

**ENHANCED BIOREMEDIATION PILOT TEST
QUARTERLY REPORT NO. 2: APRIL THROUGH JUNE 2020
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
BILLINGS, MONTANA**

Prepared for:

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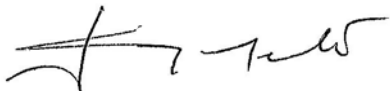
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

APPROVAL

As required in Section X, Paragraph 36 of the Consent Decree, Remedial Design/Remedial Action for Operable Unit 2 at the Lockwood Solvent Superfund Site, all documents, other than progress reports, which purport to document Soco's compliance with the terms of this Consent Decree shall be signed by an authorized representative of Soco.



Raj Mehta
Soco West, Inc. President

8/31/2020

Date

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REVIEWS AND APPROVALS

Roger Hoogerheide
EPA Remedial Project Manager



Date

8/31/2020

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ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
µS/cm	Microsiemens per centimeter
Big Horn	Big Horn Engineering
bgs	Below ground surface
<i>cis</i> -1,2-DCE	<i>cis</i> -1,2-Dichloroethene, also known as <i>cis</i> -1,2-Dichloroethylene
CD	Remedial Design/Remedial Action Consent Decree
COC	Contaminant of concern
DEQ	Montana Department of Environmental Quality
DNAPL	Dense non-aqueous phase liquid
DQOs	Data quality objectives
EA1	Excavation area 1
EA2	Excavation area 2
EA3	Excavation area 3
EB	Enhanced bioremediation
Energy	Energy Laboratories, Inc.
EOS	EOS Remediation, LLC
EPA	U.S. Environmental Protection Agency
EVO	Emulsified vegetable oil
gpm	gallons per minute
IDW	Investigation-derived waste
Keller	Keller Transport, Inc.
Kuck	Kuck Trucking Inc.
LNAPL	Light non-aqueous phase liquid
LSGPS	Lockwood Solvent Groundwater Plume Site
LTC	Landfarm treatment cell
mg/L	Milligrams per liter
mL	Milliliter
MQAPP	Monitoring Quality Assurance Project Plan
MS	Matrix spike
MSD	Matrix spike duplicate
mV	Millivolts
NPL	National Priorities List
ORP	Oxidation-reduction potential
OS/VR	Ozone sparge/vapor recovery
OU2	Operable Unit 2
PCE	Tetrachloroethene (also known as perchloroethene or tetrachloroethylene)
PPE	Personal protective equipment

ACRONYMS AND ABBREVIATIONS (CONTINUED)

psi	per square inch
QA	Quality assurance
QA/QC	Quality assurance/quality control
QC	Quality control
RAWP	<i>Revised Remedial Action Work Plan for Fine-Grained Source Soils</i>
ROD	Record of Decision
SDG	Sample delivery group
Soco	Soco West, Inc.
Tasman	Tasman Geosciences, Inc.
TCE	Trichloroethene (also known as trichloroethylene)
TOC	Total organic carbon
VOC	Volatile organic compound
VC	Vinyl chloride
Work Plan	<i>Enhanced Bioremediation Pilot Test Work Plan</i>

DISTRIBUTION LIST

The following individuals will receive a copy of this Enhanced Bioremediation Pilot Test Quarterly Report upon approval, and will receive copies of any subsequent revisions:

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1.0 INTRODUCTION

Tasman Geosciences, Inc. (Tasman) has prepared this *Enhanced Bioremediation Pilot Test Quarterly Report No. 2* (Report) on behalf of Soco West, Inc. (Soco) Operable Unit 2 (OU2) of the Lockwood Solvent Groundwater Plume Site (LSGPS) near Billings, Montana (see Figures 1 and 2). Reports are prepared and submitted pursuant to the *Enhanced Bioremediation Pilot Test Work Plan* (Work Plan; Tasman, 2019c). This report documents activities completed April through June 2020.

EB was among the remedial alternatives selected in the *Record of Decision* (ROD; EPA/DEQ, 2005) to treat contaminant of concerns (COCs) in impacted groundwater at OU2. The COCs at OU2 are the following volatile organic compounds (VOCs): tetrachloroethene, commonly known as perchloroethene (PCE); trichloroethene (TCE); *cis*-1,2-dichloroethene (*cis*-1,2-DCE); and vinyl chloride (VC), which are commonly referred to as chlorinated solvents. OU2 estimated extent of source soils are shown on Figures 3 and 4.

The purpose of this pilot test is to evaluate enhanced bioremediation (EB) as a remedial technology to create a downgradient groundwater treatment barrier system to treat COC impacted groundwater north of Coulson Ditch to below ROD performance standards (Table 1). EB involves the injection of emulsified vegetable oil (EVO) into the saturated alluvial interval to induce and sustain reductive dechlorination of PCE and biodegradation daughter products.

This EB pilot test involved subsurface application of an organic substrate solution, known as EOS₁₀₀, north of Coulson Ditch where soils exceed ROD performance standards for PCE (Table 1). EOS₁₀₀ is a mixture of food-grade organic compounds that promotes anaerobic biodegradation of chlorinated compounds including PCE. The EOS₁₀₀ vegetable oil concentrate was diluted with water to create an EVO solution. A series of injection wells were installed north of Coulson Ditch (Figure 4), and the EVO solution was injected into the subsurface from November 2019 through March 2020.

In April 2020, EB pilot test groundwater samples were collected concurrently with the semi-annual and ozone sparge/vapor recovery (OS/VR) pilot test groundwater samples for analysis of VOCs and total organic carbon (TOC). Additional groundwater samples were also collected from select EB monitoring wells for analysis of dissolved gases (methane, ethane and ethene); alkalinity; sulfate and chloride; and dissolved metals (arsenic, calcium, magnesium, potassium and sodium).

In April 2020, a significant decrease in PCE concentrations were observed in groundwater samples collected from several monitoring wells north of Coulson Ditch in the EB pilot test area. Substantial increases in *cis*-1,2-DCE concentrations were also observed in some of the same monitoring wells. The significant decrease in PCE concentrations, coupled with the increases in *cis*-1,2-DCE concentrations, indicate the anaerobic biodegradation of the EVO and the reductive dechlorination of PCE is occurring in the EB treatment area and area immediately downgradient.

In April 2020, groundwater samples were also collected from four select monitoring wells for analysis of Dehalococcoides bacteria (DHC), the first bacterial group isolated and proven to be capable of complete reductive dechlorination of PCE and TCE to ethene. DHC concentrations in the samples collected were low, suggesting that complete reductive dichlorination of PCE and TCE is unlikely to occur under existing conditions, indicating the need to introduce an enriched bioaugmentation culture.

Ex situ groundwater quality field parameters were measured in April 2020 during the quarterly sampling event and in situ groundwater quality field parameters were measured in both May and June 2020 during the performance monitoring events. Groundwater quality field parameter values this quarter were generally consistent with previous monitoring events.

The data collected during this pilot test will be used to determine if EB is a suitable technology for full-scale implementation north of Coulson Ditch. A determination will be made in consultation with Environmental Protection Agency (EPA) and Montana Department of Environmental Quality (DEQ), as to whether full-scale bioremediation of soils located downgradient of the primary source areas using EOS₁₀₀ is feasible.

2.0 BACKGROUND

2.1 Site Background

EB treatment of groundwater is one of several remedial technologies identified in the ROD to address chlorinated solvent impacts at OU2 (EPA/DEQ, 2005). This section presents summary background information on LSGPS and OU2. A complete site history, including physical settings, summary of previous investigations, and a conceptual site model of OU2 are detailed in the RAWP (Tasman, 2017b).

LSGPS is a 568-acre EPA National Priorities List (NPL) site located in an unincorporated suburb of and on the east side of Billings, Montana, known as Lockwood (Figure 1). As a result of chlorinated solvent impacts at the site, EPA proposed placing LSGPS on the NPL in May 2000 and subsequently listed LSGPS on December 1, 2000. In September 2018, a permanent controlled groundwater area was established to ensure that new wells are not developed in the contaminated groundwater plume.

Based on sources of subsurface impacts, the LSGPS was divided into two separate operable units. OU2, the focus of these remedial action activities, has been defined as a 246-acre geographic area where contaminated soil associated with the Soco property and impacted groundwater emanating from this source area are located (Figure 2). The COCs at OU2 are the following VOCs: PCE, TCE, *cis*-1,2-DCE and VC. COC concentrations in source area groundwater and soils are compared to the ROD performance standards (EPA/DEQ, 2005). The groundwater ROD performance standards are listed in Table 1.

Data from previous OU2 investigations suggest that the shallow, sandy gravel aquifer is the preferential pathway for migration of contaminants, and that the lower-permeability bedrock unit likely impedes downward vertical groundwater flow and contaminant migration. The predominant groundwater flow direction is northwest toward the Yellowstone River (Figures 5A and 5B).

During the November 2018 fine-grained source soils assessment, soil samples were collected for laboratory analysis north of Coulson Ditch on the Kuck Trucking Inc. (Kuck) property (Figure 3). The analytical results show that fine-grained soils exceed the ROD performance standard for PCE are present north of Coulson Ditch. Based on the concentration gradient, the PCE concentrations detected in soil samples collected from the Kuck property are not likely from surface releases but are rather believed to be the result of long-term contact with COC impacted groundwater (Tasman, 2019b).

Figure 3 illustrates the extent of known and suspected source soil at OU2, based on the current OU2 site knowledge. The source soil outlines are an interpretation of data collected during the April 2019 monitoring well MW453 through MW458 soil boring sampling, the November 2018 additional fine-grained soils delineation, the August 2016 primary fine-grained source soils delineation and historic soil data collected during previous investigations (Tasman, 2017a and 2019e). The northern most boundary of the extent of fine-grained source soils that exceed ROD performance standards, located on the Kuck property, is inferred (Figure 3). The northern most soil borings on the Kuck property were step-out borings collected on the final day of the November 2018 additional fine-grained source soils assessment.

There are two primary fine-grained soil source areas, the northwest source area and the former tank farm source area, and two minor source areas, the slope pit source area and the former acid tank farm source area, shown on Figure 3. Fine-grained soils that exceed ROD performance

standards are also present north of Coulson Ditch, as determined by the November 2018 additional fine-grained source soils delineation.

Excavation area 1 (EA1; former slope pit source area) was excavated during November 2017, under the RAWP (Tasman, 2017b). The soils were transported to the landfarm treatment cell (LTC) and subsequently treated, removed and stockpiled in lifts on Soco-owned property for future backfill. EA2 (the southern portion of the former tank farm area) was excavated from September through October 2018 (Tasman, 2019a). The excavated EA2 soils were transported to the LTC and subsequently treated, removed and stockpiled on Soco-owned property. The third sequenced fine-grained source soil excavation, excavation area 3 (EA3; middle portion of where the former acid tank farm resided to the area northwest near former monitoring well PT-06, and connected to EA1 to the east) was completed in October 2019. The treated EA1 and EA2 fine-grained soils temporarily stockpiled were used to backfill EA1 and EA3. The extent of EA1, EA2 and EA3 are shown on Figure 3. The remaining fine-grained source soil excavation activities (excavation areas 4 through 6) will continue to be phased under the RAWP (Tasman, 2017b), to accommodate OU2 site conditions.

2.2 EVO Injections

This EB pilot test involved subsurface application of an organic substrate solution known as EOS₁₀₀ to induce and sustain reductive dechlorination of PCE and biodegradation of daughter products north of Coulson Ditch, where soils exceed ROD performance standards for PCE (Table 1). EOS₁₀₀ is a mixture of food-grade organic compounds that promotes anaerobic biodegradation of chlorinated compounds including PCE. Using OU2-specific data provided in the EOS Site Evaluation Form, EOS Remediation, LLC (EOS) personnel of Research Triangle Park, North Carolina prepared a Design Summary to determine the volume of EOS₁₀₀ for this pilot test (Tasman, 2019c). Based on the input parameters used, EOS recommended 18 totes of EOS₁₀₀ to inject during this pilot test to obtain the distribution needed for creating a downgradient groundwater barrier treatment system for OU2. The EB EVO injections were conducted November 2019 through March 2020. The EB infrastructure layout is shown on Figure 4.

