot Screen	
	9/8/2023	13:28	14-12	11	3.21	77.3	145	68.0	2	62	0							
	9/8/2023	14:14	12-10	12	3.97	145.3	219	74.0	2	68	0							
	9/8/2023	14:46	10-8	14	4.21	219.3	291	71.7	2	66	0							
	9/8/2023	15:06	8-6	8	2.86	291.0	364	73.0	2	67	0							
8	9/11/2023	10:52	16-14	23	4.68	0.0	72.5	72.5	2	66	0	350.0	12	321	0.046		2-Foot Screen	
	9/11/2023	11:17	14-12	18	5.03	72.5	145.3	72.8	2	67	0							
	9/11/2023	11:39	12-10	15	4.92	145.3	218.6	73.4	2	67	0							
	9/11/2023	12:02	10-8	11	4.07	218.6	291.2	72.6	2	67	0							
	9/11/2023	12:40	8-6	12	3.43	291.2	350.0	58.8	2	54	0							
9	9/8/2023	11:57	16-14	35	3.56	0.0	76	75.6	2	69	0	364.0	12	333	0.046	Colormetric influence on PZ-2, MW-6 after 27 gallons injected	2-Foot Screen	
	9/8/2023	13:29	14-12	15	2.84	75.6	146	70.3	2	64	0							
	9/8/2023	14:14	12-10	12	4.03	145.8	220	74.3	2	68	0							
	9/8/2023	14:46	10-8	12	3.99	220.1	294	73.9	2	68	0							
	9/8/2023	15:06	8-6	8	2.87	294.0	364	70.0	2	64	0							
10	9/11/2023	10:53	16-14	22	4.52	0.0	72.1	72.1	2	66	0	347.0	11	318	0.046		2-Foot Screen	
	9/11/2023	11:17	14-12	18	5.39	72.1	145.4	73.2	2	67	0							
	9/11/2023	11:39	12-10	16	4.97	145.4	219.4	74.1	2	68	0							
	9/11/2023	12:02	10-8	12	4.64	219.4	291.5	72.1	2	66	0							
	9/11/2023	12:40	8-6	7	3.48	291.5	347.0	55.5	2	51	0							
11	9/11/2023	14:25	16-14	29	4.96	0.0	90	90.0	3	82	0	391.6	13	359	0.046		2-Foot Screen	
	9/11/2023	14:53	14-12	5	3.25	90.0	179	89.0	3	82	0							
	9/12/2023	7:34	12-10	10	3.20	179.0	268	89.0	3	82	0							
	9/12/2023	7:34	10-8	9	2.46	268.0	294	26.2	1	24	0							
	9/12/2023	10:51	10-8	8	2.67	0.0	97	97.4	3	89	0							
12	9/11/2023	14:26	16-14	30	4.64	0.0	89.5	89.5	3	82	0	381.1	13	349	0.046	16:05, Well 6 started to flood, vacuumed the area and lowered pump.	2-Foot Screen	
	9/11/2023	14:54	14-12	7	3.32	89.5	179.0	89.5	3	82	0							
	9/12/2023	7:34	12-10	13	2.20	179.0	268.0	89.0	3	82	0							
	9/12/2023	7:34	10-8	6	2.60	268.0	295.8	27.8	1	25	0							
	9/12/2023	10:52	10-8	6	2.41	0.0	85.3	85.3	3	78	0							
												Total Gallons:	Total Lbs. of S-Micro ZVI	Total Lbs. of PlumeStop	Total Liters of BDI			
												4213.3	138.9	3858.8	2784			



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Appendix B:

Groundwater Parameters Logs



Stantec- Rockwell Collins

Groundwater Parameters

Table 5



Date	Time	Location	Screened Interval	Water Depth (Feet)	Temperature (Celsius)	pH	Conductivity (uS/cm)	ORP	RDO
8/29/2023	11:01	MW-07	14-4	8.82	22.89	6.34	2018	84.7	7.19
8/29/2023	14:13			8.86	22.59	6.35	2016	179	2.36
8/30/2023	8:51			9.96	20.43	6.99	1586	-206	0.27
9/6/2023	8:20	MW-08		7.28	23.3	7.08	1332	-58.2	1.29
9/6/2023	10:20			7.28	21.11	6.91	2255	40.3	1.56
9/6/2023	16:33			7.28	21.02	6.96	2236	125.4	2.42
9/7/2023	8:20	MW-17		X	18.83	6.89	1027	-126.4	3.37
9/7/2023	17:26			X	28.05	7.63	1484	-370.5	0.06
9/8/2023	8:20	MW-06	15-5	X	20.48	6.61	1149	68.5	0.46
9/8/2023	12:30			X	27.5	6.9	1388	-22	3.3
9/8/2023	13:50			X	28.4	9.1	1926	6.4	1.2
9/8/2023	14:30			X	30	8.5	1742	-5.4	5.5
9/8/2023	15:04			X	25.4	8.3	2170	-1.4	0.59
9/8/2023	17:00			X	28.3	8.1	1674	59	5.9
9/11/2023	9:46			7.4	18.86	7.32	2402	-146	1.98
9/8/2023	11:36	PZ-1	20-15	8.41	18.55	7.05	987	-191	0.54
9/8/2023	12:30			8.41	27.3	7.4	1140	-70	3.9
9/8/2023	13:50			8.41	28	7.3	1100	61.1	4.4
9/8/2023	14:30			8.41	30.3	7.4	1111	3.5	5.2
9/8/2023	15:04			8.41	27.7	7.6	1090	10.7	6.7
9/8/2023	17:00			8.41	31.96	8.1	1237	80.7	6.9
9/11/2023	10:06			9.19	17.69	7.1	1092	-195	0.02
9/8/2023	10:58	PZ-2	15-10	7.89	18.34	7.13	1102	-237	0.09
9/8/2023	12:30			7.89	27.7	7.5	856	-54	6.4
9/8/2023	13:50			7.89	27.9	7.4	912	45.2	5.1
9/8/2023	14:30			7.89	28.8	7.5	884	-4.3	4.6
9/8/2023	15:04			7.89	25.9	7.7	828	7.5	6.5
9/8/2023	17:00			7.89	28.5	8.8	1111	59	5.9
9/11/2023	10:21			7.88	18.15	7.29	1028	-209	0



Stantec- Rockwell Collins

Groundwater Parameters

Table 5



Date	Time	Location	Screened Interval	Water Depth (Feet)	Temperature (Celsius)	pH	Conductivity (uS/cm)	ORP	RDO
9/13/2023	11:24	PZ-3	15-10	X	19.86	6.64	2741	-168.5	1.43
9/13/2023	16:51			X	25.93	8.49	1609	-123	4.75
9/14/2023	13:44			5.94	24.58	8.08	1655	-300	0
9/14/2023	16:59			5.94	28.34	7.99	2548	23.4	6.8
9/20/2023	8:05			7.23	20.41	6.95	2607	-245	0
9/13/2023	11:03	PZ-4	10-5	X	22.73	7.38	1401	-121	4
9/13/2023	16:46			X	26.05	9.32	2198	-130	0.01
9/14/2023	13:56			6.02	20.99	7.24	2865	-313	0
9/14/2023	16:49			6.02	28.81	9.09	2341	62.3	5.1
9/20/2023	8:15			6.75	21.91	7.06	2567	-229	0
9/12/2023	10:37	PZ-7	16-11	7.5	20.51	6.66	6242	-116	0.05
9/12/2023	14:15			7.5	25.05	7.03	5437	-866	5.84
9/12/2023	16:35			7.5	25.54	6.93	6327	-92.5	5.88
9/13/2023	10:06			6.38	19.2	6.76	6062	-178	0.01
9/14/2023	8:36			7.5	20.86	6.68	3294	-140	0.12
9/14/2023	17:07			7.5	26.3	7.63	5070	33.7	7.9
9/20/2023	8:56			7.47	20.48	2.65	3764	-271	0
9/12/2023	10:51	PZ-8	11-6	7.55	21.88	6.71	3067	-60	0.13
9/12/2023	14:12			7.55	24.56	6.93	5144	119	3.84
9/12/2023	16:32			7.55	24.19	7.14	4803	27.2	5.36
9/13/2023	9:56			6.15	20.92	6.77	4080	-145	0.04
9/14/2023	8:48			7.38	19.69	6.75	5769	-171	0.28
9/14/2023	17:04			7.38	25.23	8.01	3456	25.9	7.9
9/20/2023	9:13			6.71	21.82	8.3	3065	-188	6.79
9/12/2023	9:52	PZ-9	16-11	7.5	19.52	7.42	1077	-87	8.2
9/20/2023	9:43			7.55	20.98	8.27	950	-70.4	6.87
9/20/2023	10:02	PZ-10	11-6	8.42	21.72	8.14	803	-64.7	7.84