Tasman emulsified the EOS₁₀₀ vegetable oil product with water using a Dosatron®, which emulsified the vegetable oil product and water then dispensed it into an injection well. The water used to form the EVO solution was pumped from the open pit of excavation area 2 (EA2). Approximately 10 percent EOS₁₀₀ was emulsified with approximately 90 percent water, per manufacturer recommendations. Each 275-gallon tote of EOS₁₀₀ contained approximately 263 gallons of vegetable oil product. Therefore, approximately 2,630 gallons of water was emulsified with the approximate 263 gallons of EOS₁₀₀ to achieve the approximate 90:10 (water: EOS₁₀₀) ratio. Thus, approximately 2,893 gallons of EVO solution was injected into each of the 18 injection wells.

On November 15, 2019, Tasman initially tried to inject the EVO solution through a garden hose at the bottom of an EB injection well under gravity flow conditions. When the aquifer would not accept the EVO solution through a garden hose in the injection well, a stickup well head manifold was constructed from PVC and was used to inject the EVO solution and chase water. The injections continued as weather permitted and by the end of January 2020, Tasman completed the EVO solution injections (and chase water) into injection wells EBI-1 through EBI-8 through EBI-13, EBI-16 and EBI-18.

Injections were attempted into injection wells EBI-7, EBI-14, EBI-15 and EBI-17. However, the EVO solution daylighted to the surface while injecting in these four wells. Attempts to inject into

these wells were repeated with a longer well head manifold and at a slower injection flow rate. Again, the EVO solution daylighted to the surface while injecting into each of these wells. To help determine if was the EVO solution was daylighting from the screened interval within the fine-grained unit and if the aquifer would accept the EVO solution in the screened intervals within just the sandy gravel unit, EVO solution was injected into adjacent monitoring wells MW410-D, MW412-I and MW412-D. The EVO solution was accepted in the intermediate interval and both deep intervals of the monitoring wells tested. Therefore, the EVO solution injection into monitoring well MW410-D served as the completed injection for injection well EBI-17 and the EVO solution injection into monitoring well MW412-I/-D served as the completed injection for injection well EBI-14, due to their proximity to each other.

Based on the injection results, it was determined the sandy gravel unit is less permeable than previously believed. In March 2020, replacement injection wells EBI-7R and EBI-15R were installed to replace injection wells EBI-7 and EBI-15. The replacement injection wells consisted of only 10 feet of screen set just below the bottom of the fine-grained unit, which allowed the injected EVO solution to enter the aquifer without short circuiting to the surface. In March 2020, Tasman completed the EVO solution injections (and chase water) into injection wells EBI-7 and EBI-15.

Chase water was injected into each well following injection of the EVO, to minimize the potential for biofouling in the injection well or clogging of the well screen. Approximately 55 gallons of chase water was injected into each well following the EVO injection. The chase water was pumped from EA2, through the Dosatron®, and into the injection wells.

3.0 EB PILOT TEST ACTIVITIES COMPLETED THIS PERIOD

The following EB pilot test activities were completed this reporting period.

- Conducted an EB quarterly groundwater sampling event April 8 through 15, 2020 concurrently with the semi-annual and OS/VR pilot test groundwater sampling events. Samples were also collected for DHC analysis during the April 2020 groundwater sampling event. The EB groundwater analytical results including quality assurance/quality control (QA/QC) sample results, miscellaneous analytes detected, DHC results, historic groundwater analytical results, field parameter data including ferrous iron concentrations, elevations and liquid investigation derived waste (IDW) analysis are included in Tables 1 through 10, respectively. The April 2020 EB quarterly groundwater analytical data and data validation report are included in Appendices A and B, respectively. The April 2020 EB quarterly groundwater monitoring field data sheets and notes are included in Appendix C. COC concentration trend graphs for each EB monitoring well are included in Appendix D.
- Conducted monthly EB in situ performance groundwater monitoring in both May and June 2020. Results of the performance monitoring are included in Tables 7 and 9. EB performance groundwater monitoring field sheets are included in Appendix E.
- Evaluated the need for injecting additional chase water into all of the wells that EOS was injected into in an attempt to reduce biofouling. Based on the DHC sample results, it was determined EOS's bioaugmentation culture BAC-9, capable of degrading chlorinated solvents to innocuous compounds via halorespiration, was ready to be injected in the EB treatment area. After injection, the culture requires anaerobic chase water to flush out the well screen. This chase water will also serve as the chase water needed to reduce biofouling. The BAC-9 culture and chase water was injected in August 2020 and will be discussed in the next quarterly report.

4.0 EB GROUNDWATER MONITORING AND SAMPLING RESULTS

During this EB pilot test, select monitoring wells are periodically monitored for both field and laboratory parameters to evaluate the effectiveness of EB. Wells were sampled using low-flow methods following the procedures specified in the Work Plan (Tasman, 2019c) and in accordance with the Monitoring Quality Assurance Project Plan (MQAPP; ATC, 2012). For the groundwater monitoring and sampling events, the ozone sparge system was shut down a minimum of one hour prior to monitoring and sampling activities and remained off for the duration of the event.

4.1 Quarterly Groundwater Analytical Results

The April 2020 quarterly EB groundwater sampling event was conducted concurrently with the semi-annual and OS/VR pilot test groundwater sampling events April 8 through 15, 2020. Groundwater samples were collected using a peristaltic pump, following low-flow sampling procedures. All the EB groundwater samples were analyzed for VOCs and TOC by Energy Laboratories, Inc. (Energy), according to EPA Method 8260B and Method A5310C, respectively. Additionally, groundwater samples were collected from five of the monitoring wells (MW007, MW410-D, MW413-D, MW454-D and MW455-D) and analyzed for inorganics (alkalinity, total as CaCO₃, and chloride and sulfate) by Method A2320B and Method E300; dissolved metals (arsenic, calcium, magnesium, potassium and sodium) by Method E6010.20; and methane, ethane and ethene by Method SW8015M. Field testing of the concentration of ferrous iron in groundwater was also conducted during the April 2020 groundwater sampling event. Tables 1 and 2 presents the analytical results from the April 2020 quarterly EB groundwater sampling event. The ferrous iron groundwater concentrations are included in Table 8.

COC concentrations detected in groundwater samples during the April 2020 quarterly sampling event ranged from 0.42 J µg/L (MW455-I) to 445 µg/L (MW409-D) for PCE; 1.1 µg/L (MW006 and PT-04) to 115 µg/L (MW409-D) for TCE; 5.0 µg/L (PT-04) to 1,030 µg/L (MW456-D) for *cis*-1,2-DCE; and non-detect (various wells) to 28 µg/L (MW413-I) for VC. The April 2020 minimum PCE concentration (MW455-I) was qualified with a “J”: the analyte was present but less than the reporting limit, and the associated numerical value is the estimated value of the analyte in the sample. The EB groundwater sample results are presented in Tables 1 through 3. The EB infrastructure layout is shown on Figure 4.

4.1.1 PCE

In April 2020, concentrations of PCE detected in 22 of the 29 monitoring wells sampled exceeded the ROD performance standard of 5.0 µg/L (MW009, MW117R, MW408-I/D, MW409-I/D, MW413-I/D, MW451-I/D, MW452-I/D, MW453-I/D, MW454-I/D, MW455-D, MW456-I, MW457-I, MW458-I and MW459-I/-D). PCE concentration contour maps from the April 2020 groundwater analytical data are shown on Figures 6A through 6C. Contours on these figures indicate PCE impacts continue to exceed the ROD performance standard, with the highest concentrations primarily in the former acid tank farm area and the northwest source area. In April 2020, a significant decrease in PCE concentrations was observed in groundwater samples collected from monitoring wells north of Coulson Ditch in the EB pilot test area.

4.1.2 TCE

In April 2020, concentrations of TCE detected in 23 of the 29 monitoring wells sampled equaled or exceeded the ROD performance standard of 5.0 µg/L (MW009, MW117R, MW408-I/D, MW409-I/D, MW413-I/D, MW451-I/D, MW453-I/D, MW454-I/D, MW455-I/D, MW456-I/D,

MW457-I/D, MW458-I, and MW459-I/D). TCE concentration contour maps from the April 2020 groundwater analytical data are shown on Figures 7A through 7C. Contours on these figures indicate TCE impacts continue to exceed the ROD performance standard, with the highest concentrations primarily in the former acid tank farm area and the northwest source area.

4.1.3 *cis*-1,2-DCE

In April 2020, concentrations of *cis*-1,2-DCE detected in 23 of the 29 monitoring wells sampled exceeded the ROD performance standard of 70 µg/L (MW007, MW009, MW117R, MW408-I/D, MW409-I/D, MW413-I/D, MW451-I/D, MW453-I/D, MW454-I/D, MW455-I/D, MW456-I/D, MW457-D, MW458-I and MW459-I/D). *Cis*-1,2-DCE concentration contour maps from the April 2020 groundwater analytical data are shown on Figures 8A through 8C. Contours on these figures indicate *cis*-1,2-DCE impacts continue to exceed the ROD performance standard, with the highest concentrations primarily in the northwest source area and now, as anticipated, downgradient in the EB pilot test area.

4.1.4 VC

In April 2020, concentrations of VC exceeded the ROD performance standard of 2.0 µg/L in 2 of the 29 monitoring wells sampled (MW413-I and MW455-I). VC concentration contour maps from the April 2020 groundwater analytical data are shown on Figures 9A through 9C. Contours on these figures indicate VC impacts continue to exceed the ROD performance standard, with the highest concentrations primarily in the northwest source area.

4.1.5 TOC

TOC is a surrogate for EVO and was included in the sampling laboratory parameters. In general, higher TOC concentrations favor reductive dechlorination of PCE, TCE and *cis*-1,2-DCE by serving as the electron donor source necessary for the reaction to occur. All the monitoring wells sampled for TOC in April 2020 had detectable levels, with TOC concentrations ranging from 2.5 mg/L (MW452-I/D) to 212 D mg/L (MW455-I). The reporting limit was increased due to the sample matrix, therefore the data for monitoring well MW455-I was qualified with a D (see Section 3.1.3 QA/QC). The TOC analytical results are included in Table 1. TOC concentration contour maps from the April 2020 groundwater sampling event are shown on Figures 10A and 10B.

4.1.6 Additional EB Evaluation Analytes

In April 2020, groundwater samples were collected from monitoring wells MW007, MW413-D, MW454-D and MW455-D for analysis of dissolved gases (methane, ethane and ethene) by method SW8015M; alkalinity by method A2320B; sulfate and chloride by method E300.0; and dissolved metals (field filtered) by method E6010.20. The groundwater analytical results are included in Table 2.

Sulfate and arsenic are naturally occurring in the aquifer. Biodegradation of an organic substrate depletes the aquifer of dissolved oxygen (DO) and other terminal electron acceptors (e.g., nitrate or sulfate), and lowers the oxidation-reduction potential (ORP) of groundwater, thereby stimulating conditions conducive to anaerobic degradation processes (Parsons, 2004). Decreasing levels of sulfate are an indicator of reductive dechlorination of COCs. Of the four monitoring wells sampled in April 2020 for sulfate, all four (MW007, MW413-D, MW454-D and MW455-D) had a detectable level of sulfate, with concentrations ranging from 273 D mg/L (MW007) to 771 D mg/L (MW455-D). Monitoring well MW007 had the largest change in sulfate concentrations, which decreased

from 750 mg/L during baseline sampling in June 2019 to 273 mg/L during the April 2020 sampling event, indicating reductive dechlorination is occurring.

Reductive dechlorination can occur only in anaerobic environments. Under conditions favorable for bioremediation of chlorinated solvents, naturally occurring environmental arsenic can become mobilized in the aquifer. Arsenic exhibits an increased solubility in anaerobic environments. However, groundwater in the area of the EB pilot test was already in an anaerobic state when the EB pilot test was initiated. All four of the monitoring wells sampled had detectable levels of arsenic in April 2020, one of which exceeded the DEQ-7 Standard of 0.01 mg/L (MDEQ, 2012), that being monitoring well MW007. Arsenic concentrations ranged from 0.001 mg/L to 0.015 D mg/L in April 2020. For the data qualified with a D, the reporting limit was increased due to the sample matrix (Appendix A).