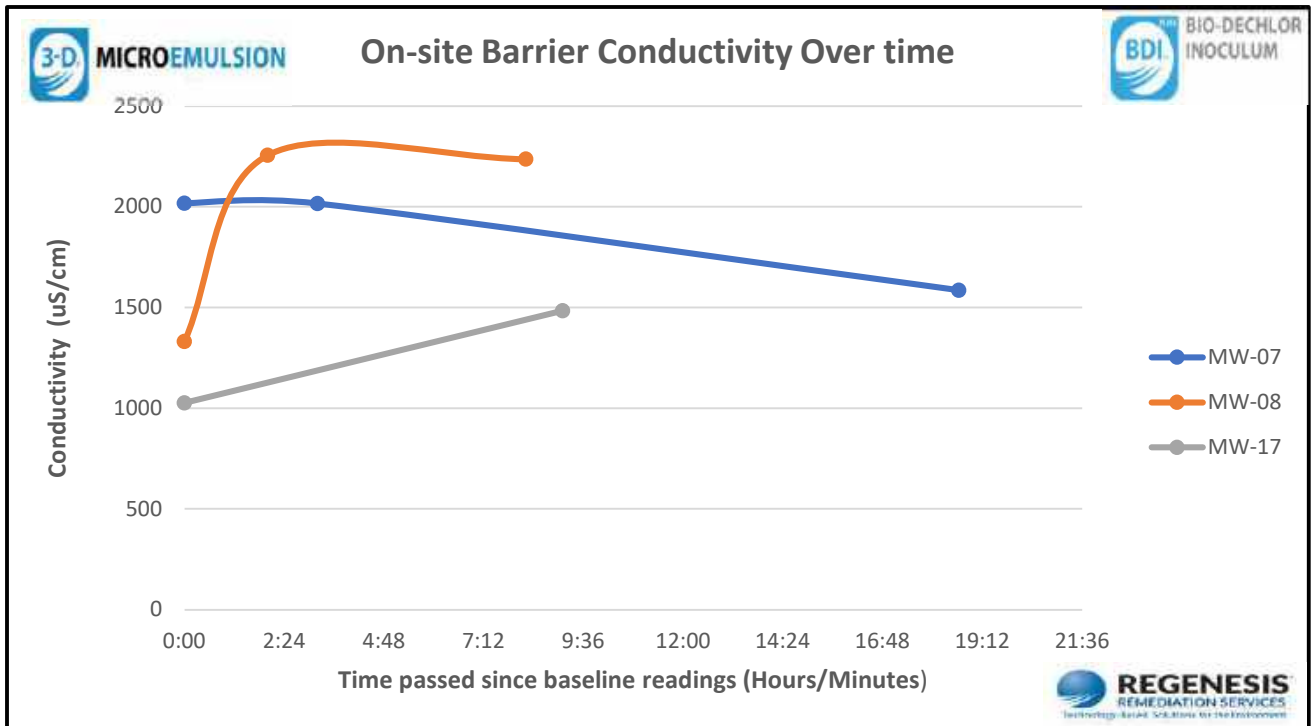


Figure 5

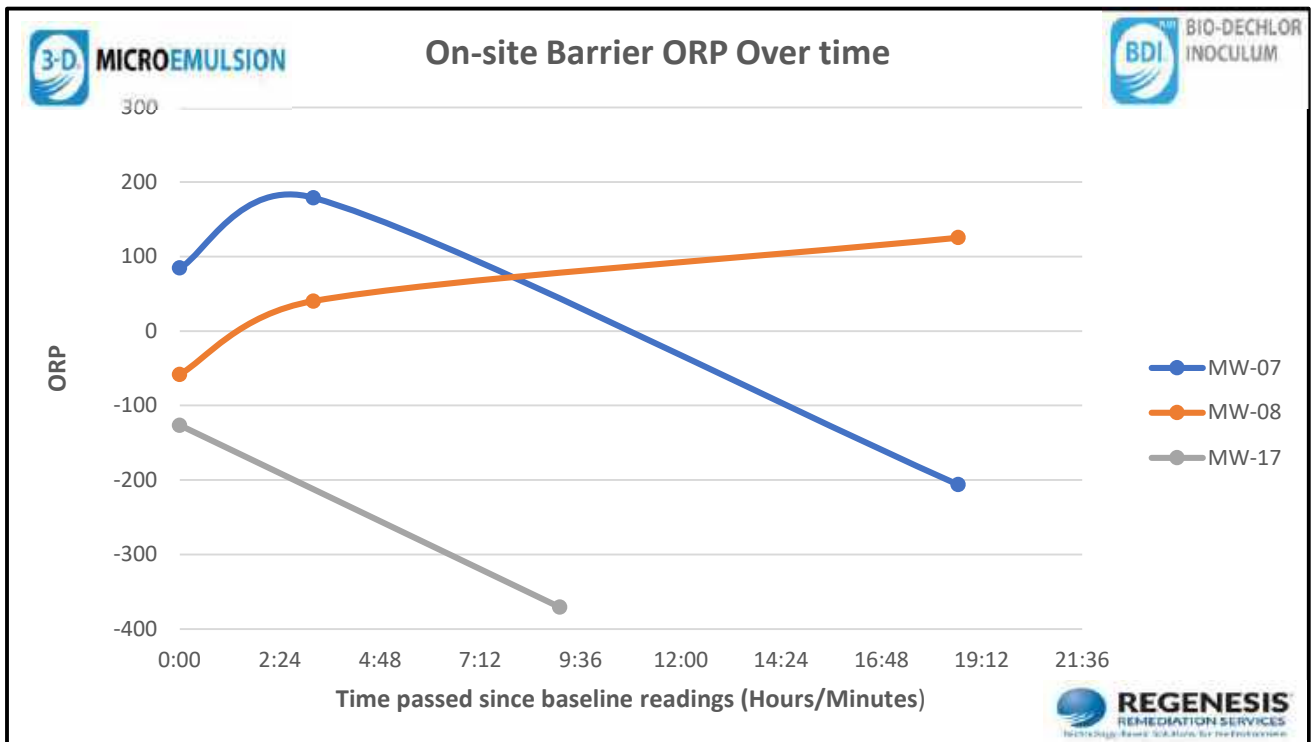


Figure 6

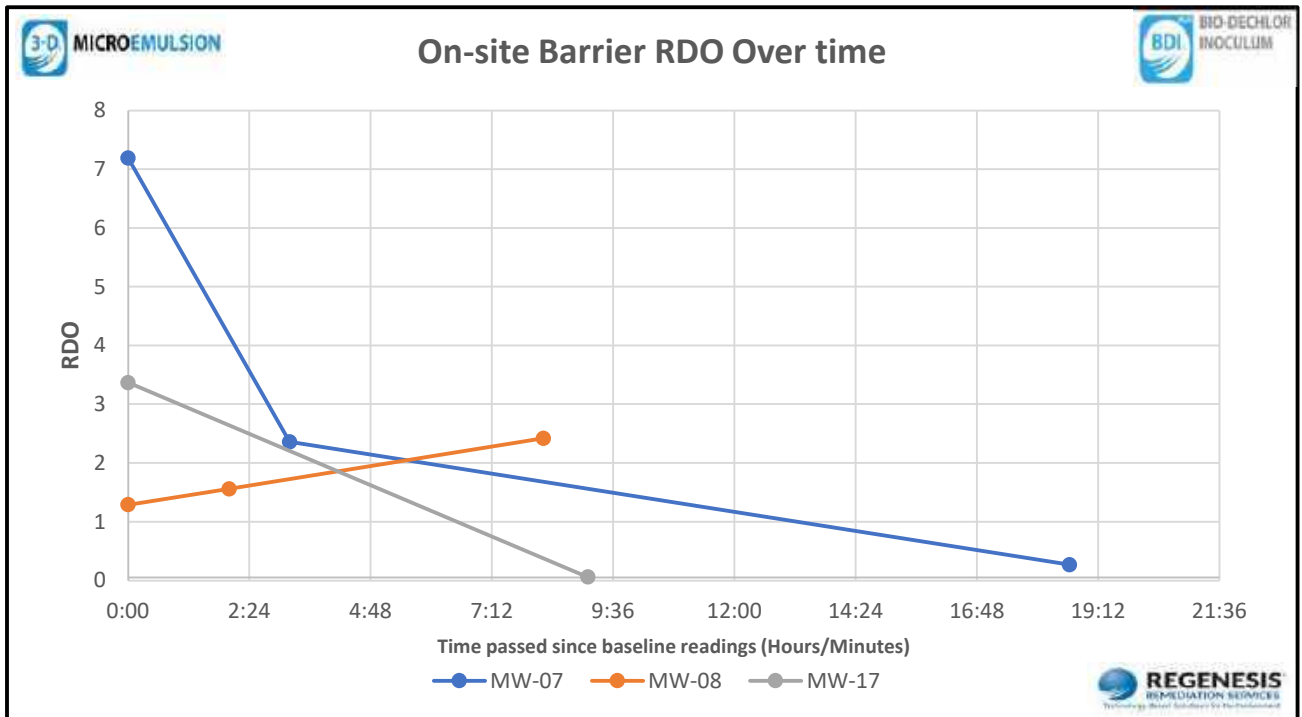


Figure 7

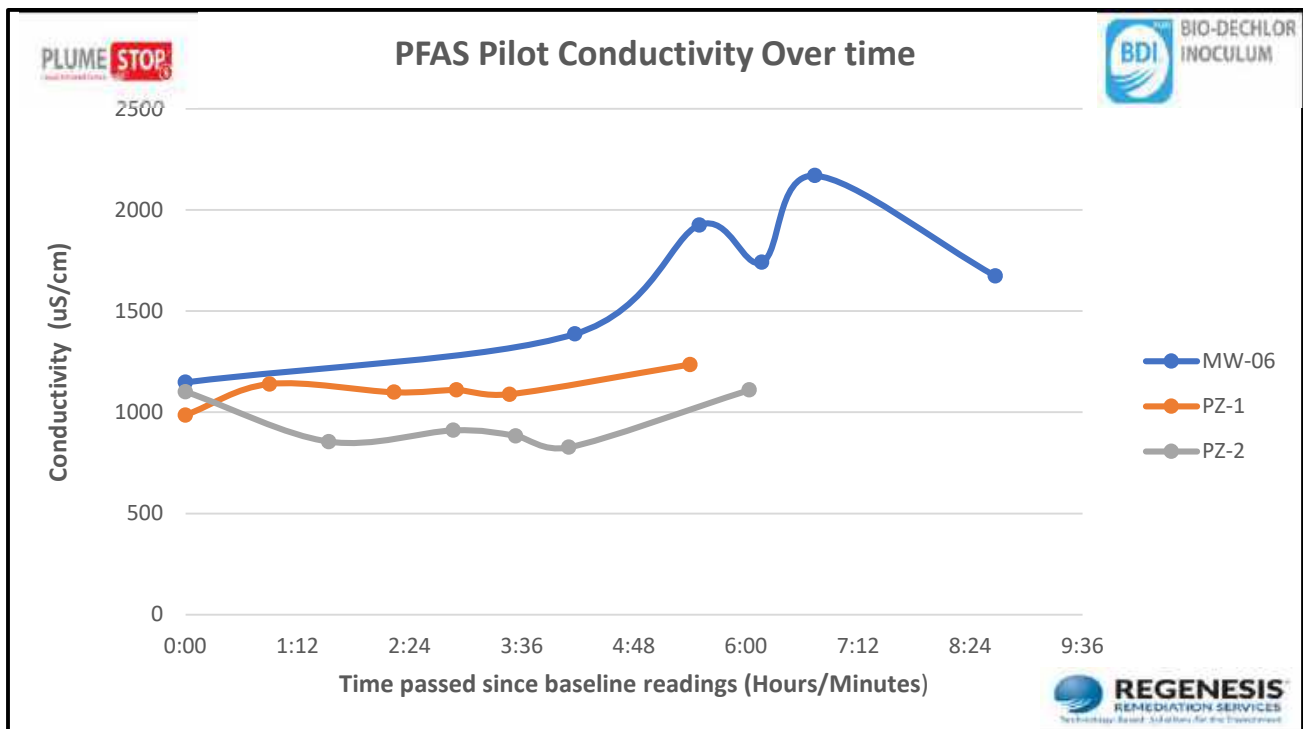


Figure 8

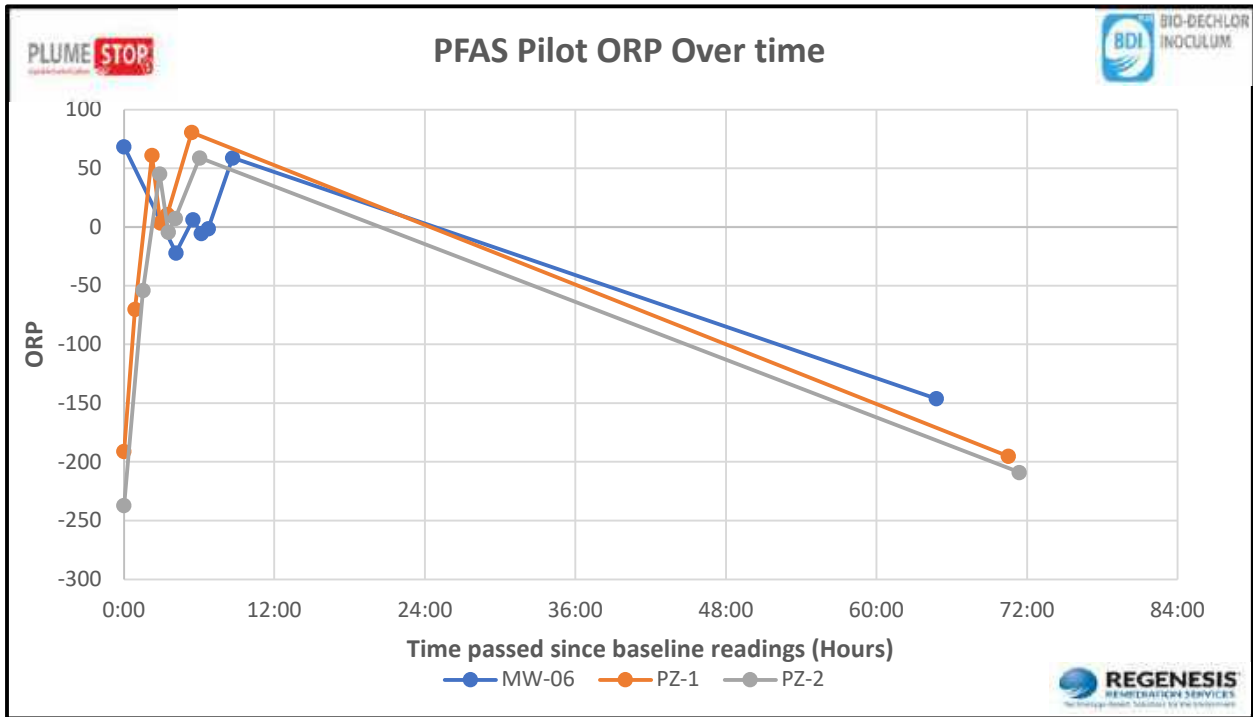


Figure 9

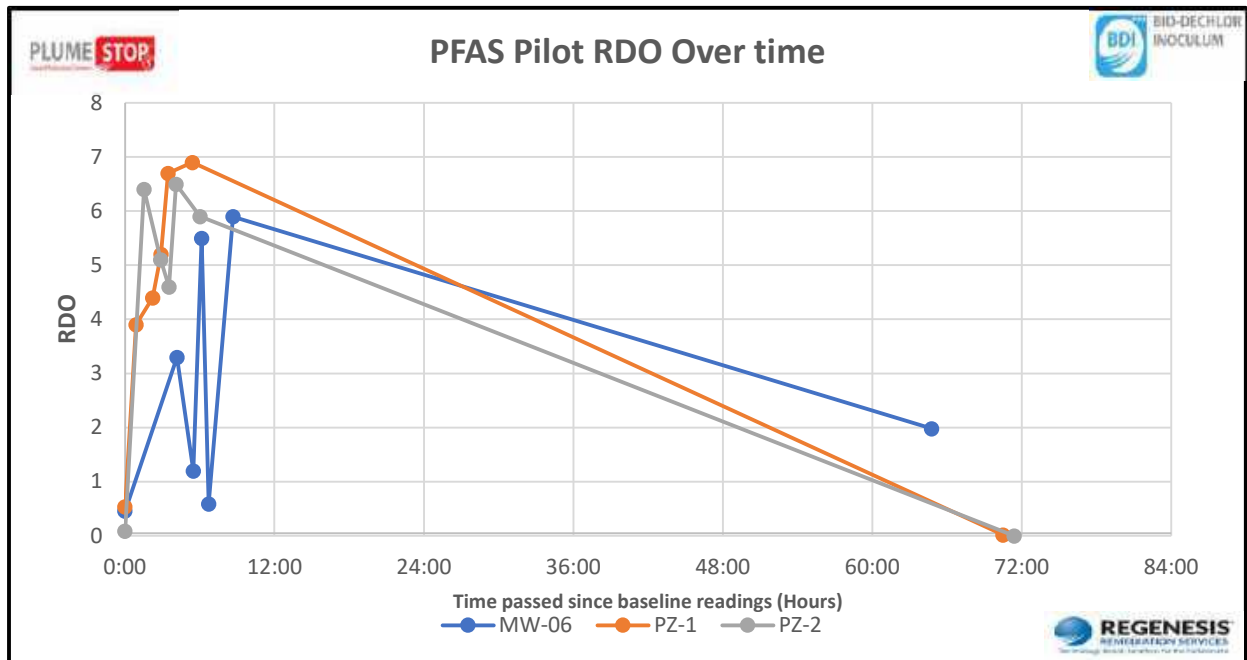


Figure 10

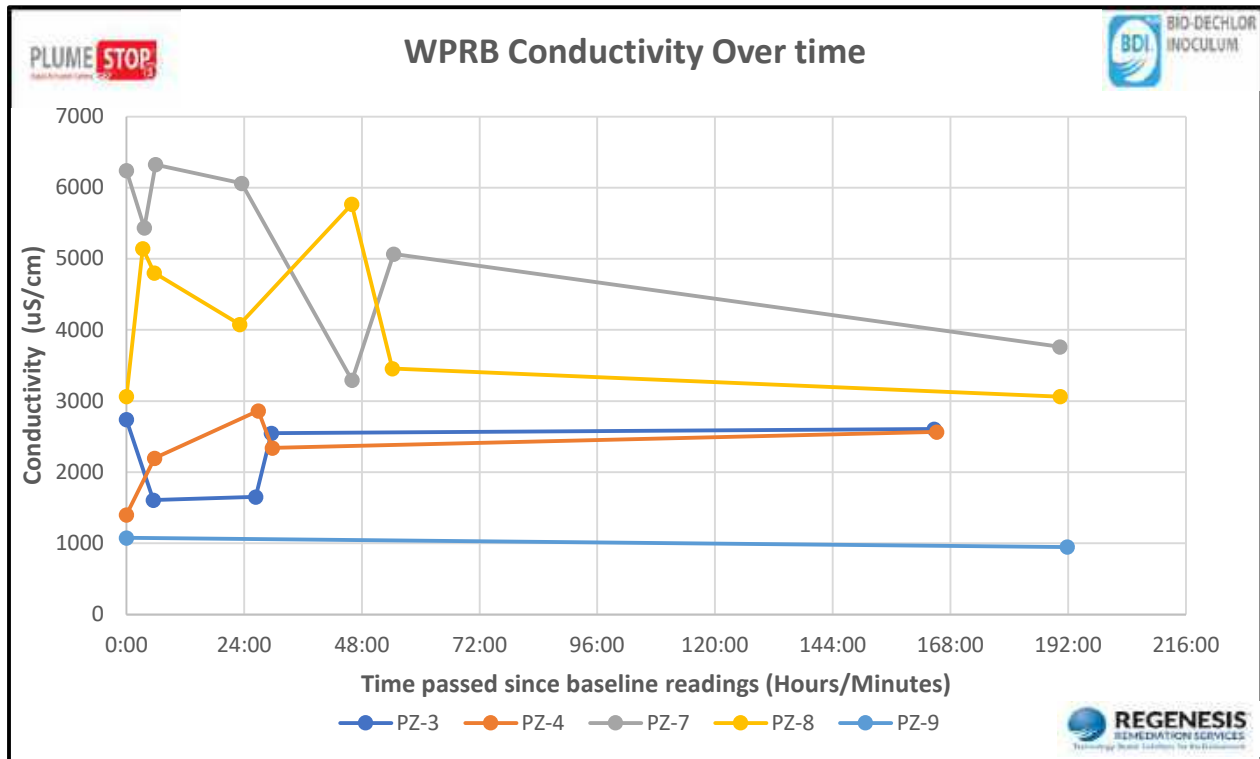


Figure 11

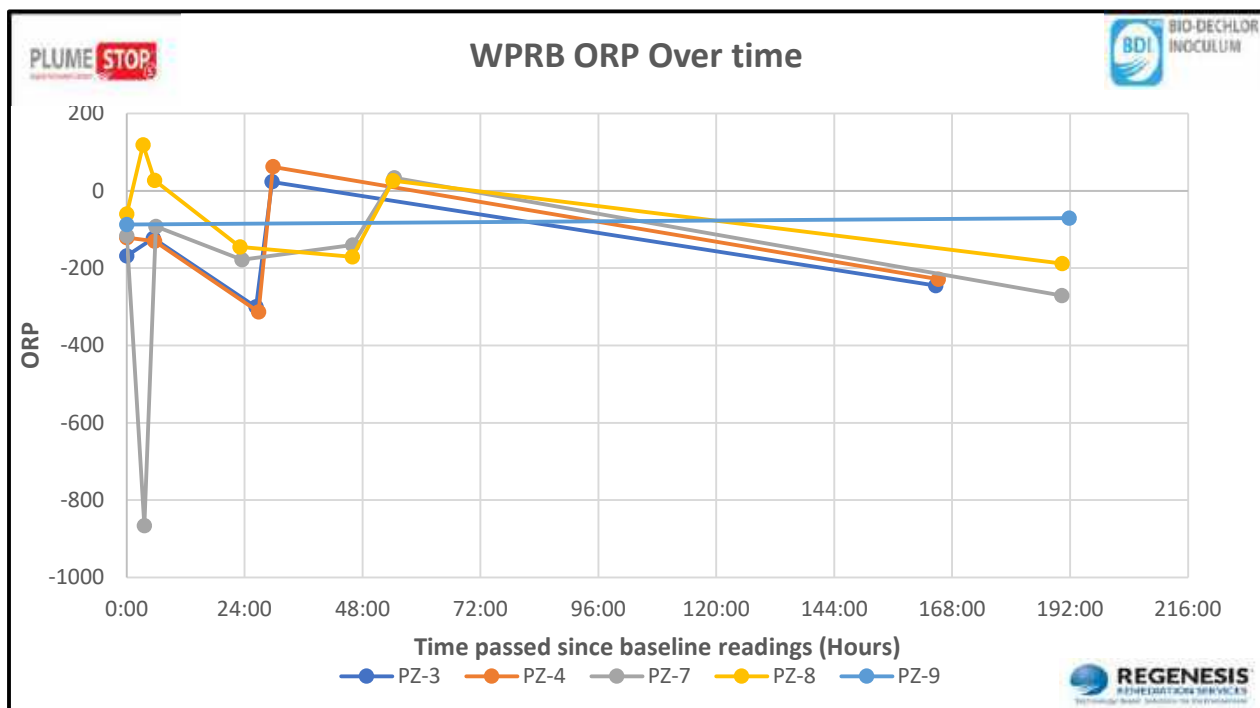


Figure 12

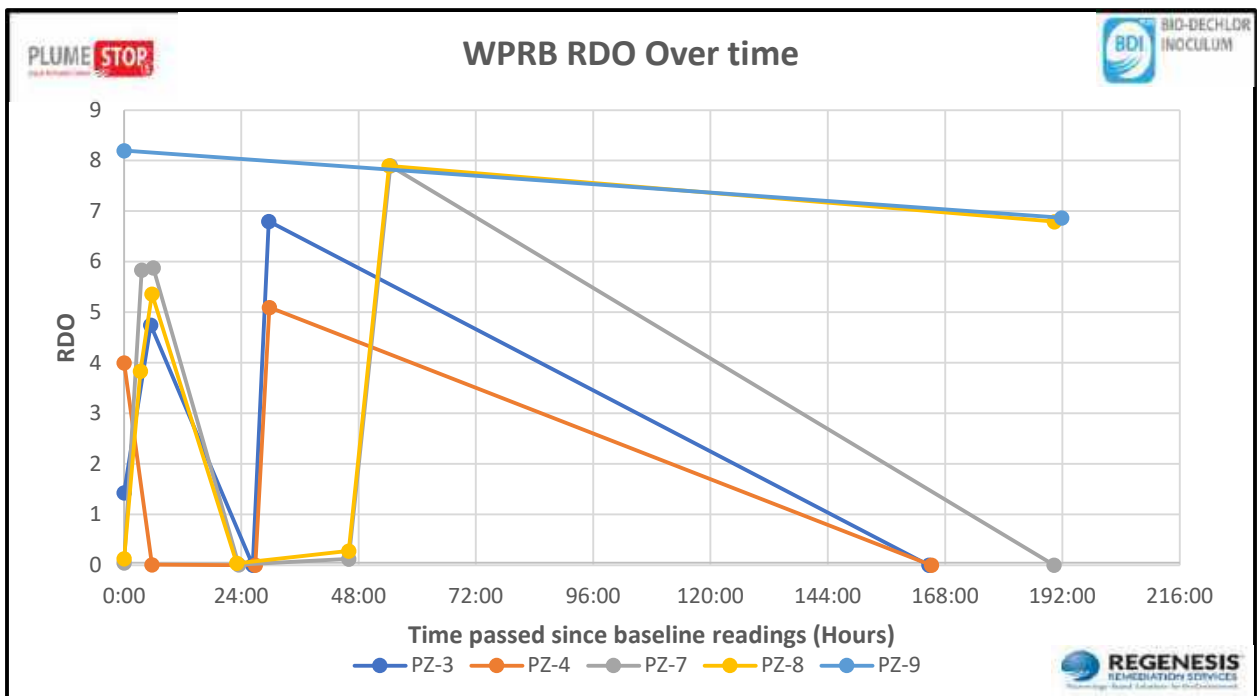


Figure 13

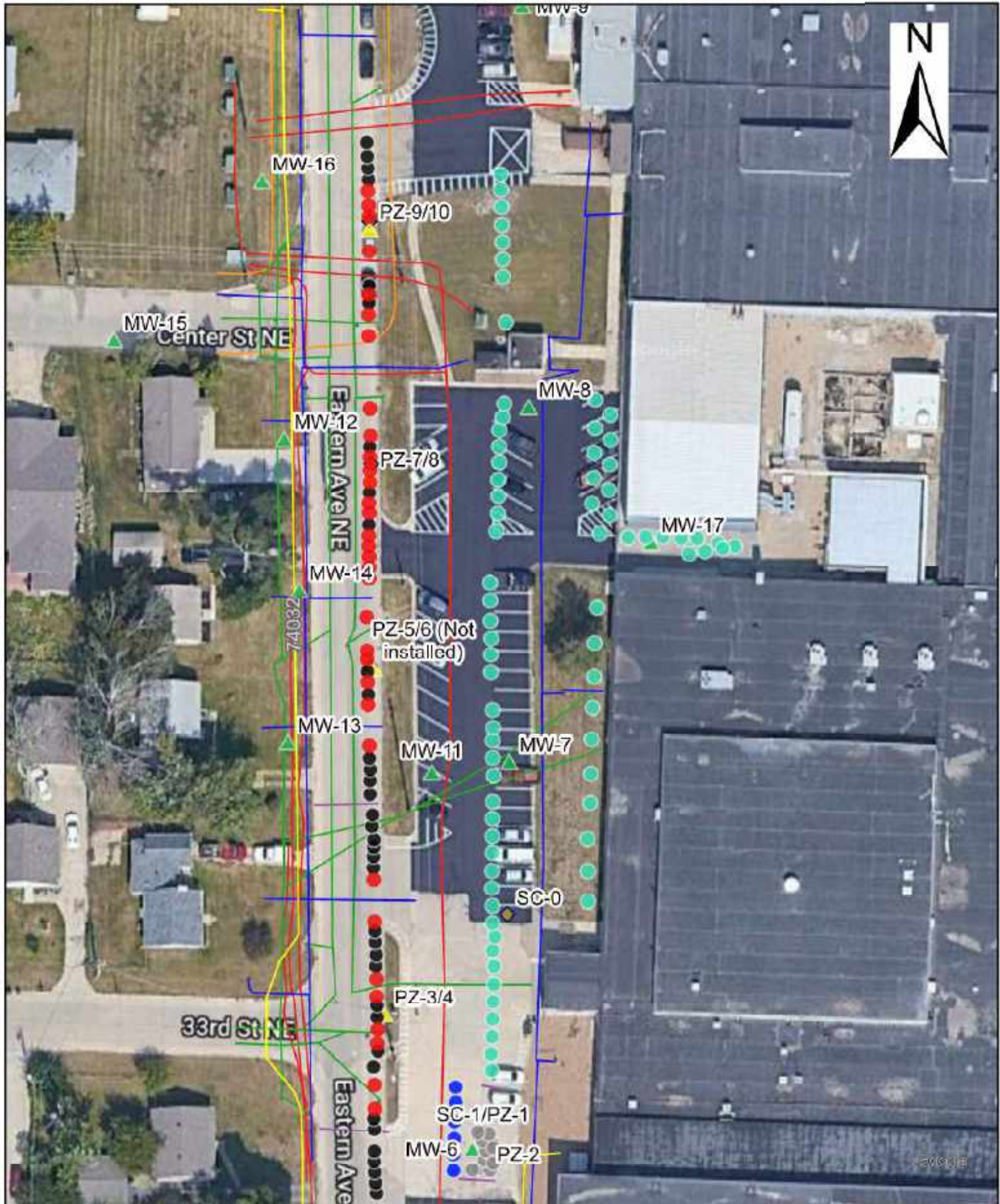


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Appendix C:

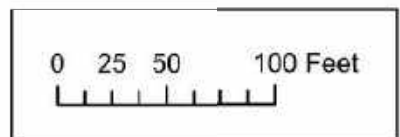
Field Maps

Stantec - Rockwell Collins - OWM74032



Legend	
● (Black)	FlumeStop Injection Point (As Designed)
● (Red)	FlumeStop Injection Point (Decision)
● (Grey)	PFAS Pilot Injection Point
● (Green)	JDME SMZYI Injection Point
● (Blue)	JDME Injection Point
▲ (Green)	Monitoring Wells
▲ (Yellow)	Piezometers
◆ (Yellow)	Pre-Injection Soil Cores
◆ (Black)	Confirmation Cores
— (Yellow)	Gas
— (Blue)	Water
— (Green)	Sewer
— (Red)	Communications
— (Orange)	Electric
— (Grey)	Unknown Utility

Appendix C-1: Site Overview Map
 855 35th St NE, Cedar Rapids, IA 52498
 Map Created Date: October 4, 2023
 Map Created By: JM



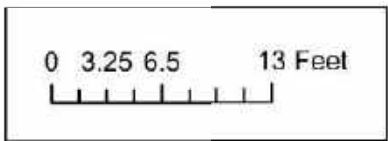


Legend	
● PFAS Pilot Injection Point	◆ Pre-Injection Soil Cores
● 3DME SM2VI Injection Point	◆ Confirmation Cores
● 3DME Injection Point	— Gas
▲ Monitoring Wells	— Water
▲ Piezometers	— Electric
	— Unknown Utility

Appendix C-2: PFAS Pilot Area and Onsite Treatment Lines

855 35th St NE, Cedar Rapids, IA 52498

Map Created Date: September 27, 2023
Map Created By: JM

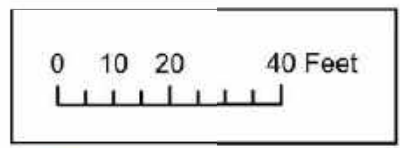


Stantec - Rockwell Collins - OWM74032

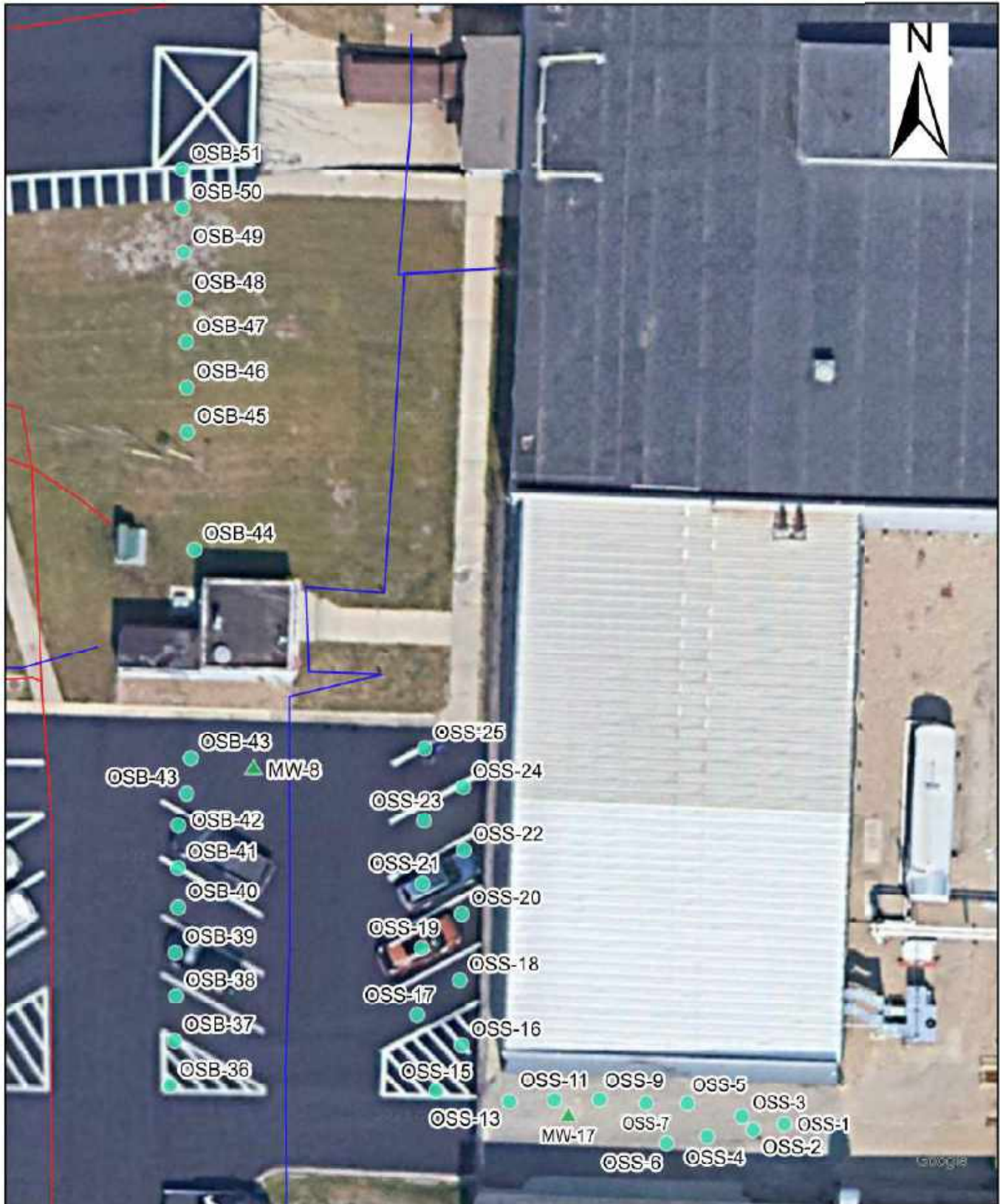


Legend	
● 3DME SMZYI Injection Point	◆ Confirmation Cores
▲ Monitoring Wells	— Water
▲ Piczometers	— Sewer
◆ Pre-Injection Soil Cores	— Electric

Appendix C-3: Onsite Treatment Lines
 855 35th St NE, Cedar Rapids, IA 52498
 Map Created Date: October 4, 2023
 Map Created By: JM



Stantec - Rockwell Collins - OWM74032



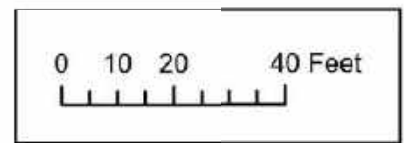
Legend

- 3DME SMZVI Injection Point
- ▲ Monitoring Wells
- Water
- Electric

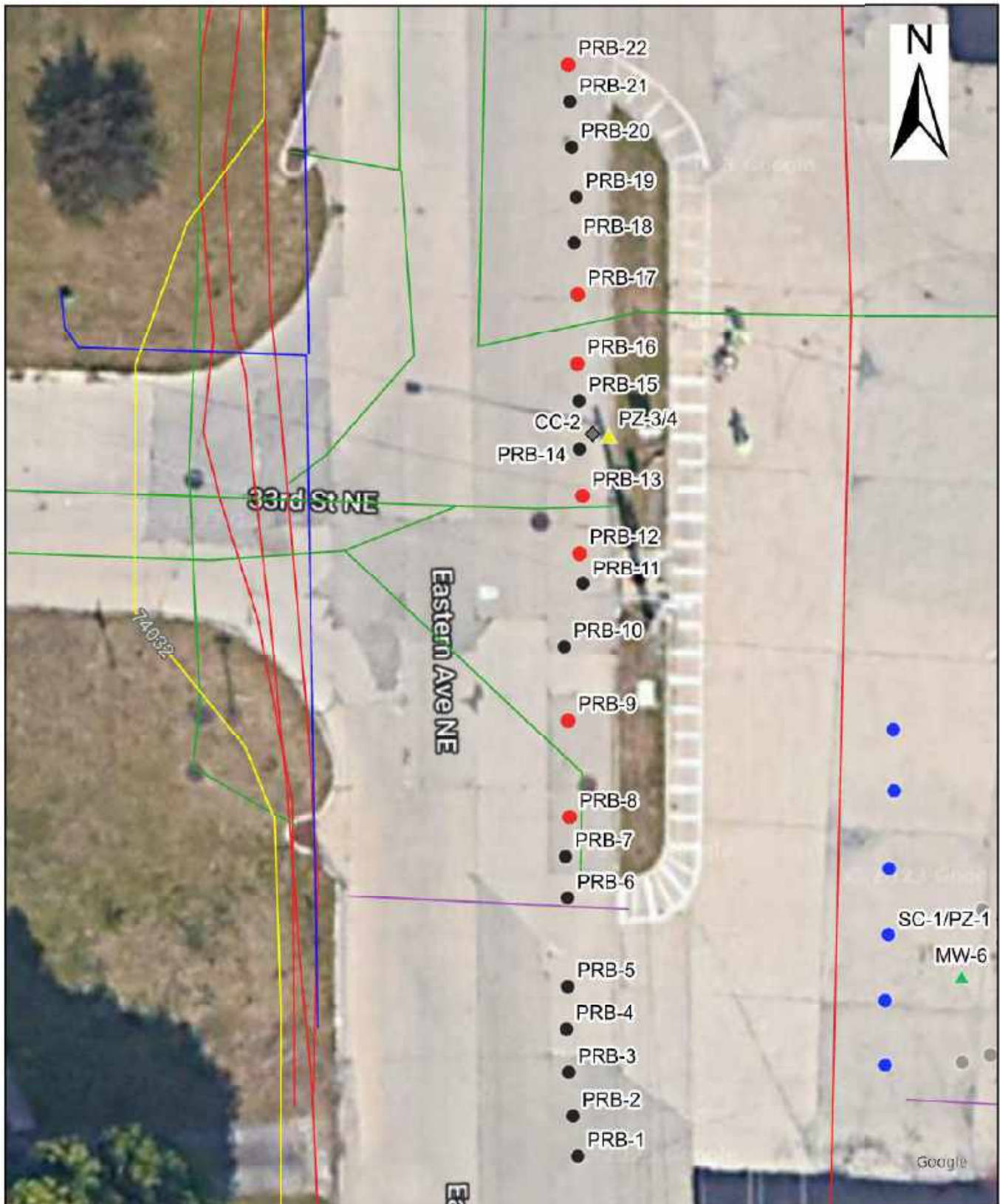
Appendix C-4: Onsite Treatment Lines and Onsite Source