Alkalinity, dissolved metal cations (calcium, magnesium, potassium, and sodium), and dissolved gases (methane, ethane and ethene) allow evaluation of the amendment distribution and define the basic geochemistry during the application and distribution of these EB amendments. Of the four monitoring wells sampled in April 2020 for alkalinity, all four had a detectable level of alkalinity, with detections ranging from 366 mg/L (MW455-D) to 765 mg/L (MW007). Calcium, magnesium, potassium and sodium were detected in all four monitoring wells sampled during the April 2020 EB groundwater sampling event. Calcium concentrations ranged from 156 mg/L (MW007) to 171 mg/L (MW413-D and MW454-D); magnesium concentrations ranged from 101 mg/L (MW007) to 108 mg/L (MW413-D); potassium concentrations ranged from 4 mg/L (MW007) to 7 mg/L (MW455-D); and sodium concentrations ranged from 145 mg/L (MW454-D) to 172 mg/L (MW455-D). Methane was detected in two (MW007 and MW455-D) of the four monitoring wells sampled during the April 2020 EB groundwater sampling event. Methane concentrations ranged from below detection limits to 0.0045 mg/L (MW007). Ethane was only detected in the sample collected from monitoring well MW455-D at 0.0018 mg/L. Ethene was not detected in the four monitoring wells sampled.

4.1.7 Miscellaneous Analyte Detections

While several miscellaneous analytes, herein considered to include any analytes except the four COCs, TOC and the evaluation parameters (Tables 1 and 2), were detected during the April 2020 sampling event, no miscellaneous analytes were detected above their established maximum contaminant levels (MCLs). Four miscellaneous analytes were detected in various samples collected from the April 2020 sampling event, as summarized in Table 4. Those analytes include the following:

- Benzene;
- 1,1-Dichloroethane;
- 1,1-Dichloroethene; and
- *trans*-1,2-Dichloroethene.

Concentrations of these miscellaneous analytes have previously been detected in samples collected from several monitoring wells located on and downgradient of the Soco property.

4.1.8 DHC Analysis Results

DHC were the first bacterial group isolated and proven to be capable of complete reductive dechlorination of PCE and TCE to ethene. During the April 2020 quarterly groundwater sampling event, samples were collected in unpreserved one-liter bottles from monitoring wells MW007,

MW430-I, MW455-D and MW456-D and shipped overnight to Microbial Insights (MI) in Knoxville, Tennessee for DHC analysis.

In April 2020, DHC concentrations in the samples collected from monitoring wells MW007, MW430-I, MW455-D and MW456-D were low ($< 10^1$ or 10^1 cells/mL), similar to the April 2019 baseline samples, suggesting that complete reductive dichlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. In July 2020, additional samples for DHC analysis were collected and the DHC concentrations were also low (the July 2020 results will be discussed further in the next quarterly report). Therefore, EOS's bioaugmentation culture BAC-9, capable of degrading chlorinated solvents, was injected in August 2020, which will be detailed in the next quarterly report. The results of the April 2020 DHC analysis are included in Table 5 and the analytical report and DHC Interpretation Guide provided by MI are included in Appendix F.

4.2 Groundwater Quality Trends

Table 6 presents the historic OU2 COC groundwater analytical data through the April 2020 sampling event. COC concentration trend graphs for each EB monitoring well are included in Appendix D. In April 2020, a significant decrease in PCE concentrations was observed in groundwater samples collected from monitoring wells (MW007, MW413-I, MW453-I/D, MW455-I, MW456-I/D, MW457-D, MW459-I/D) north of Coulson Ditch in the EB pilot test area (Figure 4). The decrease in PCE concentrations ranged from 54 $\mu\text{g/L}$ (MW457-D) to 754 $\mu\text{g/L}$ (MW007). In April 2020, substantial increases in *cis*-1,2-DCE concentrations were also observed in monitoring wells (MW453-I/D, MW455-I, MW456-I/D, MW457-D and MW459-I) in the EB pilot test area. The increase in *cis*-1,2-DCE concentrations ranged from 68 $\mu\text{g/L}$ (MW459-I) to 874 $\mu\text{g/L}$ (MW456-D).

The significant decrease in PCE concentrations, coupled with the increases in *cis*-1,2-DCE concentrations, indicate the anaerobic biodegradation of the EVO and the reductive dechlorination of PCE is occurring in the EB treatment area and area immediately downgradient. It is believed that injection of the enriched bioaugmentation culture BAC-9 will facilitate dechlorination of site COCs to innocuous compounds.

4.3 Groundwater Field Parameters

Groundwater quality field parameters were measured ex situ through a flow-through cell in April 2020 and in situ in May and June 2020 using a YSI Professional Plus water quality meter. The water quality indicator parameters were recorded at approximately three-minute intervals until stabilized, as determined by field personnel. The water-quality field parameters included temperature, pH, specific conductance, ORP and DO. The post-injection groundwater field parameters are summarized in Table 7. The EB infrastructure layout is shown on Figure 4. The groundwater monitoring field data sheets and notes are included in Appendices C and E.

Monitoring wells MW408-I/D, MW409-I/D, MW410-I/D, MW412-I/D and MW413-I/D are 1-inch diameter wells and cannot be monitored in situ due to the larger diameter of the water quality meter probe. Therefore, groundwater quality field parameters were measured ex situ from these wells monthly using a peristaltic pump with a water quality meter flow-through cell until stable, following the low-flow sampling procedures.

Field parameters were not measured for monitoring wells MW410-I/D and MW412-I/D this quarter due to the use of wells MW410-D and MW412-I/D as EB injection wells. In June 2020, monitoring wells MW408-I/D, MW409-I/D and MW453-I/D were submerged under water from recent rainstorms and could not be monitored. The EB infrastructure layout is shown on Figure 4.

Groundwater temperature ranged from 7.3 degrees Celsius (°C) to 11.9°C during the April through June 2020 monitoring events. The pH ranged from 6.6 to 8.1. Specific conductance ranged from 1,690 microsiemens per centimeter (µS/cm) to 3,300 µS/cm from April through June 2020. ORP ranged from -393.3 millivolts (mV) to 287.4 mV. DO ranged from 0.21 milligrams per liter (mg/L) to 10.79 mg/L from April through June 2020. Groundwater quality field parameter values this quarter were generally consistent with previous monitoring events. The post-injection groundwater field parameters are summarized in Table 7.

During last quarter (January through March 2020), concentrations of dissolved oxygen were measured in monitoring wells MW408-I and MW409-I that exceed the maximum oxygen saturation level for the temperature and pressure of the groundwater. The two wells are located near ozone sparge points and it is believed that the sparging caused localized areas of oxygen supersaturation. The ozone sparge system was shut down on April 27, 2020 due to damage to a conveyance pipe caused by dirt work conducted on the Keller Transport, Inc. (Keller) property. The DO concentrations in monitoring wells MW408-I and MW409-I both decreased following the ozone sparge system shut down. The groundwater field parameters are summarized in Table 7.

Figures 11A and 11B display specific conductance trends, Figures 12A and 12B display ORP levels and Figures 13A and 13B display the DO concentrations, for the deep and intermediate monitoring wells, respectively, from pre-injection April 2019 through post-injection June 2020.

4.4 Ferrous Iron

Ferrous iron concentrations were measured in the field during the April 2020 quarterly groundwater sampling event. Ferrous iron concentrations act as an indicator of reducing conditions. Ferrous iron concentrations were measured using a Hach® Model IR-18C ferrous iron (Fe²⁺) test kit following sample collection for laboratory analysis. Six (MW007, MW409-D, MW455-I, MW456-I/D and MW457-D) of the 29 monitoring wells tested for ferrous iron had detectable concentrations, ranging from 0.50 mg/L (MW409-D) to 1.50 mg/L (MW456-I). The ferrous iron groundwater concentrations are included in Table 8.

4.5 Groundwater Elevations

Fluid level measurements were collected from the monitoring wells during the quarterly groundwater sampling event and monthly performance monitoring events. An interface probe was used to measure fluid levels to the nearest 0.01 ft. from the established measuring point prior to collecting groundwater field parameters. No light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) was detected while gauging the monitoring wells during this monitoring period. The results of the April through June 2020 depth to groundwater measurements and corresponding calculated groundwater elevations are listed in Table 9. The locations of the monitoring wells are shown on Figure 4. The fluid level measurements were recorded on the field data sheets included in Appendices B and D.

During the April 2020 sampling event, groundwater elevations ranged from approximately 3085.25 feet (MW117R) to 3090.86 feet (MW451-I) in the EB monitoring well network (Table 9). Potentiometric maps (Figures 5A and 5B), prepared using data collected during the April 2020 combined EB quarterly, semi-annual and OS/VR pilot test groundwater sampling event, indicate a general northwest flow of groundwater toward the Yellowstone River. The direction of groundwater flow observed in April 2020 is consistent with previous sampling events.

4.6 Investigation-Derived Waste

An estimated 550 gallons of liquid IDW was generated during the March 2020 installation and development of replacement EB injections wells EBI-7R and EBI-15R, replacement monitoring well MW117R and new monitoring wells MW500-I/D through MW506-I/D; the combined April 2020 semi-annual, OS/VR and EB groundwater sampling event; and the monthly groundwater field parameter monitoring events. The liquid IDW was temporarily placed in a polyethylene tank in a storage area on Soco-owned property and treated by air sparging prior to sampling in June 2020, in accordance with the MQAPP (ATC, 2012). Post-treatment liquid IDW sample analytical results are presented in Table 10. The June 2020 IDW laboratory analytical report and field sheet are included in Appendix G.

Non-hazardous IDW, such as personal protective equipment (PPE) and disposable investigation equipment that was generated throughout the monitoring and sampling activities was placed in dedicated heavy-duty plastic garbage bags and disposed of at the Billings Regional Landfill, located in Billings, Montana, in accordance with the MQAPP (ATC, 2012).

5.0 QUALITY CONTROL

The quality of field data is assessed through the regular collection and analysis of field QC samples in accordance with the MQAPP (ATC, 2012). Field QC samples collected included field duplicates and trip blanks. QC samples and analytical results are described in the following sections.

Laboratory QC samples were analyzed in accordance with the MQAPP-referenced analytical method protocols to ensure that laboratory procedures and analyses were conducted properly, and the quality and usability of the data is known.

5.1 Field Quality Control

QC samples were collected in the field and analyzed to check sampling and analytical precision and accuracy. The following sub-sections discuss the types and purposes of field QC samples that were collected. Analytical results of the April 2020 groundwater sampling event are presented in Tables 1 and 2, including the duplicate sample results collected for QC purposes. The remaining QC analytical results from the April 2020 groundwater sampling event are presented in Table 4. The associated data validation report is presented in Appendix B.

5.1.1 Field Duplicates

During the April 2020 quarterly groundwater sampling event, one duplicate sample was collected from the EB monitoring well network and submitted for QA/QC purposes. The duplicate sample was collected from monitoring well MW007 and was identified as MW007GW036-701. The analytical results of the field duplicate are provided in Table 1.

For liquid matrix samples, the relative percent difference (RPD) between duplicate samples must be less than 25 percent (ATC, 2012). The RPD results for the April 2020 sampling event were exceeded for field duplicate samples MW007GW036 and MW007GW036-701 for PCE and VC. The natural sample, MW007GW036 reported concentration of the compounds, and the duplicate samples were non-detect at a reporting limit 10 times that of the natural sample. The data were qualified with a J: the analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample. The April 2020 groundwater data validation report is included in Appendix B.

5.1.2 Trip Blanks

During the April 2020 combined quarterly EB pilot test, semi-annual and OS/VR pilot test groundwater sampling event, one trip blank, provided by Energy, was included with each of the six sample delivery groups (SDGs). The trip blanks were analyzed for VOCs by EPA Method 8260B. The trip blanks were free of LSGPS COCs. Results of the April 2020 trip blanks are presented in Table 4.

5.2 Laboratory Quality Control

Internal laboratory duplicates and calibration checks were performed at a frequency of five percent, i.e., one for every 20 samples submitted for analysis per SDG. Details of all requirements for laboratory QC are presented in the MQAPP (ATC, 2012).

During the April 2020 sampling event, matrix spikes and matrix spike duplicates (MS/MSDs) requirements were met in accordance with the MQAPP (ATC, 2012). The surrogate recoveries were within project specific limits. The data validation report for the April 2020 sampling event is included in Appendix B.

6.0 DATA VALIDATION AND USABILITY

All data verification and validation requirements for all LSGPS OU2 data are presented in the MQAPP (ATC, 2012) and not repeated in this report. Groundwater sampling data were verified and validated in accordance with the requirements of the MQAPP. As discussed in Section 5.1.1, the QA/QC evaluation data met all verification and validation acceptance criteria except for PCE and VC concentrations in the sample collected from monitoring well MW007. Therefore, the data were qualified with a J: the analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample. The duplicate sample was non-detect at a reporting limit 10 times that of the natural sample. The QA/QC evaluation for the April 2020 groundwater sampling event is included in Appendix B.

7.0 DEVIATIONS FROM THE WORK PLAN

The EB Work Plan (Tasman, 2019c) stated that the bioaugmentation culture BAC-9 injection would occur approximately three to four weeks following completion of the EVO injections. After Tasman consulted the EOS technical representative, it was suggested that the addition of BAC-9 into the system should be delayed at least one to two quarters after the completion of the injections. Groundwater field parameter monitoring and groundwater sampling continued to ensure conditions were favorable for introducing the microbial consortium. As discussed in Section 4.1.8, the April 2020 DHC concentrations were low suggesting that complete reductive dichlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. In cooperative agreement with EPA and DEQ, Tasman injected EOS's bioaugmentation culture BAC-9 in August 2020, which will be detailed in the next quarterly report.

Monitoring wells MW410-I/D and MW412-I/D contained EVO solution from use as injection wells and were not monitored or sampled this quarter.

Ferrous iron concentrations were scheduled for measurement in field samples collected from monitoring wells MW408-I/D, MW409-I/D, MW410-I/D, MW412-I/D and MW413-I/D during the monthly field parameter monitoring events since the wells are purged, due to the small (1-inch) diameter of the wells rather than measured in situ. However, ferrous iron concentrations were only monitored during the April 2020 quarterly sampling event.

In June 2020, monitoring wells MW408-I/D, MW409-I/D and MW453-I/D were submerged under water from recent storms and could not be monitored.

8.0 CONCLUSIONS AND RECOMMENDATIONS

This report summarizes the EB pilot test field activities conducted from April through June 2020. The purpose of the pilot test is to evaluate EB as a remedial technology for the creation of a downgradient groundwater treatment barrier system to treat COC impacted groundwater north of Coulson Ditch to below ROD performance standards.

The April 2020 quarterly EB groundwater sampling event was conducted concurrently with the semi-annual and OS/VR pilot test groundwater sampling events. Concentrations of PCE, TCE, *cis*-1,2-DCE and vinyl chloride were detected in groundwater samples collected from the EB monitoring wells during the April 2020 quarterly sampling event. COC concentrations detected in groundwater samples ranged from 0.43 J µg/L to 445 µg/L for PCE; 1.1 µg/L to 115 µg/L for TCE; 5.0 µg/L to 1,030 µg/L for *cis*-1,2-DCE; and below detection to 28 µg/L for VC during the April 2020 sampling event.

In April 2020, a significant decrease in PCE concentrations, up to 754 µg/L, were observed in groundwater samples collected from several monitoring wells north of Coulson Ditch in the EB pilot test area. Substantial increases in *cis*-1,2-DCE concentrations, up to 874 µg/L, were also observed in some of the monitoring wells in the EB pilot test area. The significant decrease in PCE concentrations, coupled with the increases in *cis*-1,2-DCE concentrations, indicate the anaerobic biodegradation of the EVO and the reductive dechlorination of PCE is occurring in the EB treatment area and area immediately downgradient.

The TOC concentrations in the groundwater samples collected during the April 2020 quarterly groundwater sampling event ranged from 2.5 mg/L to 212 D mg/L. Higher TOC concentrations generally favor reductive dechlorination of PCE, TCE, and *cis*-1,2-DCE by serving as the electron donor source necessary for the reaction to occur.

In April 2020, groundwater samples were collected from select monitoring wells for analysis of dissolved gases (methane, ethane and ethene); alkalinity; sulfate and chloride; and dissolved metals (arsenic, calcium, magnesium, potassium and sodium). Sulfate and arsenic are naturally occurring in the aquifer. Biodegradation of an organic substrate depletes the aquifer of DO and other terminal electron acceptors (e.g., nitrate or sulfate), and lowers the ORP of groundwater, thereby stimulating conditions conducive to anaerobic degradation processes (Parsons, 2004). In April 2020, the four monitoring wells sampled for sulfate had concentrations ranging from 273 D mg/L to 771 D mg/L. Monitoring well MW007 had the largest change in sulfate concentrations, which decreased 477 mg/L from June 2019 to April 2020, indicating reductive dichlorination is occurring.

Reductive dechlorination can occur only in anaerobic environments and arsenic exhibits an increased solubility in anaerobic environments. Under conditions favorable for bioremediation of chlorinated solvents, naturally occurring environmental arsenic can become mobilized in the aquifer. Groundwater in the EB pilot test area was already in an anaerobic state when the EB pilot test was initiated. In April 2020, the four monitoring wells sampled for arsenic had concentrations ranging from 0.001 mg/L to 0.015 D mg/L. Monitoring well MW007 exceeded the DEQ-7 Standard of 0.01 mg/L (MDEQ, 2012) for arsenic in April 2020.

Alkalinity, dissolved metal cations (calcium, magnesium, potassium, and sodium), and dissolved gases (methane, ethane and ethene) allow evaluation of the amendment distribution and define the basic geochemistry during the application and distribution of the EB amendments. In April 2020, the four monitoring wells sampled for alkalinity had detections ranging from 366 mg/L to

765 mg/L. Calcium, magnesium, potassium and sodium were detected in all four monitoring wells sampled during the April 2020 EB groundwater monitoring event. Calcium concentrations ranged from 156 mg/L to 171 mg/L; magnesium concentrations ranged from 101 mg/L to 108 mg/L; potassium concentrations ranged from 4 mg/L to 7 mg/L; and sodium concentrations ranged from 145 mg/L to 172 mg/L. In April 2020, methane was detected in two of the four monitoring wells sampled. Methane concentrations ranged from below detection limits to 0.0045 mg/L. Ethane was only detected in one monitoring well at 0.0018 mg/L. Ethene was not detected in the four monitoring wells sampled.

DHC were the first bacterial group isolated and proven to be capable of complete reductive dechlorination of PCE and TCE to ethene. In April 2020, DHC concentrations in the samples collected from four select monitoring wells were low ($< 10^1$ or 10^1 cells/mL), similar to the April 2019 baseline samples, suggesting that complete reductive dichlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. EOS's bioaugmentation culture BAC-9, capable of degrading chlorinated solvents, was injected in August 2020 and will be detailed in the next quarterly report.

In April 2020, ferrous iron concentrations were measured in the field during the EB quarterly groundwater sampling event. Ferrous iron concentrations act as an indicator of reducing conditions. Six of the 29 monitoring wells tested for ferrous iron had detectable concentrations, ranging from 0.50 mg/L to 1.50 mg/L.

In May and June 2020, groundwater quality field parameters were measured in situ. Groundwater quality field parameter values this quarter were generally consistent with previous monitoring events.

Groundwater samples and field parameters were not collected from monitoring wells MW410-I/D and MW412-I/D during this quarter due to the use of MW410-D and MW412-I/D as EB injection wells.

Groundwater monitoring data were verified and validated in accordance with the requirements of the MQAPP (ATC, 2012). EPA Stage 2B data validation was conducted on all groundwater quality laboratory data. The April 2020 data met all verification and validation acceptance criteria, and no data were qualified, except for PCE and VC concentrations in the sample collected from monitoring well MW007. Therefore, the data were qualified with a J: the analyte was positively identified, and the associated numerical value is the approximate concentration of the analyte in the sample.

Tasman recommends continuing the EB pilot test monthly groundwater quality field parameter performance monitoring and the quarterly groundwater sampling to determine the effectiveness and evaluate the potential of EB as a remedial technology to treat COC impacted groundwater north of Coulson Ditch.

9.0 REFERENCES

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- Tasman, 2019c. Enhanced Bioremediation Pilot Test Work Plan (Work Plan), Sampling and Analysis Plan and Field Sampling Plan, Operable Unit 2, Lockwood Solvent Groundwater Plume Site, Billings, Montana, July 25.