855 35th St NE, Cedar Rapids, IA 52498

Map Created Date: October 4, 2023
 Map Created By: JM

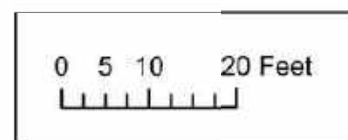


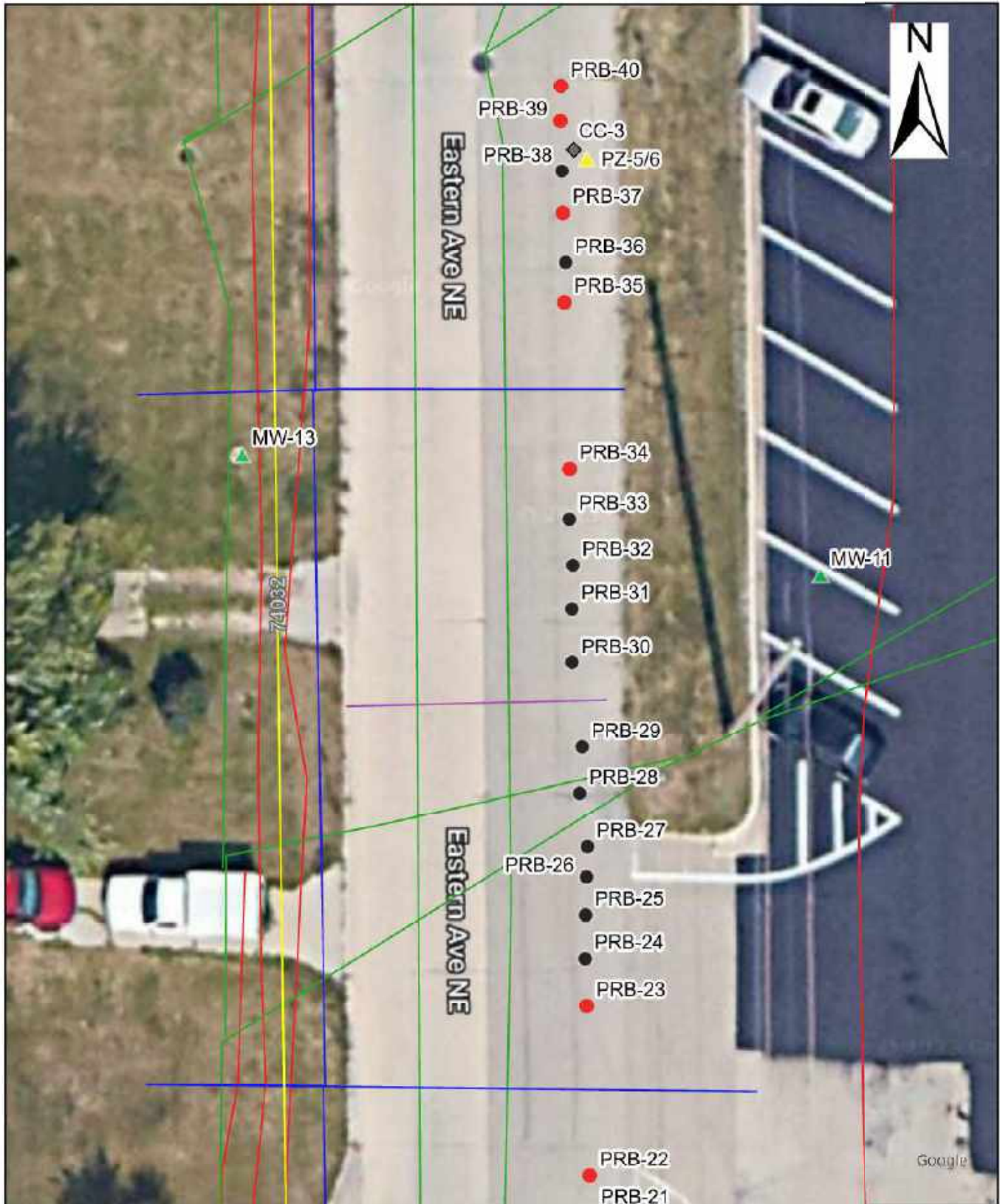
Stantec - Rockwell Collins - OWM74032



Legend	
● PlumeStop	▲ Piezometers
● Injection Point (As Designed)	◆ Confirmation Cores
● PlumeStop	— Gas
● Injection Point (Deviation)	— Water
● 3DME Injection Point	— Sewer
▲ Monitoring Wells	— Electric
	— Unknown Utility

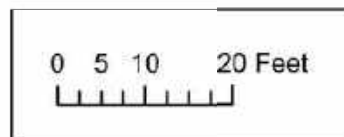
Appendix C-5: Western PRB - South
 855 35th St NE, Cedar Rapids, IA 52498
 Map Created Date: September 28, 2023
 Map Created By: JM





Legend	
● PlumeStop Injection Point (As Designed)	◆ Confirmation Cores
● PlumeStop Injection Point (Deviation)	— Gas
▲ Monitoring Wells	— Water
▲ Piezometers	— Sewer
	— Electric
	— Unknown Utility

Appendix C-6: Western PRB - South Central
 855 35th St NE, Cedar Rapids, IA 52498
 Map Created Date: September 28, 2023
 Map Created By: JM

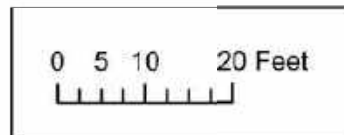


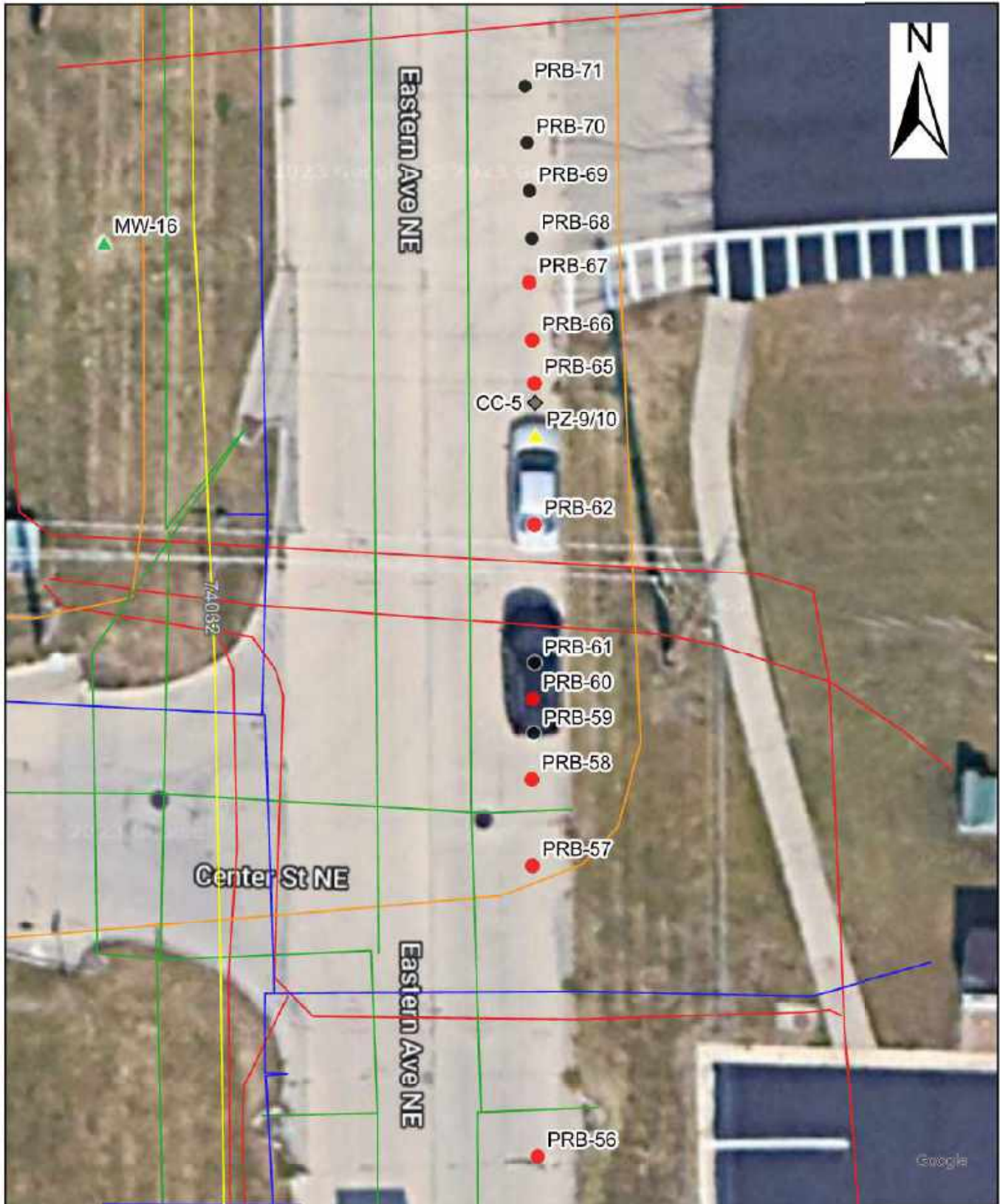
Stantec - Rockwell Collins - OWM74032



Legend	
● PlumeStop Injection Point (As Designed)	◆ Confirmation Cores
● PlumeStop Injection Point (Deviation)	— Gas
▲ Monitoring Wells	— Water
▲ Piezometers	— Sewer
	— Electric
	— Unknown Utility

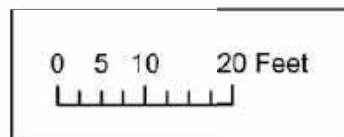
Appendix C-7: Western PRB - North Central
 855 35th St NE, Cedar Rapids, IA 52498
 Map Created Date: September 28, 2023
 Map Created By: JM





Legend	
● PlumeStop Injection Point (As Designed)	◆ Confirmation Cores
● PlumeStop Injection Point (Deviation)	— Gas
▲ Monitoring Wells	— Water
▲ Piezometers	— Sewer
	— Communications
	— Electric
	— Unknown Utility

Appendix C-8: Western PRB - North
 855 35th St NE, Cedar Rapids, IA 52498
 Map Created Date: September 28, 2023
 Map Created By: JM





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Appendix C-2:

Location Data

Stantec - Rockwell Collins
 RRS Location Data (WGS84 Web Mercator Auxiliary Sphere)
 855 35th St NE, Cedar Rapids, IA