Tables

**TABLE 1
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	VC (µg/L)	TOC (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW006	4/30/2019	3.4	0.95	4.1	0.30 J	NS	Baseline
	6/25/2019	4.0	1.2	5.5	0.36	NS	Baseline
	10/28/2019	3.6	1.0	6.5	0.78	NS	
	4/8/2020	3.6	1.1	7.8	0.38 J	6.4	
MW007	4/29/2019	547	56	224	0.33 J	3.0	Baseline
	6/24/2019	476	49	202	0.23 J	NS	Baseline
	10/29/2019	755	63	126	0.21 J	NS	
	4/9/2020	0.55	3.5	842	0.81	39 D	Natural sample
	4/9/2020	< 5.0	3.8 J	872	< 5.0	40 D	Duplicate sample
MW009	4/30/2019	276	67	277	0.78	3.0	Baseline
	6/25/2019	237	61	291	0.81	NS	Baseline
	10/31/2019	314	55	251	0.41 J	NS	
	4/10/2020	267	59	273	0.63	8.2	
MW117	4/30/2019	95	10	51	1.1	NS	Baseline
	6/25/2019	51	8.2	42	1.3	NS	Baseline
	10/30/2019	80	12	40	0.83	NS	
MW117R	4/8/2020	255	31	89	0.42 J	7.3	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	VC (µg/L)	TOC (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW408-I	4/29/2019	254	25	124	< 0.50	NS	Baseline
	6/26/2019	191	25	160	< 0.50	NS	Baseline
	11/1/2019	254	25	124	<0.50	NS	
	4/8/2020	182	19	37	<0.50	6.7	
MW408-D	4/29/2019	603	81	356	2.4	2.9	Baseline
	6/26/2019	252	116	213	5.1	NS	Baseline
	11/1/2019	131	99	141	4.5	NS	
	4/8/2020	328	60	87	1.5	6.2	
MW409-I	4/29/2019	384	31	200	< 0.50	NS	Baseline
	6/26/2019	310	34	156	< 0.50	NS	Baseline
	11/1/2019	353	28	108	< 0.50	NS	
	4/8/2020	332	26	87	< 0.50	7.6	
MW409-D	4/29/2019	345	94	669	4.2	3.7	Baseline
	6/26/2019	388	135	675	3.7	NS	Baseline
	11/1/2019	574	120	346	2.2	NS	
	4/8/2020	445	115	232	1.4	6.6	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Total Organic Carbon (mg/L)	
		DEQ-7 Standards					
		5.0	5.0	70	0.20	NSE	
MW410-I	4/29/2019	196	16	68	< 0.50	NS	Baseline
	6/25/2019	96	13	51	0.23 J	NS	Baseline
	10/30/2019	35	7.2	26	< 0.50	NS	
MW410-D	4/29/2019	417	30	141	< 0.50	3.1	Baseline
	6/25/2019	446	37	142	< 0.50	NS	Baseline
	10/30/2019	305	15	40	0.47 J	NS	
MW412-I	4/30/2019	245	19	134	< 0.50	NS	Natural sample. Baseline
	4/30/2019	275	19	144	< 0.50	NS	Duplicate sample. Baseline
	6/25/2019	275	25	132	< 0.50	NS	Natural sample. Baseline
	6/25/2019	256	23	126	< 0.50	NS	Duplicate sample. Baseline
	10/30/2019	326	28	81	0.17 J	NS	
MW412-D	4/29/2019	577	37	181	0.40 J	NS	Baseline
	6/25/2019	564	40	181	0.43 J	NS	Baseline
	10/30/2019	671	45	106	0.50 J	NS	
MW413-I	4/30/2019	450	42	251	< 0.50	NS	Baseline
	6/24/2019	345	40	232	0.20 J	NS	Baseline
	10/29/2019	477	46	180	0.34 J	NS	
	4/15/2020	13	8.7	441	28	86 D	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	VC (µg/L)	TOC (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW413-D	4/30/2019	784	78	435	1.0	2.9	Baseline
	6/24/2019	622	83	388	0.71	NS	Baseline
	10/29/2019	815	73	298	0.92	NS	Natural sample
	10/29/2019	793	77	296	0.97	NS	Duplicate sample
	4/14/2020	403	88	220	0.53	3.3	
MW451-I	4/29/2019	73	6.7	40	< 0.50	NS	Baseline
	6/26/2019	60	8.1	31	< 0.50	NS	Baseline
	11/1/2019	98	10	148	4.2	NS	
	4/15/2020	38	7.4	90	1.3	2.8	
MW451-D	4/29/2019	195	13	94	< 0.50	2.6	Baseline
	6/26/2019	138	13	60	< 5.0 ^A	NS	Baseline
	11/1/2019	167	14	217	6.8	6.2	
	4/15/2020	68	10	102	1.3	2.8	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	VC (µg/L)	TOC (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW452-I	4/25/2019	17	3.0	5.8	< 0.50	NS	Baseline
	6/26/2019	12	3.7	3.3	< 0.50	NS	Baseline
	10/31/2019	11	4.2	21	0.99 J	NS	Natural sample
	10/31/2019	11	4.8	24	1.4 J	NS	Duplicate sample
	4/15/2020	5.8	3.3	14	0.25 J	2.5	
MW452-D	4/25/2019	25	3.8	6.0	< 0.50	NS	Natural sample. Baseline
	4/25/2019	23	4.0	6.4	< 0.50	NS	Duplicate sample. Baseline
	6/26/2019	17	3.9	3.6	< 0.50	NS	Baseline
	10/31/2019	16	4.8	30	1.9	NS	
	4/15/2020	7.3	3.5	16	0.48 J	2.5	
MW453-I	5/1/2019	376	35	325	< 5.0 ^A	NS	Baseline
	6/26/2019	387	46	280	< 5.0 ^A	NS	Baseline
	4/13/2020	143	49	719	0.71	9.3	
MW453-D	5/1/2019	386	37	365	< 5.0 ^A	NS	Baseline
	6/26/2019	401	48	308	< 5.0 ^A	NS	Baseline
	4/13/2020	50	30	734	0.84	10.2	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	VC (µg/L)	TOC (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW454-I	5/2/2019	380	19	144	< 0.50	NS	Baseline
	6/24/2019	333	19	117	< 0.50	NS	Baseline
	10/29/2019	374	25	130	1.0	NS	
	4/14/2020	361	25	97	< 0.50	3.1	
MW454-D	5/2/2019	365	22	156	0.26 J	3.2	Baseline
	6/24/2019	208	16	135	0.40 J	NS	Natural sample. Baseline
	6/24/2019	226	20	135	0.38 J	NS	Duplicate sample. Baseline
	10/29/2019	361	25	154	0.98	NS	
	4/14/2020	307	22	98	< 0.50	3.0	
MW455-I	5/2/2019	261	27	112	0.79	NS	Baseline
	6/24/2019	69	143	259	1.1	NS	Baseline
	10/29/2019	171	42	326	0.30 J	NS	
	4/10/2020	0.42 J	5.7	489	10	212 D	
MW455-D	5/2/2019	486	64	287	4.3	3.8	Baseline
	6/24/2019	109	195	263	3.4	NS	Baseline
	10/29/2019	124	185	315	0.66	NS	
	4/9/2020	219	78	131	< 0.50	7.6	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	VC (µg/L)	TOC (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW456-I	5/2/2019	327	48	114	1.5	NS	Baseline
	6/25/2019	163	225	114	1.6	NS	Baseline
	10/30/2019	201	108	105	0.27 J	NS	
	4/10/2020	12	60	337	0.9	30 D	
MW456-D	5/2/2019	370	96	174	3.1	3.3	Baseline
	6/25/2019	157	352	177	2.6	NS	Baseline
	10/30/2019	440	119	156	0.44 J	NS	
	4/9/2020	0.43 J	8.4	1030	1.1	41 D	
MW457-I	5/2/2019	59	10	62	1.5	NS	Natural sample. Baseline
	5/2/2019	72	11	74	1.6	NS	Duplicate sample. Baseline
	6/24/2019	19	5.3	36	1.7	NS	Baseline
	10/30/2019	16	4.5	17	0.29 J	NS	
	4/14/2020	10	5.0	19	0.42 J	3.2	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Total Organic Carbon (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
MW457-D	5/2/2019	31	22	27	0.26 J	1.8	Baseline
	6/24/2019	28	25	31	< 0.50	NS	Baseline
	10/30/2019	59	17	21	0.21 J	NS	
	4/14/2020	4.3	10	197	< 0.50	30 D	
MW458-I	5/2/2019	262	64	171	0.96	NS	Baseline
	6/24/2019	183	48	138	1.6	NS	Baseline
	10/29/2019	197	38	61	1.0	NS	Natural sample
	10/29/2019	198	39	61	1.1	NS	Duplicate sample
	4/14/2020	125	23	70	0.61	3.4	
MW458-D	5/2/2019	0.47 J	7.6	21	0.81	2.2	Baseline
	6/24/2019	< 0.50	1.6	23	0.62	NS	Baseline
	10/29/2019	0.57	1.4	8.3	< 0.50	NS	
	4/13/2020	0.43 J	0.6	6.6	< 0.50	9.2	
MW459-I	8/12/2019	96	11	48	< 1.0	NS	Baseline
	10/29/2019	128	14	87	0.74	NS	
	4/13/2020	34	18	155	1.9	14.8	
MW459-D	8/12/2019	98	80	145	1.8	NS	Natural sample. Baseline
	8/12/2019	110	80	142	1.8	NS	Duplicate sample. Baseline
	10/29/2019	137	79	168	1.7	NS	
	4/13/2020	61	90	187	1.3	6.9	

TABLE 1 (CONTINUED)
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	VOCs 8260B				Organics A5310C	Comments
		PCE (µg/L)	TCE (µg/L)	<i>cis</i> -1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	Total Organic Carbon (mg/L)	
		ROD Performance Standards					
		5.0	5.0	70	2.0	NSE	
PT-04	4/30/2019	0.31 J	0.42 J	8.4	0.75	< 40 D	Baseline
	6/25/2019	< 0.50	0.22 J	4.3	0.34 J	NS	Baseline
	10/30/2019	0.95	1.1	9.8	0.42 J	NS	
	4/10/2020	1.1	1.1	5.0	< 0.50	7.9	
EBI-9	8/12/2019	171	35	72	< 1.0	NS	Baseline

Notes:

^A - The reporting limit reflects a five times dilution. The sample was diluted due to sample matrix interference.

D - Reporting limit increased due to sample matrix.

J - Estimated value. Result outside QA/QC limits.

NS - Not Sampled.

NSE - No standard established.

ROD Performance Standards - Applicable cleanup levels for groundwater, as set forth in the August 2005 Record of Decision for the Lockwood Groundwater Solvent Plume Site.

TOC - Total organic carbon.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I/-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

Bold - Indicates that analyte concentration equals or exceeds the ROD Performance Standards.

**TABLE 2
EB GROUNDWATER ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**

Well	Date	Inorganics A2320 B	Inorganics E300.0	Inorganics E300.0	Metals SW6020	Metals SW6010B	Metals SW6010B	Metals SW6010B	Metals SW6010B	Organics SW8015M	Organics SW8015M	Organics SW8015M	Comments
		Alkalinity (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Arsenic (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	
		DEQ-7 Standards											
		NSE	NSE	NSE	0.01	NSE	NSE	NSE	NSE	NSE	NSE	NSE	
MW007	4/29/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	Baseline
	6/24/2019	397	62	750	0.002	168	110	5	164	<0.0010	<0.0010	<0.0010	Baseline
	4/9/2020	765	60 D	273 D	0.015	153	99	4	149	0.0044	<0.0010	<0.0010	Natural sample
	4/9/2020	766	60 D	273 D	0.016	156	101	4	151	0.0045	<0.0010	<0.0010	Duplicate sample
MW410-D	4/29/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	Baseline
	6/25/2019	412	63	718	0.003	165	110	5	165	<0.0010	<0.0010	<0.0010	Baseline
MW413-D	4/30/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	Baseline
	6/24/2019	406	56	764	0.003	178	113	5	160	< 0.0010	< 0.0010	< 0.0010	Baseline
	4/14/2020	383	56 D	718 D	0.008 D	171	108	5	160	< 0.0010	< 0.0010	< 0.0010	
MW454-D	5/2/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	Baseline
	6/24/2019	359	52	698	0.002	164	99	6	148	0.0041	0.0033	0.0024	Natural sample. Baseline
	6/24/2019	363	52	698	0.002	164	99	6	147	0.0045	0.0033	0.0027	Duplicate sample. Baseline
	4/14/2020	418	52 D	731 D	0.004 D	171	104	5	145	< 0.0010	< 0.0010	< 0.0010	
MW455-D	5/2/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	Baseline
	6/24/2019	365	63	777	0.005	156	107	7	155	0.13	0.064	0.033	Baseline
	4/9/2020	366	63 D	771 D	0.001	167	102	7	172	0.0020	0.0018	< 0.0010	

Notes:

D - Reporting Limit increased due to sample matrix.

NS - Not Sampled

NSE - No standard established.

DEQ-7 Standards - Applicable cleanup levels for groundwater, as set forth in the October 2012 Circular DEQ-7 Montana Numeric Water Quality Standards.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

Bold - Indicates that analyte concentration equals or exceeds the ROD Performance Standards.

TABLE 3
MISCELLANEOUS ANALYTE DETECTIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Analyte	Concentration (µg/L)	MCL (µg/L)
April 2020			
MW006	1,1-Dichloroethane	0.30 J	NSE
	<i>trans</i> -1,2-Dichloroethene	0.31 J	100
MW007	1,1-Dichloroethane	0.37 J	NSE
	1,1-Dichloroethene	0.52	7.0
	<i>trans</i> -1,2-Dichloroethene	10	100
MW009	1,1-Dichloroethane	0.46 J	NSE
	1,1-Dichloroethene	0.52	7.0
	<i>trans</i> -1,2-Dichloroethene	2.7	100
MW117R	1,1-Dichloroethane	0.47 J	NSE
	1,1-Dichloroethene	0.20 J	7.0
	<i>trans</i> -1,2-Dichloroethene	1.2	100
MW408-I	<i>trans</i> -1,2-Dichloroethene	0.35 J	100
MW408-D	1,1-Dichloroethane	0.41 J	NSE
	1,1-Dichloroethene	0.32 J	7.0
	<i>trans</i> -1,2-Dichloroethene	0.83	100
MW409-I	1,1-Dichloroethane	0.27 J	NSE
	<i>trans</i> -1,2-Dichloroethene	0.71	100
MW409-D	Benzene	0.28 J	5.0
	1,1-Dichloroethane	0.75	NSE
	1,1-Dichloroethene	0.65	7.0
	<i>trans</i> -1,2-Dichloroethene	1.9	100
MW413-I	<i>trans</i> -1,2-Dichloroethene	7.2	100
MW413-D	Benzene	0.23 J	5.0
	1,1-Dichloroethane	0.50 J	NSE
	1,1-Dichloroethene	0.56	7.0
	<i>trans</i> -1,2-Dichloroethene	3.0	100
MW451-I	1,1-Dichloroethane	0.28 J	NSE
	1,1-Dichloroethene	0.41 J	7.0
	<i>trans</i> -1,2-Dichloroethene	0.71	100
MW451-D	1,1-Dichloroethane	0.30 J	NSE
	1,1-Dichloroethene	0.44 J	7.0
	<i>trans</i> -1,2-Dichloroethene	0.80	100