Table 6

Project ID	Location ID	Longitude (°)	Latitude (°)	Altitude (HAE)	Avg Horizontal Accuracy (m)	Avg Vertical Accuracy (m)	x (m)	y (m)	Location Type	Notes
74032	PP-1	-91.6478945	42.01091369	204.33	0.31521407	0.4915	-10202196.95	5162614.402	PFAS Pilot Injection Points	
74032	PP-2	-91.64786465	42.0109134	204.42	0.15210851	0.2415	-10202193.63	5162614.358		
74032	PP-3	-91.64788258	42.01091605	204.31	0.15210851	0.242	-10202195.62	5162614.756		
74032	PP-4	-91.64785979	42.01092217	204.3	0.18333763	0.2846	-10202193.08	5162615.672		
74032	PP-5	-91.64787365	42.01092613	204.31	0.15743069	0.2516	-10202194.63	5162616.266		
74032	PP-6	-91.64785862	42.01093181	204.35	0.15262044	0.241	-10202192.95	5162617.117		
74032	PP-7	-91.64787184	42.0109381	204.33	0.15262044	0.241	-10202194.43	5162618.059		
74032	PP-8	-91.6478596	42.010942	204.17	0.23348508	0.3611	-10202193.06	5162618.644		
74032	PP-9	-91.64786061	42.01094695	204.34	0.15262044	0.2408	-10202193.17	5162619.385		
74032	PP-10	-91.64787738	42.01095101	204.42	0.15391231	0.248	-10202195.04	5162619.993		
74032	PP-11	-91.64786618	42.0109595	204.37	0.15391231	0.248	-10202193.8	5162621.266		
74032	PP-12	-91.64788578	42.0109615	204.43	0.15391231	0.248	-10202195.98	5162621.565		
74032	OSB-1	-91.64797556	42.01091332	203.93	0.14911	0.2425	-10202205.97	5162614.347	3DME Only Injection Points	
74032	OSB-2	-91.64797383	42.01093529	203.9	0.15315	0.2478	-10202205.78	5162617.638		
74032	OSB-3	-91.64797319	42.0109576	203.99	0.16035	0.261	-10202205.71	5162620.98		
74032	OSB-4	-91.6479718	42.01097925	203.93	0.16059	0.2567	-10202205.55	5162624.224		
74032	OSB-5	-91.6479721	42.01100019	203.98	0.15223	0.2431	-10202205.59	5162627.362		
74032	OSB-6	-91.64797078	42.01102247	204.04	0.1601	0.2614	-10202205.44	5162630.7		
74032	OSB-7	-91.64786221	42.0110393	204.53	0.1877	0.315	-10202193.35	5162633.222		
74032	OSB-8	-91.6478632	42.01106048	204.65	0.21168	0.3547	-10202193.46	5162636.395		
74032	OSB-9	-91.64786129	42.011082	204.78	0.22926	0.3843	-10202193.25	5162639.618		
74032	OSB-10	-91.64786055	42.0110431	204.84	0.22766	0.3819	-10202193.17	5162642.961		
74032	OSB-11	-91.64785977	42.01112643	204.84	0.21767	0.3623	-10202193.08	5162646.275		
74032	OSB-12	-91.64785863	42.01114871	204.88	0.23041	0.3838	-10202192.95	5162649.614		
74032	OSB-13	-91.6478581	42.01117108	204.92	0.17553	0.2904	-10202192.9	5162652.965		
74032	OSB-14	-91.64786048	42.0111911	204.92	0.17639	0.2853	-10202193.16	5162655.964		
74032	OSB-15	-91.64785627	42.01120819	204.97	0.22114	0.3554	-10202192.69	5162658.524		
74032	OSB-16	-91.64786084	42.01122522	204.95	0.18473	0.2967	-10202193.2	5162661.076		
74032	OSB-17	-91.64786091	42.0112471	204.85	0.17299	0.2743	-10202193.21	5162664.354		
74032	OSB-18	-91.64786176	42.01126927	204.79	0.16842	0.2635	-10202193.3	5162667.676		
74032	OSB-19	-91.64786148	42.011291	204.73	0.17403	0.272	-10202193.27	5162670.932		
74032	OSB-20	-91.6478608	42.01131407	204.69	0.18305	0.2922	-10202193.2	5162674.388		
74032	OSB-21	-91.64786084	42.01133476	204.67	0.19348	0.3015	-10202193.2	5162677.488		
74032	OSB-22	-91.64786079	42.01135696	204.79	0.1685	0.263	-10202193.19	5162680.814		
74032	OSB-23	-91.6478601	42.01137877	204.81	0.19764	0.3077	-10202193.12	5162684.081		
74032	OSB-24	-91.64785883	42.0114116	204.76	0.16658	0.2578	-10202192.98	5162689		
74032	OSB-25	-91.64786048	42.0114339	204.86	0.16952	0.2616	-10202193.16	5162692.34		
74032	OSB-26	-91.64786066	42.01145576	204.8	0.17645	0.2719	-10202193.18	5162695.616		
74032	OSB-27	-91.64785976	42.01147227	204.83	0.17198	0.2652	-10202193.08	5162698.09		
74032	OSB-28	-91.64786049	42.01149461	204.86	0.17886	0.2801	-10202193.16	5162701.436		
74032	OSB-29	-91.64786	42.01151679	204.8	0.192	0.298	-10202193.11	5162704.759		
74032	OSB-30	-91.64786337	42.01154208	204.39	0.17702	0.2714	-10202193.48	5162708.549		
74032	OSB-31	-91.64786342	42.01156446	204.45	0.18913	0.2886	-10202193.49	5162711.901		
74032	OSB-32	-91.64786286	42.01158523	204.46	0.19343	0.2952	-10202193.43	5162715.014		
74032	OSB-33	-91.64786409	42.01160723	204.54	0.19902	0.3059	-10202193.56	5162718.309		
74032	OSB-34	-91.64786446	42.01163288	204.55	0.19723	0.2995	-10202193.6	5162722.152		
74032	OSB-35	-91.64786479	42.01165507	204.49	0.20039	0.3041	-10202193.64	5162725.477		
74032	OSB-36	-91.64785428	42.01172051	204.55	0.20574	0.3116	-10202192.47	5162735.282		
74032	OSB-37	-91.64785127	42.01174257	204.64	0.21199	0.322	-10202192.14	5162738.587		
74032	OSB-38	-91.6478503	42.01176457	204.69	0.21146	0.3181	-10202192.03	5162741.883		
74032	OSB-39	-91.64785077	42.01178573	204.71	0.20389	0.3072	-10202192.08	5162745.053		
74032	OSB-40	-91.64784885	42.01180778	204.67	0.19522	0.2997	-10202191.87	5162748.357		
74032	OSB-41	-91.64784886	42.01182727	204.67	0.20429	0.3142	-10202191.87	5162751.276		
74032	OSB-42	-91.64784877	42.0118481	204.71	0.22312	0.3428	-10202191.86	5162754.397		
74032	OSB-43	-91.64784335	42.01186389	204.75	0.21934	0.3374	-10202191.25	5162756.763		
74032	OSB-43	-91.64784055	42.01188114	204.85	0.22623	0.3482	-10202190.94	5162759.348		
74032	OSB-44	-91.64783813	42.01198371	204.88	0.21511	0.3314	-10202190.67	5162774.715		
74032	OSB-45	-91.64784288	42.01204119	204.86	0.22118	0.3403	-10202191.2	5162783.326		
74032	OSB-46	-91.64784329	42.01206296	205.01	0.22556	0.3473	-10202191.25	5162786.589		
74032	OSB-47	-91.64784355	42.01208519	204.98	0.22961	0.3542	-10202191.28	5162789.918		
74032	OSB-48	-91.64784444	42.01210664	205.08	0.21527	0.3316	-10202191.38	5162793.132		
74032	OSB-49	-91.64784536	42.01212941	205.16	0.24778	0.3811	-10202191.48	5162796.544		
74032	OSB-50	-91.64784601	42.01215108	205.2	0.24054	0.3706	-10202191.55	5162799.79		
74032	OSB-51	-91.64784636	42.01217021	205.26	0.24836	0.3818	-10202191.59	5162802.657		
74032	OSB-52	-91.64784754	42.01219214	205.29	0.23987	0.3693	-10202191.72	5162805.943		

Stantec - Rockwell Collins
 RRS Location Data (WGS84 Web Mercator Auxiliary Sphere)
 855 35th St NE, Cedar Rapids, IA
Table 6



Project ID	Location ID	Longitude (°)	Latitude (°)	Altitude (HAE)	Avg Horizontal Accuracy (m)	Avg Vertical Accuracy (m)	x (m)	y (m)	Location Type	Notes
74032	OSB-53	-91.64784918	42.01221447	205.27	0.23161	0.3565	-10202191.9	5162809.288	3DME/SMZVI Injection Points	
74032	OSB-54	-91.64784907	42.01223345	205.26	0.24145	0.3801	-10202191.89	5162812.132		
74032	OSB-56	-91.64769869	42.01125235	205.33	0.27889	0.3834	-10202175.15	5162665.141		
74032	OSB-57	-91.6476989	42.01129075	205.54	0.27759	0.4083	-10202175.17	5162670.894		
74032	OSB-58	-91.64769946	42.01133143	205.75	0.25832	0.3751	-10202175.24	5162676.988		
74032	OSB-59	-91.64769426	42.0113772	205.59	0.28876	0.3911	-10202174.66	5162683.845		
74032	OSB-60	-91.64769323	42.01141375	205.68	0.27973	0.4082	-10202174.54	5162689.322		
74032	OSB-61	-91.64769206	42.0114572	205.71	0.29386	0.4456	-10202174.41	5162695.831		
74032	OSB-62	-91.64769017	42.01149759	205.61	0.29952	0.4541	-10202174.2	5162701.883		
74032	OSB-63	-91.64768781	42.01153664	205.27	0.22599	0.3823	-10202173.94	5162707.733		
74032	OSB-64	-91.64768718	42.01157939	204.92	0.24606	0.4048	-10202173.87	5162714.138		
74032	OSB-65	-91.64768317	42.0116238	205.03	0.28551	0.4746	-10202173.42	5162720.792		
74032	OSS-1	-91.6474488	42.01170164	204.2	0.47112	0.6494	-10202147.33	5162732.455		
74032	OSS-2	-91.6474694	42.01169879	203.95	0.65996	0.8913	-10202149.63	5162732.027		
74032	OSS-3	-91.64747684	42.01170529	208.26	1.32123	2.1936	-10202150.45	5162733.002		
74032	OSS-4	-91.64749961	42.01169546	205.53	1.07357	1.7525	-10202152.99	5162731.529		
74032	OSS-5	-91.6475127	42.01171164	205.27	1.3478	2.2104	-10202154.45	5162733.953		
74032	OSS-6	-91.64752659	42.01169227	206.17	0.27963	0.4905	-10202155.99	5162731.051		
74032	OSS-7	-91.64754008	42.01171172	205.72	1.11566	1.8149	-10202157.49	5162733.964		
74032	OSS-8	-91.64755556	42.01169594	205.62	0.80433	1.3649	-10202159.22	5162731.6		
74032	OSS-9	-91.6475708	42.01171362	205.91	0.21884	0.3579	-10202160.91	5162734.25		
74032	OSS-10	-91.64758687	42.01169646	205.96	0.16785	0.2782	-10202162.7	5162731.678		
74032	OSS-11	-91.64760055	42.0117133	205.84	0.24974	0.4168	-10202164.23	5162734.201		
74032	OSS-12	-91.64761352	42.01169827	205.34	0.16602	0.2678	-10202165.67	5162731.95		
74032	OSS-13	-91.64763015	42.01171248	205.21	0.15687	0.2626	-10202167.52	5162734.079		
74032	OSS-14	-91.64764452	42.01170005	204.74	0.22574	0.3714	-10202169.12	5162732.216		
74032	OSS-15	-91.64767295	42.01170699	202.31	0.33655	0.4468	-10202172.28	5162733.255		
74032	OSS-16	-91.64766167	42.01174036	204.91	0.2053	0.3282	-10202171.03	5162738.255		
74032	OSS-17	-91.64769113	42.01175521	204.61	0.15936	0.291	-10202174.31	5162740.481		
74032	OSS-18	-91.64766298	42.01177234	204.65	0.2525	0.3982	-10202171.18	5162743.046		
74032	OSS-19	-91.6476883	42.01178804	204.61	0.18179	0.319	-10202173.99	5162745.398		
74032	OSS-20	-91.64766167	42.01180474	204.68	0.21684	0.3388	-10202171.03	5162747.9		
74032	OSS-21	-91.64768776	42.01181966	204.55	0.18588	0.3353	-10202173.93	5162750.136		
74032	OSS-22	-91.64766021	42.01183596	204.7	0.22672	0.3687	-10202170.87	5162752.578		
74032	OSS-23	-91.64768662	42.01185039	204.72	0.18694	0.34	-10202173.81	5162754.74		
74032	OSS-24	-91.64766071	42.01186696	204.93	0.23171	0.3781	-10202170.92	5162757.223		
74032	OSS-25	-91.64768611	42.01188591	204.38	0.21041	0.3845	-10202173.75	5162760.062		
74032	PRB-1	-91.64805702	42.0108843	204.4736	0.207164984	0.3558	-10202215.04	5162609.999	Western PRB Injection Points	
74032	PRB-2	-91.6480591	42.01089683	204.2317	0.182191522	0.2991	-10202215.27	5162611.877		
74032	PRB-3	-91.64806082	42.01091066	204.0486	0.17076988	0.28	-10202215.46	5162613.949		
74032	PRB-4	-91.6480618	42.01092412	203.9927	0.160095436	0.2592	-10202215.57	5162615.965		
74032	PRB-5	-91.64806126	42.01093765	203.9031	0.156635249	0.262	-10202215.51	5162617.991		
74032	PRB-6	-91.64806136	42.01096533	203.9486	0.145440982	0.2437	-10202215.52	5162622.139		
74032	PRB-7	-91.64806226	42.01097829	203.957	0.149718603	0.2513	-10202215.62	5162624.081		
74032	PRB-8	-91.64806051	42.01099073	204.0081	0.157169851	0.2637	-10202215.43	5162625.945		
74032	PRB-9	-91.64806109	42.01102113	203.8828	0.168171721	0.2851	-10202215.49	5162630.498		
74032	PRB-10	-91.64806279	42.01104436	203.7703	0.152819295	0.2563	-10202215.68	5162633.98		
74032	PRB-11	-91.64805493	42.01106441	203.603	0.151647618	0.256	-10202214.81	5162636.937		
74032	PRB-12	-91.64805628	42.01107364	203.5987	0.147122398	0.248	-10202214.96	5162638.367		
74032	PRB-13	-91.64805509	42.01109171	203.6412	0.146492321	0.2463	-10202214.82	5162641.074		
74032	PRB-14	-91.6480563	42.01110649	203.6983	0.151647618	0.256	-10202214.96	5162643.288		
74032	PRB-15	-91.64805649	42.01112146	203.7302	0.148479964	0.2504	-10202214.98	5162645.53		
74032	PRB-16	-91.64805722	42.01113299	203.7631	0.146045869	0.2456	-10202215.06	5162647.258		
74032	PRB-17	-91.64805707	42.01115483	203.8133	0.151647618	0.256	-10202215.05	5162650.53		
74032	PRB-18	-91.64805866	42.01117118	203.7327	0.151020865	0.255	-10202215.22	5162652.98		
74032	PRB-19	-91.64805775	42.01118542	203.7221	0.146492321	0.246	-10202215.12	5162655.112		
74032	PRB-20	-91.64805965	42.01120122	203.7196	0.143634111	0.2406	-10202215.33	5162657.48		
74032	PRB-21	-91.6480604	42.01121539	203.6835	0.142523682	0.239	-10202215.42	5162659.603		
74032	PRB-22	-91.64806105	42.01122711	203.6308	0.142523682	0.239	-10202215.49	5162661.355		
74032	PRB-23	-91.64806244	42.01128048	203.7516	0.14886812	0.2405	-10202215.64	5162669.358		
74032	PRB-24	-91.648063	42.01129537	203.8448	0.136693087	0.229	-10202215.71	5162671.586		
74032	PRB-25	-91.64806382	42.01130905	203.8717	0.137116671	0.2296	-10202215.69	5162673.635		
74032	PRB-26	-91.64806249	42.01132101	203.9012	0.136845235	0.2294	-10202215.65	5162675.428		
74032	PRB-27	-91.64806208	42.01133045	203.8771	0.138443113	0.234	-10202215.6	5162676.842		
74032	PRB-28	-91.64806532	42.01134727	203.8307	0.152829172	0.2606	-10202215.96	5162679.361		
74032	PRB-29	-91.64806427	42.01136183	203.929	0.13764134	0.2326	-10202215.85	5162681.543		
74032	PRB-30	-91.64806853	42.01138835	203.9382	0.146826881	0.2516	-10202216.32	5162685.517		
74032	PRB-31	-91.64806859	42.0114052	203.8642	0.14430636	0.2466	-10202216.33	5162688.041		
74032	PRB-32	-91.64806821	42.01141903	203.7922	0.150183947	0.2606	-10202216.28	5162690.113		
74032	PRB-33	-91.64806968	42.01143336	203.6838	0.151414533	0.2662	-10202216.45	5162692.26		

Stantec - Rockwell Collins
 RRS Location Data (WGS84 Web Mercator Auxiliary Sphere)
 855 35th St NE, Cedar Rapids, IA



Table 6

Project ID	Location ID	Longitude (°)	Latitude (°)	Altitude (HAE)	Avg Horizontal Accuracy (m)	Avg Vertical Accuracy (m)	x (m)	y (m)	Location Type	Notes	
74032	PRB-34	-91.64806953	42.01144925	203.5202	0.146413797	0.255	-10202216.43	5162694.641	Western PRB Injection Points		
74032	PRB-35	-91.64807178	42.01150142	203.3274	0.239422786	0.3837	-10202216.68	5162702.457			
74032	PRB-36	-91.64807123	42.0115139	203.3981	0.21679257	0.3674	-10202216.62	5162704.326			
74032	PRB-37	-91.64807256	42.01152915	203.4285	0.196618631	0.3362	-10202216.77	5162706.612			
74032	PRB-38	-91.64807288	42.0115427	203.4595	0.221597572	0.381	-10202216.81	5162708.641			
74032	PRB-39	-91.64807322	42.01155822	203.5332	0.195447489	0.351	-10202216.84	5162710.967			
74032	PRB-40	-91.64807329	42.01156939	203.4943	0.16438758	0.2833	-10202216.85	5162712.639			
74032	PRB-41	-91.64807419	42.01161178	203.4456	0.174462446	0.2991	-10202216.95	5162718.99			
74032	PRB-42	-91.64807016	42.01166049	203.3663	0.171868075	0.2922	-10202216.5	5162726.289			
74032	PRB-43	-91.64807091	42.01167465	203.3355	0.177413517	0.3054	-10202216.59	5162728.41			
74032	PRB-44	-91.64806959	42.01168817	203.4738	0.179359334	0.3116	-10202216.44	5162730.436			
74032	PRB-45	-91.64806966	42.01170171	203.5614	0.208779132	0.358	-10202216.45	5162732.465			
74032	PRB-46	-91.64807023	42.01171498	203.3915	0.238987266	0.4088	-10202216.51	5162734.452			
74032	PRB-47	-91.64807028	42.01172843	203.0814	0.226522552	0.3873	-10202216.52	5162736.468			
74032	PRB-48	-91.64807022	42.01174366	203.1173	0.217530217	0.3727	-10202216.51	5162738.75			
74032	PRB-49	-91.64807004	42.0117555	203.2118	0.18899312	0.3745	-10202216.49	5162740.524			
74032	PRB-50	-91.64806962	42.0117693	203.459	0.193862993	0.3331	-10202216.44	5162742.591			
74032	PRB-51	-91.64806862	42.01178237	203.5271	0.165369303	0.2842	-10202216.33	5162744.55			
74032	PRB-52	-91.64806881	42.01179753	203.5587	0.174252706	0.3	-10202216.35	5162746.821			
74032	PRB-53	-91.64806861	42.01181416	203.5592	0.180499993	0.31	-10202216.33	5162749.312			
74032	PRB-54	-91.64806911	42.01182694	203.6285	0.170912241	0.2892	-10202216.39	5162751.227			
74032	PRB-55	-91.64806785	42.01184115	203.6366	0.190002114	0.3236	-10202216.25	5162753.357			
74032	PRB-56	-91.64806857	42.01187499	203.547	0.201279892	0.3431	-10202216.33	5162758.426			
74032	PRB-57	-91.64807074	42.01196618	203.5801	0.18724722	0.3178	-10202216.57	5162772.089			
74032	PRB-58	-91.64807099	42.01199334	203.1906	0.208265417	0.3539	-10202216.59	5162776.158			
74032	PRB-59	-91.64807026	42.01200794	203.1395	0.235781864	0.4074	-10202216.51	5162778.344			
74032	PRB-60	-91.64807015	42.01202084	203.2422	0.231254296	0.3993	-10202216.5	5162780.278			
74032	PRB-61	-91.64807071	42.01202972	203.2437	0.219880233	0.3768	-10202216.56	5162781.608			
74032	PRB-62	-91.64806989	42.01207342	203.4481	0.253740925	0.4354	-10202216.47	5162788.156			
74032	PRB-65	-91.64806956	42.01211747	203.7542	0.20217858	0.3469	-10202216.44	5162794.755			
74032	PRB-66	-91.64807004	42.01213103	203.8524	0.20081353	0.3469	-10202216.49	5162796.786			
74032	PRB-67	-91.64807189	42.01214936	203.7487	0.218209344	0.3766	-10202216.69	5162799.533			
74032	PRB-68	-91.648071	42.01216333	203.675	0.277262827	0.4798	-10202216.6	5162801.622			
74032	PRB-69	-91.64807209	42.01217819	203.9057	0.27146151	0.466	-10202216.72	5162803.852			
74032	PRB-70	-91.6480721	42.01219052	204.0291	0.204473715	0.3517	-10202216.72	5162805.7			
74032	PRB-71	-91.648075	42.012214	202.6561	0.25864	0.3524	-10202216.72	5162805.7			
74032	MW-6	-91.64789102	42.01094049	204.77201	0.170651692	0.254	-10202196.56	5162618.418		Monitoring Wells	
74032	MW-7	-91.64783196	42.01142883	204.854201	0.155602057	0.24	-10202189.99	5162691.581			
74032	MW-8	-91.64779918	42.01187685	204.610401	0.154806331	0.24	-10202186.34	5162758.705			
74032	MW-9	-91.64780766	42.01238068	205.490301	0.148838839	0.227	-10202187.28	5162834.19			
74032	MW-11	-91.64796346	42.01141579	204.511501	0.148054044	0.227	-10202204.63	5162689.628			
74032	MW-12	-91.64821425	42.01183669	203.756301	0.21300641	0.3274	-10202232.54	5162752.688			
74032	MW-13	-91.64820792	42.01145369	203.699301	0.22392823	0.3407	-10202231.84	5162695.306			
74032	MW-14	-91.64818484	42.01164581	204.002701	0.150086444	0.2354	-10202229.27	5162724.09			
74032	MW-15	-91.64850345	42.01196114	203.651101	0.174056253	0.2759	-10202264.74	5162771.333			
74032	MW-16	-91.64825	42.01216137	203.920801	0.140463518	0.218	-10202236.52	5162801.332			
74032	MW-17	-91.64758659	42.01170562	205.502901	1.144898889	1.7576	-10202162.67	5162733.05			
74032	SC-1/PZ-1	42.01095733	-91.6478778	204.400401	0.155974357	0.242	-10202195.09	5162620.941		Pre-Injection Soil Core/ Piezometer	
74032	PZ-2	-91.64787023	42.01095547	204.477701	0.156083311	0.241	-10202194.25	5162620.662		Piezometers	
74032	PZ-3/4	-91.64804407	42.01111058	201.5293	0.402477956	0.7003	-10202213.6	5162643.9			
74032	PZ-5/6	-91.64806233	42.01154659	204.0246	0.355903378	0.6045	-10202215.63	5162709.224			
74032	PZ-7/8	-91.64806376	42.01179683	204.0381	0.316085592	0.5648	-10202215.79	5162746.716			
74032	PZ-9/10	-91.64806649	42.01210393	203.7971	0.247676202	0.4401	-10202216.09	5162792.727			
74032	CC-1	-91.64786782	42.01094871	204.433901	0.156083311	0.241	-10202193.98	5162619.649		Confirmation Cores	
74032	CC-2	-91.64805079	42.01111113	203.5032	0.269802731	0.4888	-10202214.35	5162643.982			
74032	CC-3	-91.6480678	42.01154945	203.415	0.262502044	0.4554	-10202216.24	5162709.652			
74032	CC-4	-91.6480669	42.01180589	203.1606	0.186309961	0.3337	-10202216.14	5162748.073			
74032	CC-5	-91.64807067	42.01211426	203.2982	0.250572005	0.4359	-10202216.56	5162794.275			

Disclaimer: The data provided is at mapping quality for reference only. The data is collected with a sub-meter GNSS device. This is not an official survey. Data should be used at your own risk due to the accuracy limitations listed in the table above.

LEGEND	
PFAS Pilot Injection Points	
3DME Only Injection Points	
3DME/SMZVI Injection Points	
Western PRB Injection Points	
Monitoring Wells	
Pre-Injection Soil Core/Piezometer	
Piezometers	
Confirmation Cores	



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Appendix D:

Photo Log

Rockwell Collins BLD 139: Photo Log



Photo 1: Active injection points on the northern section of the On-Site Barrier



Photo 2: A RegenesiS injection trailer staged near the On-Site Source Grid, toward the north end of the project



Photo 3: A RegenesiS injection trailer staged within a secondary containment unit to limit potential spills.



Photo 4: A Geoprobe drilling rig pushing injection points in the On-Site Barrier. Photo shows BGS utilizing coverage to limit the Rigs footprint in the grass.

Photo log: Continued



Photo 5: A Stantec crew member taking groundwater parameters out of MW-17.



Photo 6: The fire hydrant water meter set up on the corner of 33rd St and Eastern ave.



Photo 7: Firehose crossing Eastern Ave, utilizing hose ramps to supply RRS injection trailer with mixing water.



Photo 8: Active injection points in PFAS Pilot

Photo log: Continued



Photo 9: RRS trailer 16 set up in the southern section of the parking lot running injection lines to the PFAS Pilot



Photo 10: Active injections line running to the On-Site Source Grid.



Photo 11: Active injection points in the On-Site Source Grid.



Photo 12: Injection area of the PFAS Pilot RRS had pressure washed the surface

Photo log: Continued



Photo 13: North section of WPRB with traffic control diverting traffic away from Eastern Ave



Photo 14: RRS attached an injection line to flush impacted monitoring wells



Photo 15: Active injection points in WPRB. In the background, traffic control barricades and the hydrant set up can be seen




Photo 16: Traffic control barricades for redirecting traffic down 33rd street. Offsite emergency can be seen in background



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Appendix E:

Daily Percentage Complete

Daily Percent Complete					
Table 7					
					
Date	On-site Barrier	On-site Grid	WPRB	PFAS Pilot	Project Total
8/28/2023	0%	0%	0%	0%	0%
8/29/2023	14%	0%	0%	0%	5%
8/30/2023	41%	0%	0%	0%	15%
8/31/2023	58%	0%	0%	0%	21%
9/1/2023	69%	0%	0%	0%	25%
9/5/2023	69%	0%	0%	0%	25%
9/6/2023	76%	48%	0%	0%	34%
9/7/2023	76%	100%	0%	0%	41%
9/8/2023	76%	100%	0%	33%	43%
9/9/2023	90%	100%	0%	33%	48%
9/11/2023	90%	100%	0%	95%	53%
9/12/2023	90%	100%	16%	100%	60%
9/13/2023	90%	100%	52%	100%	76%
9/14/2023	90%	100%	83%	100%	89%
9/15/2023	90%	100%	89%	100%	92%
9/19/2023	90%	100%	92%	100%	94%
9/20/2023	100%	100%	100%	100%	100%

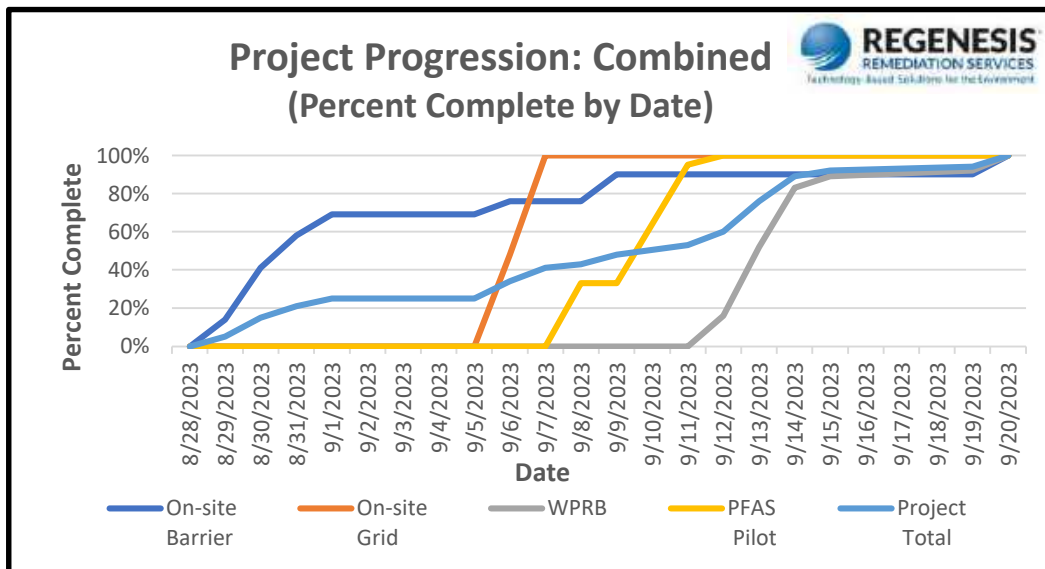


Figure 22



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Appendix F:

Soil Core Logs



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Soil Core 2

• SC-2
(5-15 ft. bgs)

Notes:

- 5'-9': No Recovery
- 9'-10': Soft malleable clay/ moist
- 9.5': highly saturated zone begins



5 ft. bgs



6 ft. bgs



7 ft. bgs



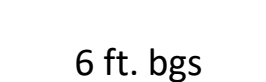
8 ft. bgs



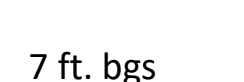
9 ft. bgs



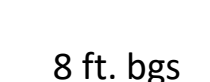
6 ft. bgs



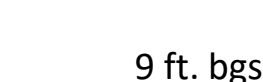
7 ft. bgs



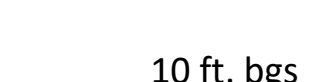
8 ft. bgs



9 ft. bgs



10 ft. bgs



SC-2

(5-15 ft. bgs)

Notes:

- 10'-11': Fine Sand, saturated
- 11'-12': Coarse Sand, Saturated
- Highly saturated Zone ends at 12.5, Sample still moist through 15'
- 12'-13': Clay/ Weathered Shale, moist
- 13'-14': Clay/ weathered Shale, moist
- 14'-15': Clay/ weathered shale, moist



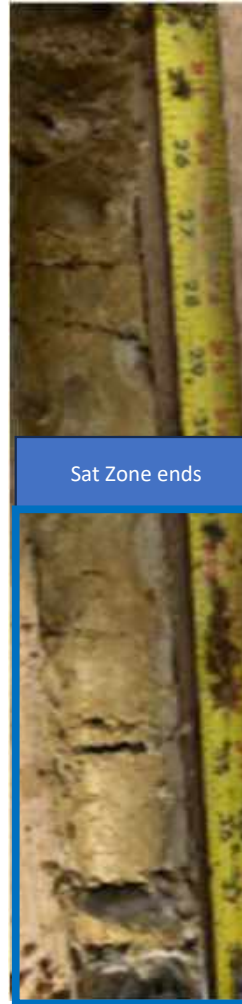
10 ft. bgs



11 ft. bgs



12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs

15 ft. bgs



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Soil Core 5

• SC-5
(5-20 ft. bgs)

Notes:

- 5'-6': No Recovery
- 6'-7': Hard Black Clay into white pebbles
- 7'-8': Moisture starts/ Sand and Silty Sand
- 8'-9' Very moist sand
- 9'-10': Soft malleable clay/ moist



5 ft. bgs



6 ft. bgs



7 ft. bgs



8 ft. bgs



9 ft. bgs



6 ft. bgs

7 ft. bgs

8 ft. bgs

9 ft. bgs

10 ft. bgs

SC-5
(5-20 ft. bgs)

Notes:

- 10'-11': Fine Sand, Small sliver of clay. Saturated
- 11'-12': Sand/ some clay. Saturated
- 12'-13': Sand/Clay. Saturated
- 12.5': Hard Clay layer begins
- 13'-14': Hard Clay
- 13.5' Saturation ends
- 14'-15': Dry. Hard Clay



10 ft. bgs



11 ft. bgs



12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs

15 ft. bgs

SC-5
(5-20 ft. bgs)

Notes:

- 15'-16': Fine sand Very saturated
- Saturated from 15'-20''
- 16'-17': Saturated, Fine Sand/Silty mix. Very soft
- 17'-18': Sand/ Silt mix, some cobbles. Saturated
- 18'-19': Uniform Sand. Soft/ Saturated
- 19'-20': Sand/some well graded pebbles. Saturated



15 ft. bgs



16 ft. bgs



17 ft. bgs



18 ft. bgs



19 ft. bgs



16 ft. bgs

17 ft. bgs

18 ft. bgs

19 ft. bgs

20 ft. bgs





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Confirmation Core 1

CC-1
(5-20 ft. bgs)

Notes:

- Full Colorimetric influence: 
- Light Colorimetric influence: 
- Visual confirmation starting at 7'
- Heavy colorimetric influence 7.8'
- 8.5'-9': less than 500 mg/Kg



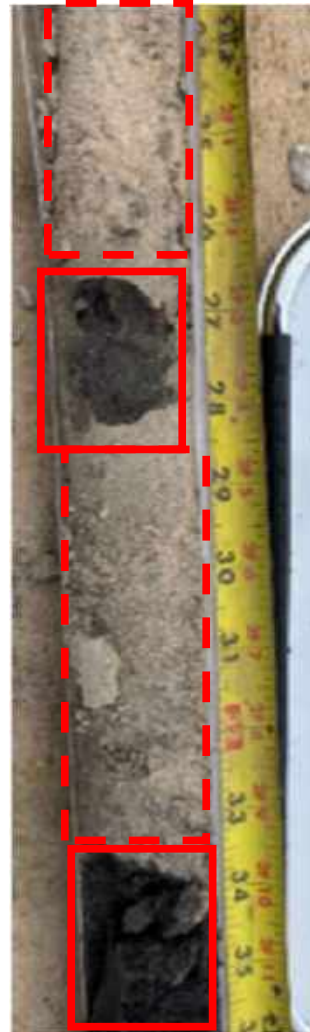
5 ft. bgs



6 ft. bgs



7 ft. bgs



8 ft. bgs



9 ft. bgs



6 ft. bgs

7 ft. bgs

8 ft. bgs

9 ft. bgs

10 ft. bgs

CC-1
(5-20 ft. bgs)