TABLE 3 (CONTINUED)
MISCELLANEOUS ANALYTE DETECTIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Analyte	Concentration (µg/L)	MCL (µg/L)
April 2020 (Continued)			
MW453-I	1,1-Dichloroethane	0.29 J	NSE
	1,1-Dichloroethene	0.56	7.0
	<i>trans</i> -1,2-Dichloroethene	8.9	100
MW453-D	1,1-Dichloroethane	0.32 J	NSE
	1,1-Dichloroethene	0.61	7.0
	<i>trans</i> -1,2-Dichloroethene	10	100
MW454-I	1,1-Dichloroethane	0.29 J	NSE
	1,1-Dichloroethene	0.31 J	7.0
	<i>trans</i> -1,2-Dichloroethene	0.91	100
MW454-D	1,1-Dichloroethane	0.31 J	NSE
	1,1-Dichloroethene	0.27 J	7.0
	<i>trans</i> -1,2-Dichloroethene	0.91	100
MW455-I	Benzene	0.23 J	5.0
	1,1-Dichloroethane	0.31 J	NSE
	1,1-Dichloroethene	0.33 J	7.0
	<i>trans</i> -1,2-Dichloroethene	6.7	100
MW455-D	Benzene	0.30 J	5.0
	1,1-Dichloroethane	0.41 J	NSE
	<i>trans</i> -1,2-Dichloroethene	1.2	100
MW456-I	1,1-Dichloroethane	0.22 J	NSE
	1,1-Dichloroethene	0.25 J	7.0
	<i>trans</i> -1,2-Dichloroethene	4.8	100
MW456-D	Benzene	0.22 J	5.0
	1,1-Dichloroethane	0.44 J	NSE
	1,1-Dichloroethene	0.54	7.0
	<i>trans</i> -1,2-Dichloroethene	14	100
MW457-I	1,1-Dichloroethane	0.28 J	NSE
	<i>trans</i> -1,2-Dichloroethene	0.48 J	100
MW457-D	1,1-Dichloroethane	0.20 J	NSE
	1,1-Dichloroethene	0.31 J	7.0
	<i>trans</i> -1,2-Dichloroethene	1.3	100

TABLE 3 (CONTINUED)
MISCELLANEOUS ANALYTE DETECTIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Analyte	Concentration (µg/L)	MCL (µg/L)
April 2020 (Continued)			
MW458-I	1,1-Dichloroethane	0.44 J	NSE
	1,1-Dichloroethene	0.22 J	7.0
	<i>trans</i> -1,2-Dichloroethene	1.2	100
MW459-I	1,1-Dichloroethane	0.22 J	NSE
	1,1-Dichloroethene	0.33 J	7.0
	<i>trans</i> -1,2-Dichloroethene	2.6	100
MW459-D	1,1-Dichloroethane	0.67	NSE
	1,1-Dichloroethene	0.56	7.0
	<i>trans</i> -1,2-Dichloroethene	2.1	100

Notes:

J - Estimated value. The analyte was present but less than the reporting limit.

MCL - Maximum contaminant level as set forth in the 2005 LSGPS Record of Decision or DEQ-7 Montana Numeric Water Quality Standards.

NSE - No standard established.

TABLE 4
APRIL 2020 GROUNDWATER QUALITY CONTROL ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Analyte	Units	MCL	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
			4/8/2020	4/9/2020	4/10/2020	4/13/2020	4/14/2020	4/15/2020
Volatile Organic Compounds (Method 8260B)								
Tetrachloroethene	µg/L	5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene	µg/L	5.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
<i>cis</i> -1,2-Dichloroethene	µg/L	70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Vinyl chloride	µg/L	2.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Notes:

MCL - Maximum contaminant level as set forth in the 2005 LSGPS Record of Decision.

TABLE 5
DEHALOCOCCOIDES ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Census - Dechlorinating Bacteria
		Dehalococcoides (DHC) (cells/mL)
MW007	4/29/2019	0.40
	4/9/2020	7.2
MW410-D	4/29/2019	59.4
MW412-D	4/29/2019	13.8
MW430-I	4/29/2019	0.30 J
	4/9/2020	9.0
MW455-D	4/9/2020	8.1
MW456-D	4/9/2020	10.5

TABLE 6
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW006
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	cis-1,2-DCE	VC
6/2/2000		µg/L	0.20 U	0.10	0.60	0.20 U
11/14/2000	Duplicate	µg/L	1.10	0.5 U	0.59	0.5 U
7/24/2001		µg/L	0.21 J	0.5 U	0.83	0.5 U
10/22/2001		µg/L	0.23 J	0.22 J	1.1	0.5 U
2/5/2002		µg/L	0.5 U	2.90	1.30	0.5 U
4/30/2002		µg/L	0.22	0.5 U	1.5	0.5 U
7/24/2002		µg/L	0.2	0.5 U	1.5	0.33
10/31/2002		µg/L	0.41 J	0.33 J	3.2	0.3 J
4/24/2003		µg/L	0.68	0.33 J	3.4	0.2 J
10/24/2003		µg/L	0.3 J	0.3 J	4.5	0.25 J
10/24/2003		µg/L	0.31 J	0.28 J	4.6	0.25 J
4/21/2004		µg/L	0.31 J	0.5 U	4.6	0.5 U
10/13/2004		µg/L	0.26 J	0.5 U	5	0.5 U
4/28/2005		µg/L	0.29 J	0.29 J	4.4	0.5 U
10/27/2005		µg/L	0.38 J	0.3 J	3.7	0.5 U
4/4/2006		µg/L	0.42 J	0.41 J	4.2	0.5 U
10/25/2006		µg/L	0.5 U	0.5 U	2.9	0.5 U
4/3/2007		µg/L	0.39 J	0.35 J	4.7	0.93
10/3/2007		µg/L	0.4 J	0.5 U	11	2.8
4/15/2008		µg/L	0.42 J	0.61	18	5.1
4/15/2008	Duplicate	µg/L	0.42 J	0.57	19	5.2
10/15/2008		µg/L	1.4 J	1.1 J	23 J	2.3 J
4/14/2009		µg/L	0.68	1.3	17	0.87
10/6/2009		µg/L	2.2	1.3	15	1.1
4/13/2010		µg/L	3.1	1.4	11	0.23
10/12/2010		µg/L	4.6	1.5	9	0.5
4/12/2011		µg/L	4.1	1.3	7.9	0.2
8/26/2011		µg/L	5.2	1.3	8.60	0.81
10/12/2011		µg/L	5.80	1.4	7.8	0.73
4/18/2012		µg/L	7.2	1.4	8.3	0.85
10/31/2012		µg/L	6.0	1.5	9.9	0.76
4/24/2013		µg/L	5.6	1.2	8.0	0.31 J
10/8/2013		µg/L	5.6	1.2	8.4	0.57
4/16/2014		ug/L	6.8	1.2	7.0	0.42 J
10/24/2014		ug/L	5.4	1.1	7.7	0.80
10/24/2014	Duplicate	ug/L	5.2	1.3	7.6	0.79
4/15/2016		ug/L	4.4	1.1	6.6	0.50 U
10/10/2016		ug/L	4.8	1.3	7.0	0.28 J
4/24/2017		ug/L	4.7	1.1	5.6	0.50 U
10/3/2017		ug/L	4.5	1.2	6.1	0.50 U
10/3/2017	Duplicate	ug/L	4.8	1.2	6.3	0.50 U
4/10/2018		ug/L	4.1	1.1	4.7	0.50 U
10/15/2018		ug/L	3.7	1.0	4.8	0.50 U
4/30/2019		ug/L	3.4	0.95	4.1	0.30 J
6/25/2019		ug/L	4.0	1.20	5.5	1.40 J
10/28/2019		ug/L	3.6	0.98	6.5	0.78
4/8/2020		ug/L	3.6	1.10	7.8	0.38 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW007
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	cis-1,2-DCE	VC
6/2/2000		ug/L	2,500 D100x	80 D100x	410 D100x	77 D100x
11/14/2000		ug/L	2,310 D200x	39	188	34
10/24/2001		ug/L	2,370 D2	198 D1	431 D1	84 D1
2/5/2002		ug/L	1,580	128	520	76
4/29/2002		ug/L	1,780	131	508	124
7/24/2002		ug/L	1,960	139	424	34
7/24/2002	Duplicate	ug/L	1,980	83	424	16
10/30/2002		ug/L	2,420	134	400	46
4/24/2003		ug/L	1,850	109	370	17
10/21/2003		ug/L	2,890	123	402	35
4/21/2004		ug/L	1,790	80	426	15
10/13/2004		ug/L	2,640	101	333	17
4/28/2005		ug/L	2,040	121	356	9.3
4/28/2005	Duplicate	ug/L	1,340	82	260	14
10/26/2005		ug/L	3,590	100	184	14
4/4/2006		ug/L	904	39 J	76	50 U
10/25/2006		ug/L	1,220	56	162	32
4/3/2007		ug/L	1,400	111	664	51
10/3/2007		ug/L	1,480	144	664	76
4/15/2008		ug/L	416	84	136	31
10/15/2008		ug/L	2,200 J	127 J	428 J	46 J
4/14/2009		ug/L	2,180	123	186	11
10/7/2009		ug/L	2,810	88	644	75
4/13/2010		ug/L	2,100	99	290	16
10/12/2010		ug/L	1,500	92	95	3.9
4/12/2011		ug/L	1,340	109	362	53
4/12/2011	Duplicate	ug/L	1,320 N	117 N	284 N	51 N
8/26/2011		ug/L	2,230	97	551	44
10/12/2011		ug/L	2,100	94	448	40
4/18/2012		ug/L	2,000	151	277	16.8
8/13/2012	Hydrasleeve (21.2-23.7 ft.)	ug/L	1,800	104	248	16.5
8/13/2012	Hydrasleeve (25.7-28.2 ft.)	ug/L	1,910	82.3	254	14.1
8/13/2012	Hydrasleeve (25.7-28.2 ft. [Duplicate])	ug/L	1,930	82.7	259	16.5
10/31/2012		ug/L	1,580	90.7	232	13.3
4/24/2013		ug/L	1,040	78	174	10
4/24/2013	Duplicate	ug/L	920	78	174	10
10/8/2013		ug/L	1,380	83	243	14
4/16/2014		ug/L	2,000	98	235	9.0
10/24/2014		ug/L	2,160	81	444	25
5/7/2015	OS Baseline	ug/L	1,270	86	312	9.2
4/15/2016		ug/L	950	70	246	3.0
4/15/2016	Duplicate	ug/L	1,030	69	256	2.8
5/24/2016	OS Monitoring	ug/L	928	64	251	5.0 U
6/27/2016	OS Monitoring	ug/L	1,160	69	279	2.4 J
10/10/2016		ug/L	924	60	260	1.9
4/24/2017		ug/L	748	65	300	0.71
4/24/2017	Duplicate	ug/L	796	66	316	5.0 UJ
10/3/2017		ug/L	880	53	417	2.3

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW007
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	cis-1,2-DCE	VC
4/10/2018		ug/L	761	66	346	0.40 J
4/10/2018	Duplicate	ug/L	826	78	323	0.37 J
10/15/2018		ug/L	627	55	352	0.70
4/29/2019		ug/L	547	56	224	0.33 J
6/24/2019		ug/L	476	49	202	0.23 J
10/29/2019		ug/L	755	63	126	0.21 J
4/9/2020		ug/L	0.55	3.5	842	0.81
4/9/2020	Duplicate	ug/L	5.0 U	3.8 J	872	5.0 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

N - Analyte tentatively identified.

D - Sample reanalyzed at a dilution factor greater than 1.