Notes:

- Heavy confirmation 11'-14'
- Light color change 14'-15'

PLUME STOP
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10 ft. bgs



11 ft. bgs



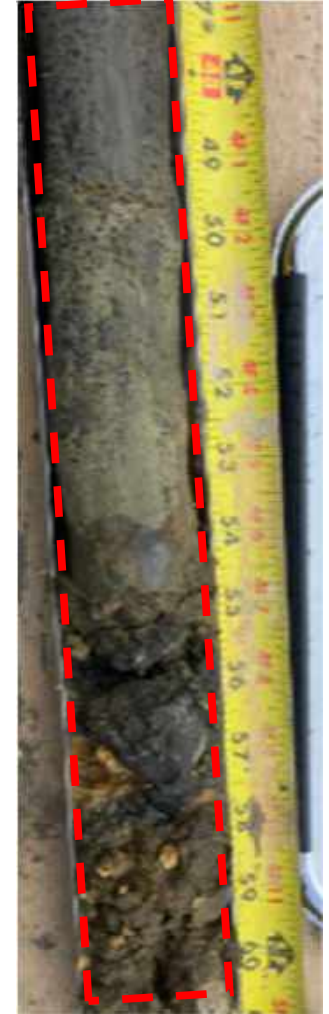
12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs

15 ft. bgs

CC-1
(5-20 ft. bgs)

Notes:

- Heavy confirmation 15'-17.5'
- Lighter color influence 17.5'-20'

15 ft. bgs



16 ft. bgs



17 ft. bgs



18 ft. bgs



19 ft. bgs



16 ft. bgs

17 ft. bgs

18 ft. bgs

19 ft. bgs

20 ft. bgs







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Confirmation Core 2

CC-2
(5-15 ft. bgs)

Notes:

- Full Colorimetric influence: 
- Light Colorimetric influence: 
- Heavy Colorimetric influence from 7.8'-8.4'
- Light colorimetric confirmation in clay layer 8.4-10'



5 ft. bgs



6 ft. bgs



7 ft. bgs



8 ft. bgs



9 ft. bgs



6 ft. bgs

7 ft. bgs

8 ft. bgs

9 ft. bgs

10 ft. bgs

CC-2
(5-15 ft. bgs)

Notes:

- Heavy confirmation 10'-12.5'
- Light color change 12.5'-13
- Heavy color change 13'-13.5'
- Heavy color change 13.8'-14.5'

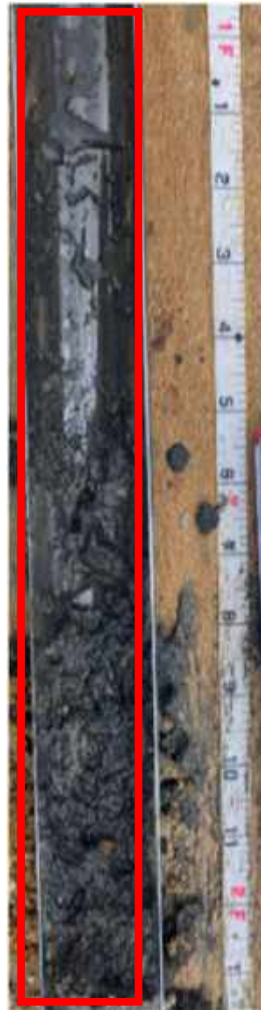
PLUME STOP
Liquid Activated Carbon

REGENESIS
REMEDICATION SERVICES
Technology-Based Solutions for the Environment

10 ft. bgs



11 ft. bgs



12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs

15 ft. bgs





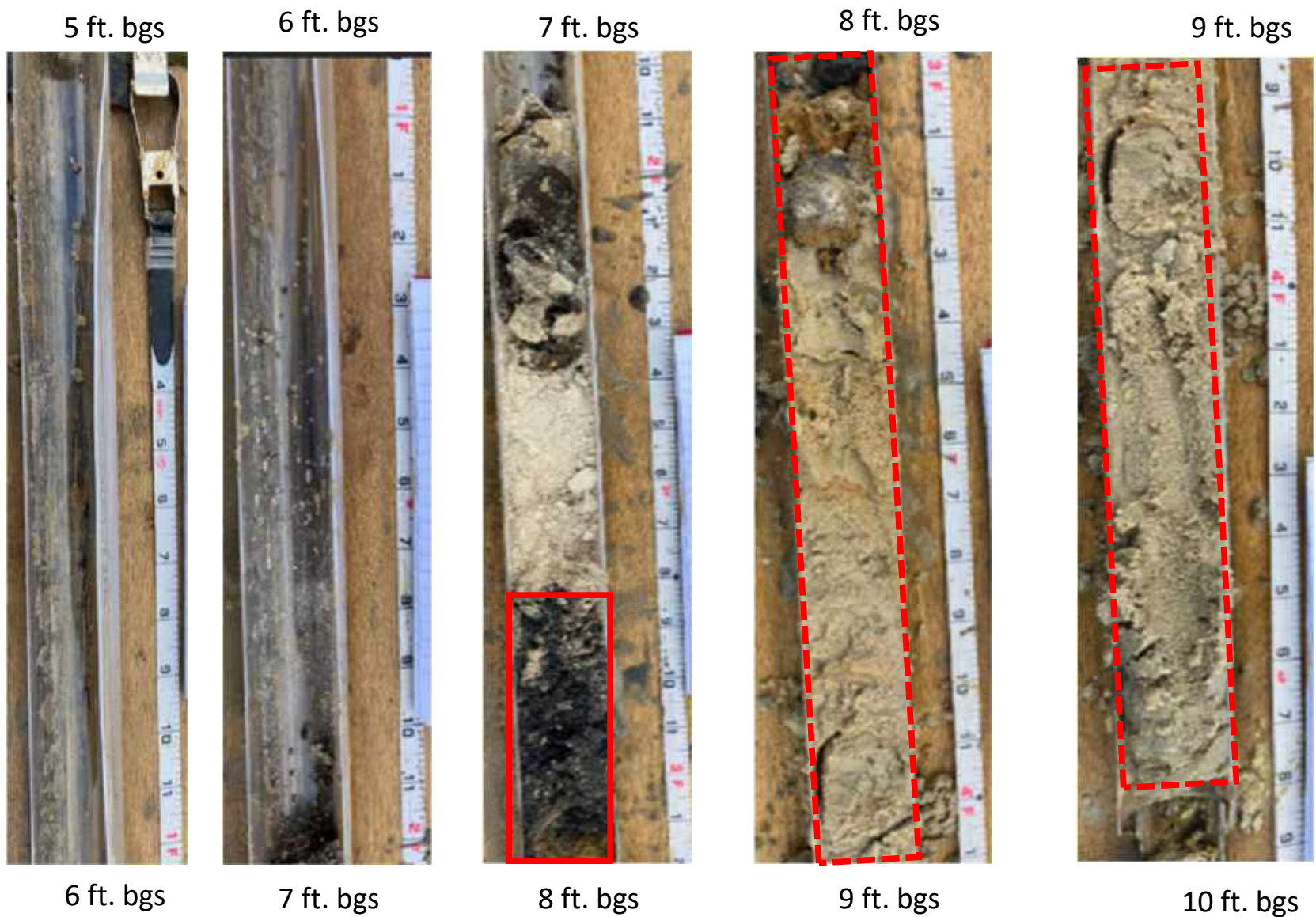
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Ph: (949) 366-8000
Fax: (949) 366-8090

Confirmation Core 3

CC-3
(5-15 ft. bgs)

Notes:

- Full Colorimetric influence: 
- Light Colorimetric influence: 
- Visual confirmation starting at 7.5'
- Light colorimetric influence 8'



CC-3
(5-15 ft. bgs)

Notes:

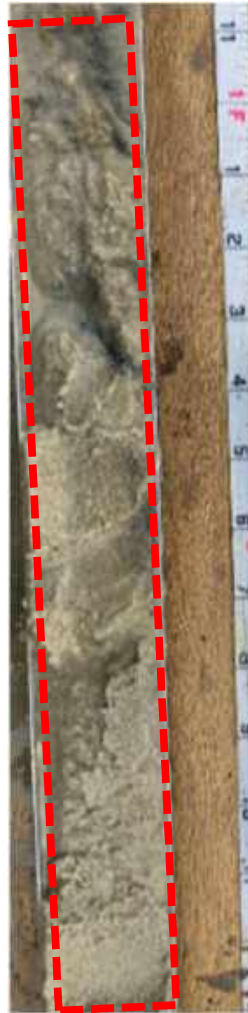
- Light color change
10'-15'
- Heavy color change
12.5' - 13.5'



10 ft. bgs



11 ft. bgs



12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs

15 ft. bgs





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Confirmation Core 4

CC-4
(5-15 ft. bgs)

Notes:

- Full Colorimetric influence: 
- Light Colorimetric influence: 
- Slight color change starting at 9'



5 ft. bgs



6 ft. bgs



7 ft. bgs



8 ft. bgs



9 ft. bgs



6 ft. bgs

7 ft. bgs

8 ft. bgs

9 ft. bgs

10 ft. bgs

CC-4
(5-15 ft. bgs)

Notes:

- Slight Color change from 10'- 12.8'
- Heavy color change 12.8'- 14.4'



10 ft. bgs



11 ft. bgs



12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs

15 ft. bgs



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Confirmation Core 5

CC-5
(5-20 ft. bgs)

Notes:

- Full Colorimetric influence:
- Light Colorimetric influence:



5 ft. bgs



6 ft. bgs



7 ft. bgs



8 ft. bgs



9 ft. bgs



6 ft. bgs

7 ft. bgs

8 ft. bgs

9 ft. bgs

10 ft. bgs

CC-5
(5-20 ft. bgs)

Notes:

- Less than 500 mg/ Kg



10 ft. bgs



11 ft. bgs



12 ft. bgs



13 ft. bgs



14 ft. bgs



11 ft. bgs

12 ft. bgs

13 ft. bgs

14 ft. bgs



15 ft. bgs



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Appendix G:

Monitoring Wells Concentration Change

		Stantec- Rockwell Collins							
Table 8									
Time (Minutes)	MW-6	PZ-1	PZ-2	PZ-3	PZ-4	PZ-7	PZ-8		
5	2900	0	300	0	0	0	0		
30	10500	0	500	2,000	3800	2200	0		
45	10500	0	500	400	5500	2200	0		
60	19500	0	1500	3500	1200	2000	0		
65	19500	200	1500	3500	1200	50	2600		
90	1100	400	700	3500	1200	50	2600		
120	7500	800	1300	3500	1200	3900	14000		
150	700	900	1000	3500	1200	3900	14000		