OS - Ozone sparge

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW009
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	cis-1,2-DCE	VC
6/2/2000		µg/L	930 D100x	140 D100x	650 D100x	83 D100x
11/14/2000		µg/L	602 D	102 D	330 D	38 D
7/25/2001		µg/L	1120 D	192 D	662 D	146 D100x
10/23/2001		µg/L	517 D2	101 D2	328 D2	103 D1
2/6/2002		µg/L	940	187	620	77
5/1/2002		µg/L	608	157	500	9.6
7/24/2002		µg/L	976	198	676	98
10/30/2002		µg/L	928	218	605	65 J
4/24/2003		µg/L	960	196	596	61
10/24/2003		µg/L	720	218	520	72
4/21/2004		µg/L	564	170	400	21
10/13/2004		µg/L	440	146	354	7
4/26/2005		µg/L	700	182	356	18
4/26/2005	Duplicate	µg/L	780	187	428	19
10/27/2005		µg/L	840 J	175 J	367 J	22 J
4/5/2006		µg/L	329	133	174	15
10/25/2006		µg/L	276	153	196	11
4/3/2007		µg/L	306	152	185	17
10/4/2007		µg/L	392	109	204	14
4/17/2008		µg/L	96	59	136	0.5 U
10/15/2008		µg/L	366 J	110 J	432 J	33 J
4/14/2009		µg/L	392	126	326	32
10/6/2009		µg/L	816	92	476	38
4/14/2010		µg/L	704	155	762	38
4/14/2010	Duplicate	µg/L	580	162	670	39
10/13/2010		µg/L	590	112	560	15
4/12/2011		µg/L	562	154	486	17
10/13/2011		µg/L	572	86 U	377	14
4/19/2012		µg/L	632	131	549	11.5
4/19/2012		µg/L	542	132	470	11.4
10/31/2012		µg/L	453	110	423	5.8
4/24/2013		µg/L	440	110	360	4.8
10/9/2013		µg/L	452	96	288	2.8
4/14/2014		ug/L	496	83	226	2.4
10/27/2014		ug/L	492	94	408	4.0
4/14/2016		ug/L	352	102	384	3.0 J
4/14/2016	Duplicate	ug/L	349	109	464	4.2 J
10/10/2016		ug/L	270	79	342	1.4
4/24/2017		ug/L	338	70	234	1.3
10/3/2017		ug/L	328	63	277	0.92
4/10/2018		ug/L	345	80	302	1.4
10/17/2018		ug/L	332	59	262	0.63
4/30/2019		ug/L	276	67	277	0.78
6/25/2019		ug/L	237	61	291	0.81
10/31/2019		ug/L	314	55	251	0.41 J
4/10/2020		ug/L	267	59	273	0.63

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

D - Sample reanalyzed at a dilution factor greater than 1.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW117
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	cis-1,2-DCE	VC
6/25/2002		µg/L	0.74	0.2 U	0.2 U	0.2 U
8/16/2002		µg/L	13	5.2 J	41	13
10/30/2002		µg/L	85	15	63	11
4/24/2003		µg/L	96	13	55	12
10/21/2003		µg/L	99	17	40	5
4/21/2004		µg/L	124	16	104	8.8
10/14/2004		µg/L	111	17	54	1.8
4/28/2005		µg/L	40	5.2	22	1.1
10/27/2005		µg/L	66	10	26	0.95
4/4/2006		µg/L	51	5.3	24	1
10/25/2006		µg/L	116	14	34	5 U
4/3/2007		µg/L	186	22	118	20
10/2/2007		µg/L	332 J	37	210	22 J
4/15/2008		µg/L	300	62	169	38
10/14/2008		µg/L	512	61	159	13
4/13/2009		µg/L	420	38	75	4.6 J
10/6/2009		µg/L	416	33	62	2.9
4/14/2010		µg/L	255	21	41	5 U
10/12/2010		µg/L	310	29	46	5 U
4/12/2011		µg/L	820	25	50	2.6
8/26/2011		µg/L	214	19	55	6
8/26/2011	Duplicate	µg/L	212	20	58	6.2
10/12/2011		µg/L	330	28	67	4.1 J
4/18/2012		µg/L	312	33.6	98.8	9.9
11/1/2012		µg/L	449	49.5	106	3.6
4/24/2013		µg/L	302	22	78	3.7
10/8/2013		µg/L	361	34	86	3.8
4/16/2014		ug/L	299	23	66	3.6
10/24/2014		ug/L	304	34	98	3.2
4/15/2016		ug/L	232	19	55	1.3
10/10/2016		ug/L	330	29	79	0.92
4/24/2017		ug/L	126	11	33	0.57
10/3/2017		ug/L	154	15	37	0.36 J
4/10/2018		ug/L	87	9.5	73	0.37 J
10/15/2018		ug/L	121	15	29	0.29 J
4/30/2019		ug/L	95	10	51	1.1
6/25/2019		ug/L	51	8.2	42	1.3
10/30/2019		ug/L	80	12	40	0.83
MW117 replaced with monitoring well MW117R in March 2020 due to tree roots in well.						

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW117R
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
4/8/2020		µg/L	255	31	89	0.42 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

Monitoring well MW117 replaced monitoring well MW117.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW408-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
10/16/2014		ug/L	688	66	556	23
5/6/2015		ug/L	636	64	460	11
4/27/2016		ug/L	1,080	44	252	0.77
5/25/2016		ug/L	1,100	39	219	5.0 U
6/29/2016		ug/L	840	30	156	5.0 U
10/11/2016		ug/L	852	39	353	5.0 U
4/25/2017		ug/L	1,050	35	319	5.0 U
10/4/2017		ug/L	1,060	51	755	5.0 U
4/9/2018		ug/L	355	30	342	0.24 J
8/7/2018		ug/L	327	34	250	0.50 U
10/16/2018		ug/L	447	42	547	1.8
4/29/2019		ug/L	254	25	124	0.50 U
6/26/2019		ug/L	191	25	160	0.50 U
11/1/2019		ug/L	353	34	82	0.50 U
4/8/2020		ug/L	182	19	37	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW408-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
10/16/2014		ug/L	80	105	185	18
5/6/2015		ug/L	730	313	920	60
4/27/2016		ug/L	872	160	634	30
5/25/2016		ug/L	992	176	660	17
6/29/2016		ug/L	536	142	392	13
10/11/2016		ug/L	984	134	600	4.2 J
4/25/2017		ug/L	904	113	656	4.9 J
10/4/2017		ug/L	498	133	637	11
4/9/2018		ug/L	457	54	440	1.7
8/7/2018		ug/L	506	118	408	4.9
10/16/2018		ug/L	603	99	687	4.5
4/29/2019		ug/L	603	81	356	2.4
6/26/2019		ug/L	252	116	213	5.1
6/26/2019		ug/L	252	116	213	5.1
11/1/2019		ug/L	131	99	141	4.5
4/8/2020		ug/L	328	60	87	1.5

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW409-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
10/16/2014		ug/L	730	110	1310	76
5/6/2015		ug/L	759	95	1020	19
4/27/2016		ug/L	524	64	584	1.6
5/25/2016		ug/L	584	67	456	5.0 U
6/29/2016		ug/L	484	49	305	5.0 U
10/11/2016		ug/L	616	74	480	5.0 U
4/26/2017		ug/L	804	63	516	5.0 U
10/4/2017		ug/L	1,010	60	803	3.8
10/4/2017	Duplicate	ug/L	1,120	65	826	4.0
4/9/2018		ug/L	461	52	321	0.18 J
8/7/2018		ug/L	409	37	222	0.50 U
10/16/2018		ug/L	301	36	247	2.0
4/29/2019		ug/L	384	31	200	0.50 U
6/26/2019		ug/L	310	34	156	0.50 U
6/26/2019		ug/L	310	34	156	0.50 U
11/1/2019		ug/L	353	28	108	0.50 U
4/8/2020		ug/L	332	26	87	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW409-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
10/16/2014		ug/L	598	372	1,420	74
10/16/2014	Duplicate	ug/L	668	368	1,480	73
5/6/2015		ug/L	944	169	1,090	43
4/27/2016		ug/L	752	111	720	7
5/25/2016		ug/L	756	116	684	6.5
6/29/2016		ug/L	684	107	548	5.7
10/11/2016		ug/L	732	80	664	1.6 J
4/26/2017		ug/L	432	126	676	6.5
10/4/2017		ug/L	477	111	888	5.6
4/9/2018		ug/L	317	43	545	2.6
4/9/2018	Duplicate	ug/L	335	45	490	2.5
8/7/2018		ug/L	269	51	414	2.5
10/16/2018		ug/L	358	129	777	3.5
4/29/2019		ug/L	345	94	669	4.2
6/26/2019		ug/L	388	135	675	3.7
11/1/2019		ug/L	574	120	346	2.2
4/8/2020		ug/L	445	115	232	1.4

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW410-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/6/2013		ug/L	623	24	92	20
10/20/2014		ug/L	532	18	119	8.9
5/7/2015		ug/L	1,160	38	169	11
4/28/2016		ug/L	290	19	109	0.28 J
5/24/2016		ug/L	564	29	135	5.0 U
6/27/2016		ug/L	584	33	124	5.0 U
10/10/2016		ug/L	452	21	112	5.0 U
4/24/2017		ug/L	189	16	117	5.0 U
10/3/2017		ug/L	121	11	65	0.5 U
4/11/2018		ug/L	391	22	166	0.25 J
8/6/2018		ug/L	135	11	80	0.5 U
10/15/2018		ug/L	322	21	138	4.9
4/29/2019		ug/L	196	16	68	0.50 U
6/25/2019		ug/L	96	13	51	0.23 J
10/30/2019		ug/L	35	7.2	26	0.50 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I/-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW410-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/6/2013		ug/L	1,360	49	150	20
10/20/2014		ug/L	1,450	30	186	15
5/7/2015		ug/L	1,210	37	185	11
4/28/2016		ug/L	588	31	176	0.72
5/24/2016		ug/L	616	35	194	5.0 U
6/27/2016		ug/L	588	43	192	5.0 U
10/10/2016		ug/L	600	38	222	5.0 U
4/24/2017		ug/L	568	30	254	5.0 U
10/3/2017		ug/L	409	19	146	0.21 J
4/11/2018		ug/L	511	33	362	0.41 J
8/6/2018		ug/L	624	41	239	0.24 J
10/15/2018		ug/L	586	38	314	2.0
4/29/2019		ug/L	417	30	141	0.50 U
6/25/2019		ug/L	446	37	142	0.50 U
10/30/2019		ug/L	305	15	40	0.47 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I/-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW412-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/6/2013		ug/L	510	49	194	11
8/6/2013	Duplicate	ug/L	538	50	196	10
10/17/2014		ug/L	1,150	55	464	21
5/7/2015		ug/L	864	48	288	9.1
4/28/2016		ug/L	892	43	282	3.1
5/24/2016		ug/L	956	41	249	2.4 J
6/28/2016		ug/L	1,070	40	200	1.7 J
10/10/2016		ug/L	792	38	234	5.0 U
4/24/2017		ug/L	656	37	278	5.0 U
10/3/2017		ug/L	790	4	314	3.1
4/11/2018		ug/L	432	26	241	0.5 U
8/6/2018		ug/L	402	30	190	0.5 U
10/15/2018		ug/L	318	26	247	2.5
4/30/2019		ug/L	245	19	134	0.5 U
4/30/2019	Duplicate	ug/L	275	19	144	0.5 U
6/25/2019		ug/L	275	25	132	0.5 U
6/25/2019	Duplicate	ug/L	256	23	126	0.5 U
10/30/2019		ug/L	326	28	81	0.17 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I/-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW412-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/6/2013		ug/L	928	39	173	12
10/17/2014		ug/L	2,100	53	353	23
5/7/2015		ug/L	1,450	42	250	11
4/28/2016		ug/L	976	37	262	2.9
5/24/2016		ug/L	1,070	43	247	1.6 J
6/27/2016		ug/L	1,030	43	199	1.3 J
10/10/2016		ug/L	896	37	269	1.6 J
4/24/2017		ug/L	704	42	292	5.0 U
10/3/2017		ug/L	747	3.4	329	4.1
4/11/2018		ug/L	701	36	320	0.7
8/6/2018		ug/L	584	35	300	0.53
10/15/2018		ug/L	510	36	394	1.9
4/29/2019		ug/L	577	37	181	0.40 J
6/25/2019		ug/L	564	40	181	0.43 J
10/30/2019		ug/L	671	45	106	0.50 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I/-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW413-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/6/2013		ug/L	525	78	404	6.6
10/24/2014		ug/L	684	103	1,290	12
5/7/2015		ug/L	775	104	1,040	1.4
4/28/2016		ug/L	560	66	592	3.5
5/24/2016		ug/L	680	65	600	3.9 J
6/27/2016		ug/L	660	69	432	1.0 J
10/10/2016		ug/L	536	59	379	5.0 U
4/24/2017		ug/L	436	46	356	5.0 U
10/3/2017		ug/L	614	5.5	514	5.0
4/11/2018		ug/L	474	43	413	0.46 J
10/15/2018		ug/L	493	51	493	0.77
10/15/2018	Duplicate	ug/L	481	51	473	0.90
4/30/2019		ug/L	450	42	251	0.50 U
6/24/2019		ug/L	345	40	232	0.20 J
10/29/2019		ug/L	477	46	180	0.34 J
4/15/2020		ug/L	13	8.7	441	28

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW413-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/6/2013		ug/L	423	89	337	2.3
10/24/2014		ug/L	544	119	1,220	20
5/7/2015		ug/L	674	144	1,160	3.7
4/28/2016		ug/L	548	104	788	4.0
5/24/2016		ug/L	628	106	672	2.3 J
6/27/2016		ug/L	716	109	640	1.7 J
10/10/2016		ug/L	516	91	460	1.8 J
4/24/2017		ug/L	512	86	552	5.0 U
10/3/2017		ug/L	746	8.3	667	6.1
4/11/2018		ug/L	803	91	671	1.3
10/15/2018		ug/L	563	81	523	1.1
4/30/2019		ug/L	784	78	435	1.0
6/24/2019		ug/L	622	83	388	0.7
10/29/2019		ug/L	815	73	298	0.92
10/29/2019		ug/L	815	73	298	0.92
4/14/2020		ug/L	403	88	220	0.53