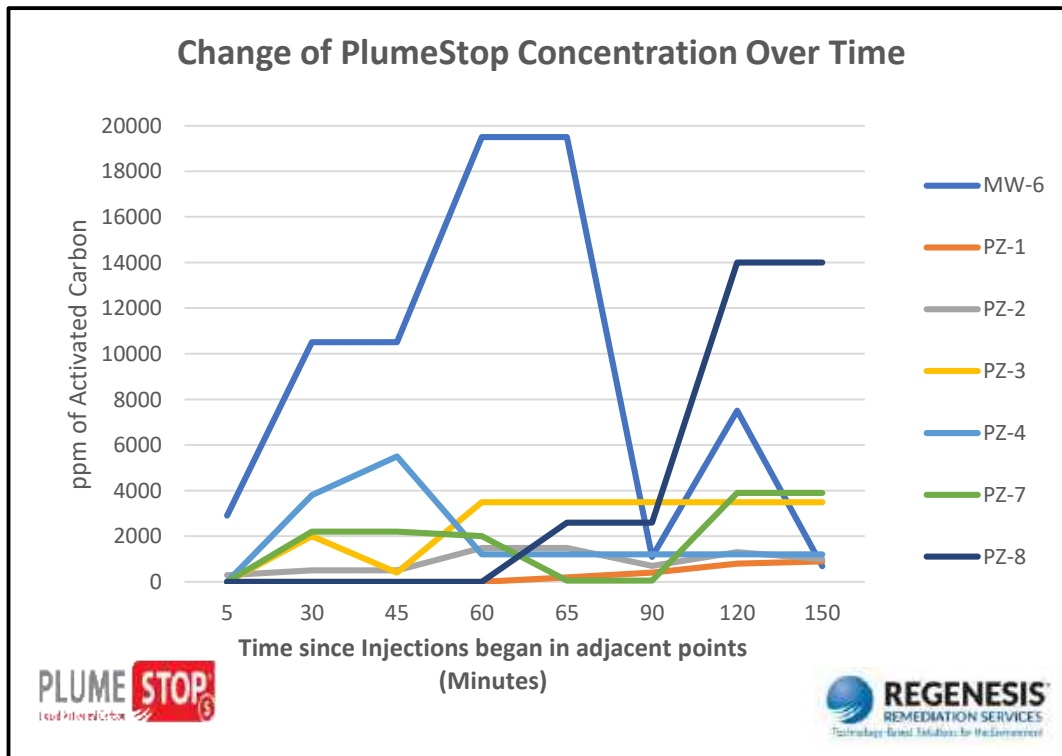


Figure 23

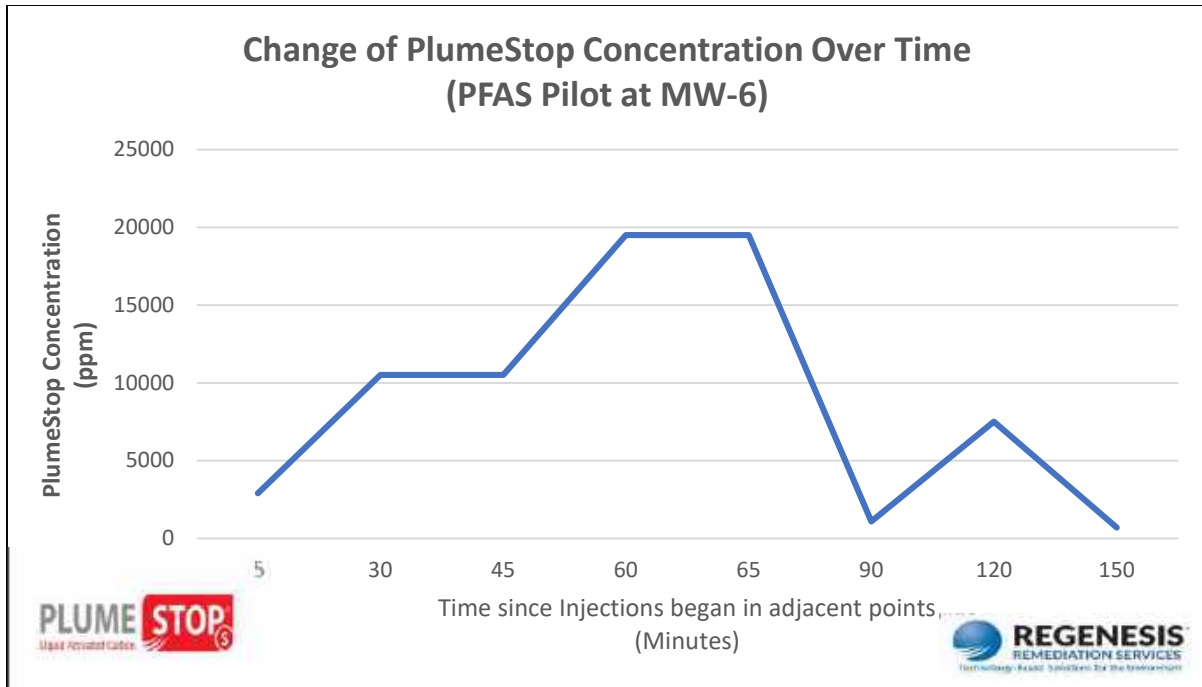


Figure 24

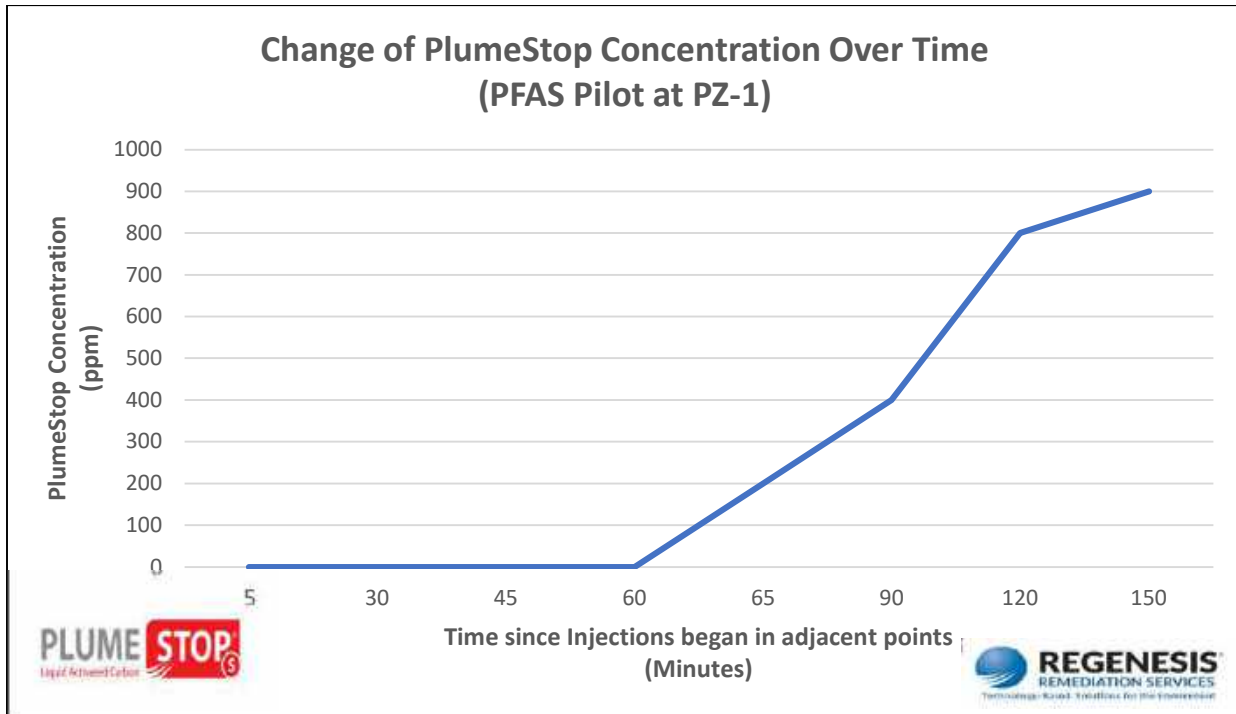


Figure 25

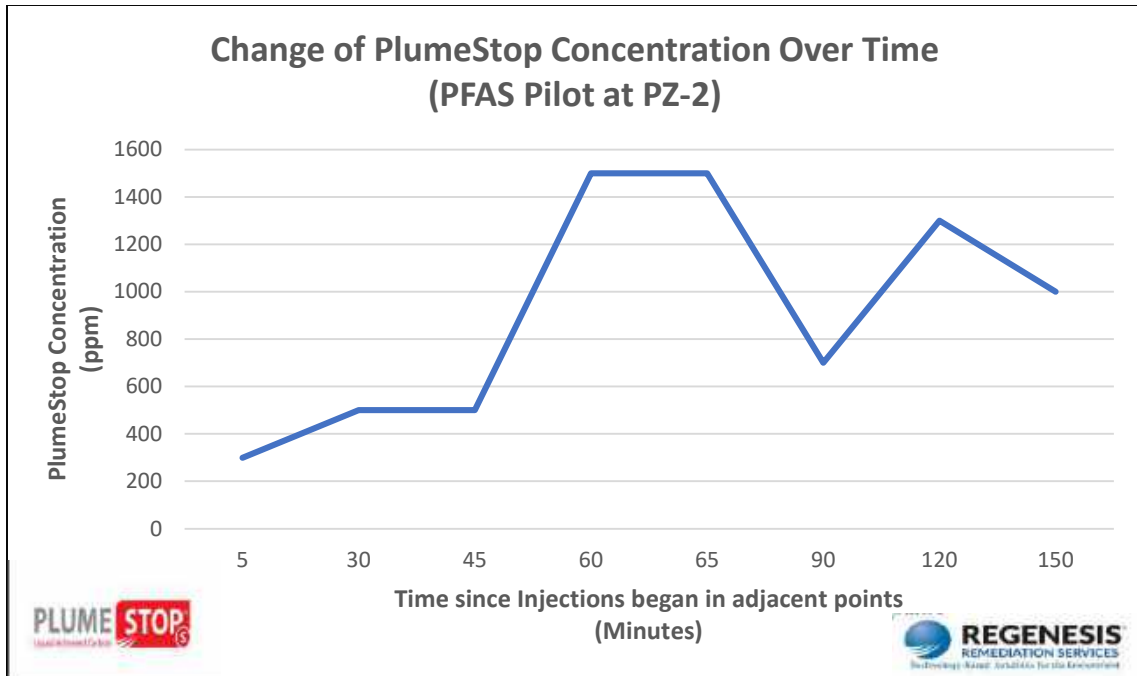


Figure 26

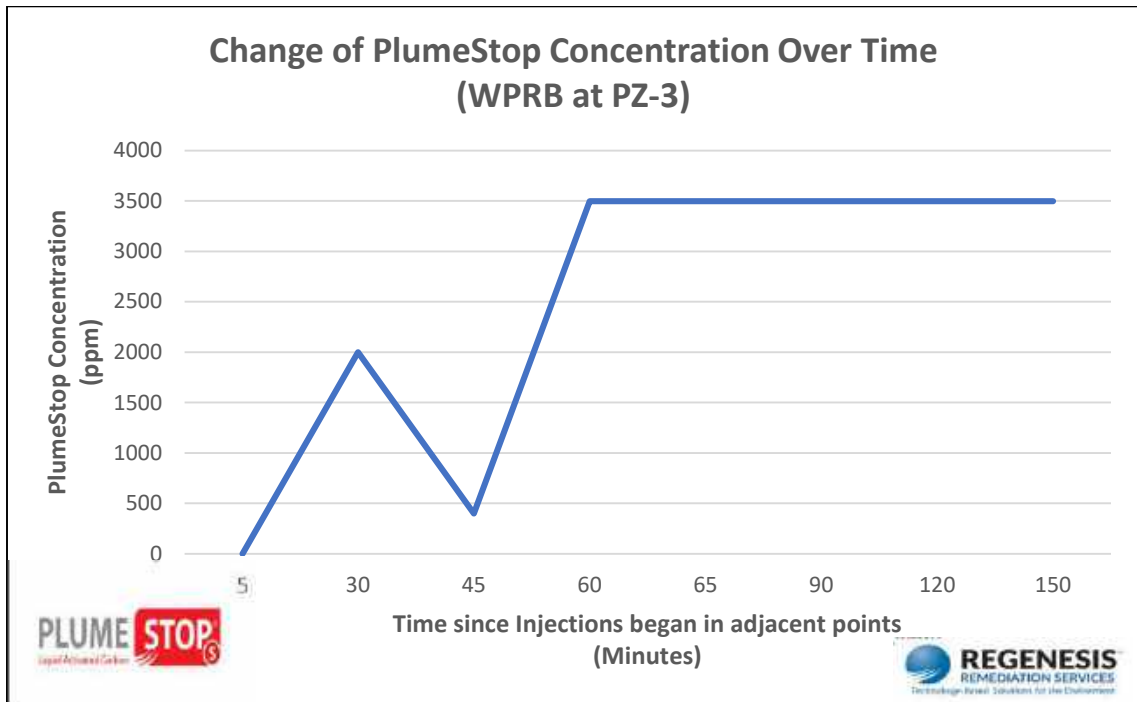


Figure 27

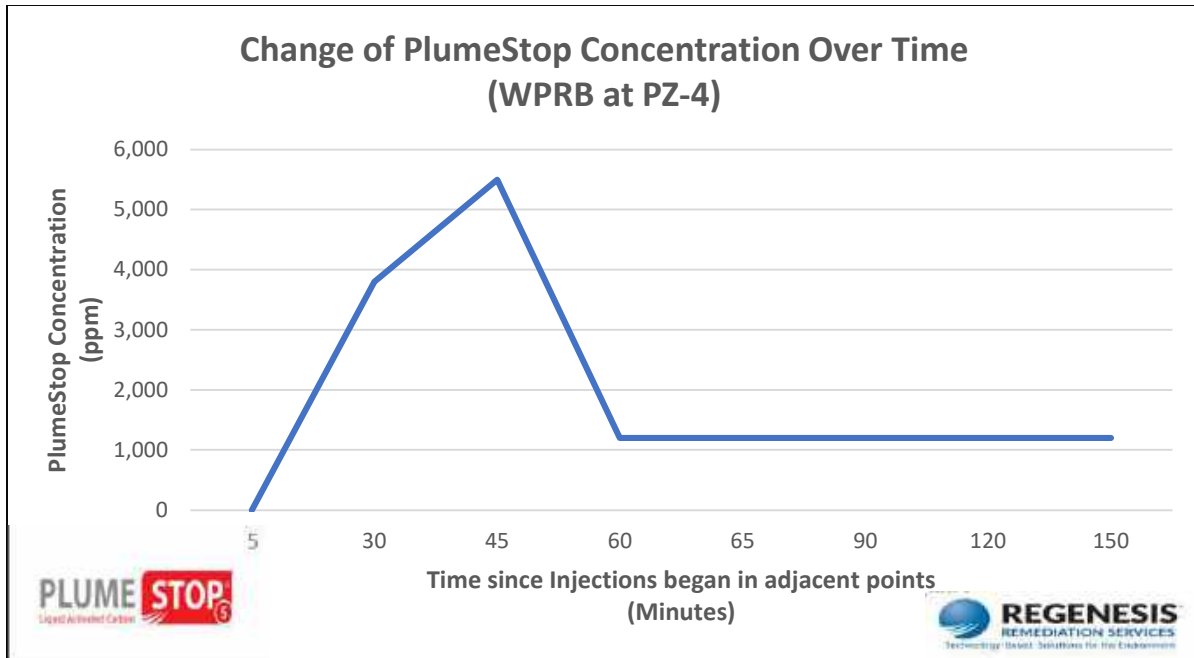


Figure 28

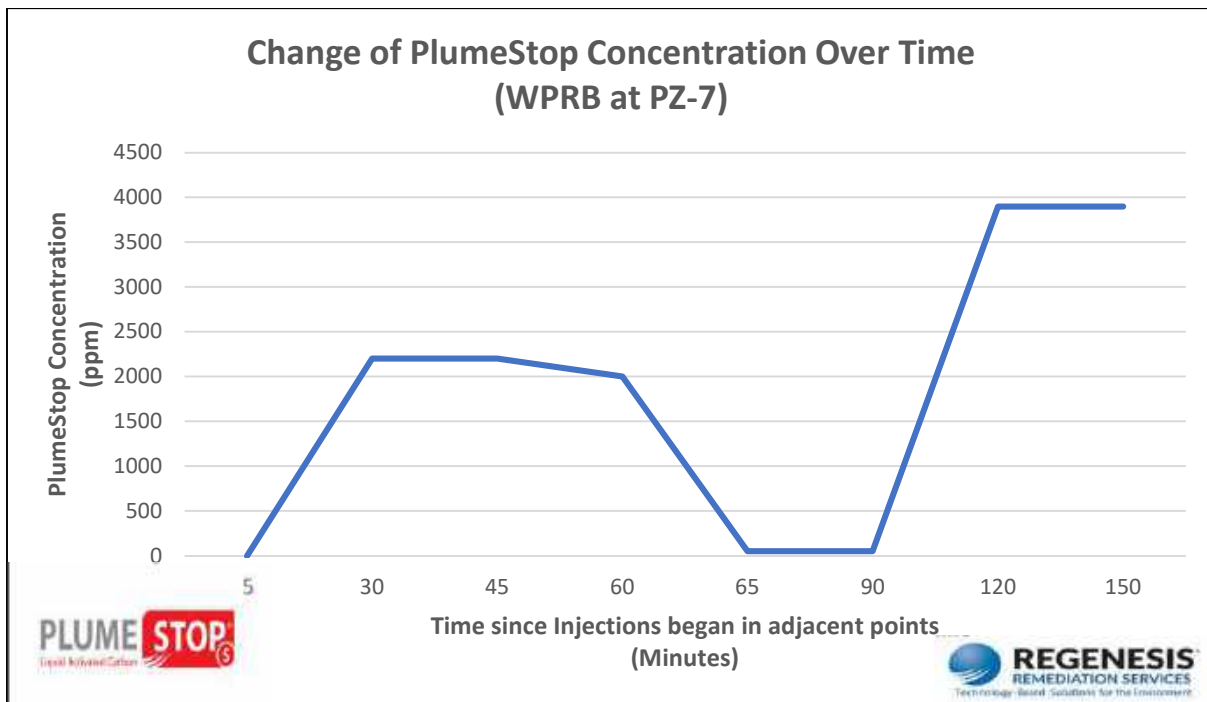


Figure 29

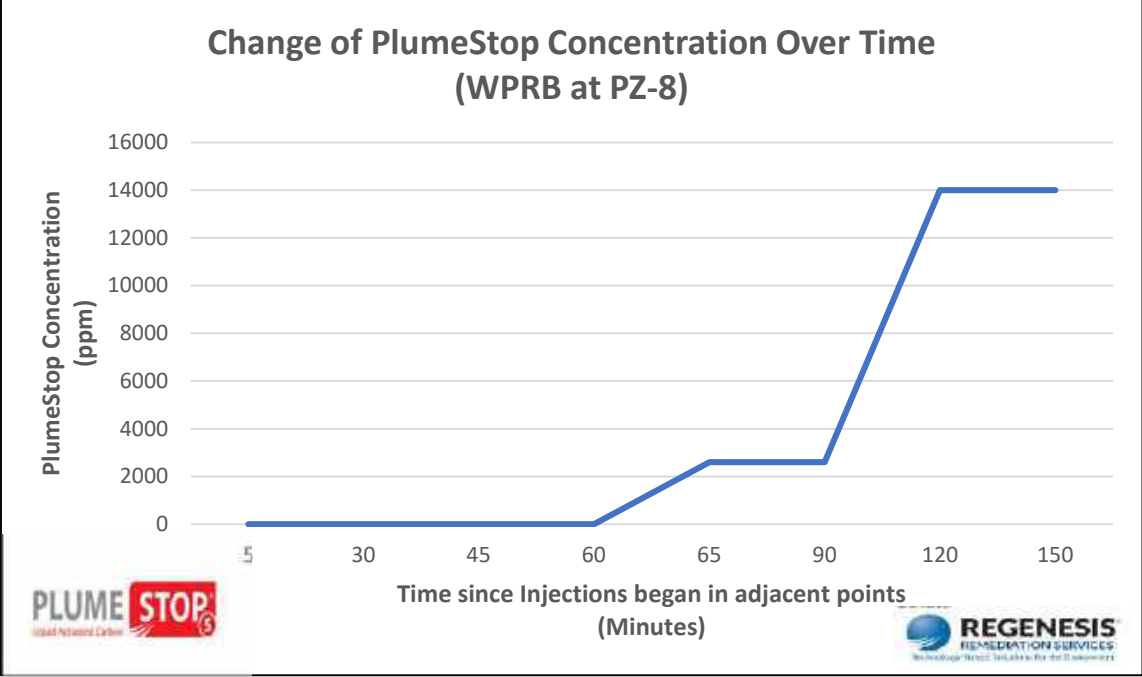


Figure 30