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW451-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
12/15/2016		ug/L	58	8.6	49	0.20 J
4/26/2017		ug/L	57	7.6	43	0.18 J
10/4/2017		ug/L	8.6	17	9.4	0.57
4/9/2018		ug/L	62	10	76	0.50 U
8/7/2018		ug/L	58	8	49	0.50 U
10/17/2018	Post-EA2 Dewatering	ug/L	801	21	326	1.5
12/20/2018		ug/L	109	8.0	147	0.50 U
2/13/2019		ug/L	64	7.3	71	0.50 U
4/29/2019		ug/L	73	6.7	40	0.50 U
6/26/2019		ug/L	60	8.1	31	0.50 U
11/1/2019		ug/L	98	10	148	4.2
4/15/2020		ug/L	38	7.4	90	1.3

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW451-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
12/15/2016		ug/L	175	13	106	0.19 J
4/26/2017		ug/L	290	14	79	0.50 U
10/4/2017		ug/L	339	18	396	0.50
4/9/2018		ug/L	150	15	150	0.50 U
8/7/2018		ug/L	127	12	96	0.21 J
10/17/2018	Post-EA2 Dewatering	ug/L	1,230	31	508	5.0 U
12/20/2018		ug/L	390	20	480	5.0 U
2/13/2019		ug/L	225	16	179	5.0 U
4/29/2019		ug/L	195	13	94	0.50 U
6/26/2019		ug/L	138	13	60	5.0 U
11/1/2019		ug/L	167	14	217	6.8
4/15/2020		ug/L	68	9.7	102	1.3

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW452-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
12/15/2016		ug/L	8.2	1.3	3.0	0.50 U
4/25/2017		ug/L	3.8	2.7	2.6	0.50 U
10/4/2017		ug/L	5.3	4.8	21	0.50 U
4/10/2018		ug/L	4.9	3.8	9.4	0.50 U
8/6/2018		ug/L	3.6	3.5	4.3	0.50 U
10/16/2018	Post-EA2 Dewatering	ug/L	146	12	117	1.2
12/20/2018		ug/L	46	4.3	20	0.50 U
2/13/2019		ug/L	27	3.8	11	0.50 U
4/25/2019		ug/L	17	3.0	5.8	0.50 U
6/26/2019		ug/L	12	3.7	3.3	0.50 U
10/31/2019		ug/L	11	4.2	21	0.99 J
10/31/2019	Duplicate	ug/L	11	4.8	24	1.4 J
4/15/2020		ug/L	5.8	3.3	14	0.25 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW452-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
12/15/2016		ug/L	5.2	4.4	5.3	0.50 U
4/25/2017		ug/L	4.0	4.0	3.1	0.50 U
10/4/2017		ug/L	5.4	6.4	32	0.38 J
4/10/2018		ug/L	6.0	4.4	9.1	0.50 U
8/6/2018		ug/L	5.0	4.2	5.0	0.50 U
10/16/2018	Post-EA2 Dewatering	ug/L	40	18	202	2.7
12/20/2018		ug/L	82	5.5	27	0.50 U
2/13/2019		ug/L	40	4.9	14	0.50 U
4/25/2019		ug/L	25	3.8	6.0	0.50 U
4/25/2019	Duplicate	ug/L	23	4.0	6.4	0.50 U
6/26/2019		ug/L	17	3.9	3.6	0.50 U
10/31/2019		ug/L	16	4.8	30	1.9
4/15/2020		ug/L	7.3	3.5	16	0.5 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW453-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/1/2019		ug/L	376	35	325	5.0 U
6/26/2019		ug/L	387	46	280	5.0 U
4/13/2020		ug/L	143	49	719	0.71

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW453-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/1/2019		ug/L	386	37	365	5.0 U
6/26/2019		ug/L	401	48	308	5.0 U
4/13/2020		ug/L	50	30	734	0.84

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW454-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	380	19	144	0.50 U
6/24/2019		ug/L	333	19	117	0.50 U
10/29/2019		ug/L	374	25	130	1.0
4/14/2020		ug/L	361	25	97	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW454-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	365	22	156	0.26 J
6/24/2019		ug/L	208	16	135	0.40 J
6/24/2019	Duplicate	ug/L	226	20	135	0.38 J
10/29/2019		ug/L	361	25	154	0.98
4/14/2020		ug/L	307	22	98	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW455-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	261	27	112	0.79
6/24/2019		ug/L	69	143	259	1.1
10/29/2019		ug/L	171	42	326	0.30 J
4/10/2020		ug/L	0.42 J	5.7	489	10

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW455-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	486	64	287	4.3
6/24/2019		ug/L	109	195	263	3.4
10/29/2019		ug/L	124	185	315	0.66
4/9/2020		ug/L	219	78	131	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW456-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	327	48	114	1.5
6/25/2019		ug/L	163	225	114	1.6
10/30/2019		ug/L	201	108	105	0.27 J
4/10/2020		ug/L	12	60	337	0.86

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW456-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	370	96	174	3.1
6/25/2019		ug/L	157	352	177	2.6
10/30/2019		ug/L	440	119	156	0.44 J
4/9/2020		ug/L	0.43 J	8.4	1030	0.44 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW457-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	59	10	62	1.5
5/2/2019	Duplicate	ug/L	72	11	74	1.6
6/24/2019		ug/L	19	5.3	36	1.7
10/30/2019		ug/L	16	4.5	17	0.29 J
4/14/2020		ug/L	10	5.0	19	0.42 J

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW457-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	31	22	27	0.26 J
6/24/2019		ug/L	28	25	31	0.50 U
10/30/2019		ug/L	59	17	21	0.21 J
4/14/2020		ug/L	4.3	10	197	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW458-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	262	64	171	0.96
6/24/2019		ug/L	183	48	138	1.6
10/29/2019		ug/L	197	38	61	1.0
10/29/2019	Duplicate	ug/L	198	39	61	1.1
4/14/2020		ug/L	125	23	70	0.61

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW458-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
5/2/2019		ug/L	0.47 J	7.6	21	0.81
6/24/2019		ug/L	0.50 U	1.6	23	0.62
10/29/2019		ug/L	0.57	1.4	8.3	0.50 U
4/13/2020		ug/L	0.43 J	0.64	6.6	0.50 U

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW459-I
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/12/2019		ug/L	96	11	48	1.0 U
10/29/2019		ug/L	128	14	87	0.74
4/13/2020		ug/L	34	18	155	1.9

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
MW459-D
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	<i>cis</i> -1,2-DCE	VC
8/12/2019		ug/L	98	80	145	1.8
8/12/2019	Duplicate	ug/L	110	80	142	1.8
10/29/2019		ug/L	137	79	168	1.7
4/13/2020		ug/L	61	90	187	1.3

Notes:

Data collected prior to April 2012 were not collected by Cardno ATC/Tasman. These data were acquired from the LSGPS regulatory database.

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

LWSD Dewatering - Groundwater monitoring as part of the Lockwood Water and Sewer District dewatering in anticipation of sewer installation.

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 6 (CONTINUED)
HISTORIC GROUNDWATER ANALYTICAL RESULTS
PT-04
ANNUAL GROUNDWATER MONITORING REPORT
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Sample Date	Notes (Duplicate, depth, etc.)	Units	Analyte			
			PCE	TCE	cis-1,2-DCE	VC
1/16/2002		µg/L	18	1.6	24	3
2/26/2004		µg/L	1.9	1.6	16	1.4
5/26/2004		µg/L	1.5	1.8	15	2.0
4/19/2012		µg/L	2.4	1.5	8.0	0.68
10/31/2012		µg/L	1.2	0.67	3.7	0.40 U
4/25/2013		µg/L	2.8	1.3	6.9	0.53
10/9/2013		µg/L	0.49 J	0.43 J	2.0	0.25 J
4/15/2014		ug/L	0.93	0.74	4.4	0.39 J
10/30/2014		ug/L	0.75	0.60	3.5	0.46 J
5/7/2015	OS Baseline	ug/L	1.3	0.75	5.3	0.47 J
4/15/2016		ug/L	0.45 J	0.51	5.0	0.39 J
5/23/2016	OS Monitoring	ug/L	0.17 J	0.50 U	1.0	0.50 U
6/27/2016	OS Monitoring	ug/L	0.21 J	0.16 J	1.2	0.50 U
10/11/2016		ug/L	0.27 J	0.26 J	1.9	0.50 U
4/25/2017		ug/L	0.54	0.46 J	3.1	0.36 J
10/3/2017		ug/L	0.50 U	0.50 U	1.1	0.50 U
4/10/2018		ug/L	0.30 J	0.43 J	4.0	0.50 U
10/17/2018		ug/L	0.19 J	0.37 J	4.6	0.52
4/30/2019		ug/L	0.31 J	0.42 J	8.4	0.75
6/25/2019		ug/L	0.50 U	0.22 J	4.3	0.34 J
10/30/2019		ug/L	0.95	1.1	9.8	0.42 J
4/10/2020		ug/L	1.1	1.1	5.0	0.50 U

Notes:

J - Analyte detected at a concentration below the reporting limit.

U - Analyte not detected above the method detection limit.

OS - Ozone sparge

The EB pilot test EVO injections were conducted November 2019 through March 2020.

TABLE 7
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments
MW006	4/30/2019	8.8	7.30	2214	-43.7	0.65	Semi-Annual, flow-through cell
	6/25/2019	11.2	7.36	2142	-88.7	0.21	Baseline, flow-through cell
	7/10/2019	10.6	6.43	2055	129.9	0.26	
	7/24/2019	10.8	7.32	2108	-59.6	0.12	
	10/16/2019	12.1	7.12	2075	88.2	0.17	
	10/28/2019	11.7	7.19	2025	53.9	0.18	Semi-Annual, flow-through cell
	1/22/2020	11.1	7.31	1960	-227.0	1.00	
	2/27/2020	10.5	7.24	1951	96.3	1.27	
	3/26/2020	10.1	7.30	1961	-22.9	0.49	
	4/8/2020	9.7	7.08	1986	120.4	0.42	Semi-Annual, flow-through cell
	5/27/2020	10.1	7.33	1991	-51.3	0.28	
6/30/2020	10.3	7.27	2025	42.2	0.47		
MW007	4/29/2019	8.8	7.41	2140	-10.6	0.22	Semi-Annual, flow-through cell
	6/24/2019	10.6	7.47	2051	-65.2	0.23	Baseline, flow-through cell
	7/10/2019	10.0	6.57	1988	139.0	0.00	
	7/24/2019	10.2	7.45	2054	-66.1	0.19	
	10/15/2019	11.7	7.36	1983	-95.3	0.15	
	10/29/2019	11.9	7.28	1959	-114.3	0.19	Semi-Annual, flow-through cell
	1/22/2020	11.2	7.33	1951	-86.4	0.16	
	2/27/2020	10.4	7.05	2043	-297.8	0.31	
	3/26/2020	10.1	7.05	1992	-305.2	0.24	
	4/9/2020	9.2	6.79	1894	-152.6	0.59	Semi-Annual, flow-through cell
	5/26/2020	10.0	7.29	1825	-309.2	0.21	
6/30/2020	10.1	7.31	1874	-342.3	0.29		
MW009	4/30/2019	7.1	7.33	2289	-28.9	0.32	Semi-Annual, flow-through cell
	6/25/2019	9.3	7.48	2204	-63.8	0.20	Baseline, flow-through cell
	7/10/2019	10.4	7.11	1853	176.4	4.24	
	7/24/2019	10.3	8.09	1915	-65.4	2.97	
	10/15/2019	14.5	8.02	1918	-50.9	2.94	
	10/31/2019	12.5	7.00	2112	161.9	0.39	Semi-Annual, flow-through cell
	1/22/2020	9.5	8.08	1898	-131.1	6.03	
	2/27/2020	7.6	7.93	1928	-200.4	4.51	
	3/30/2020	7.3	7.88	1953	63.9	5.00	
	4/10/2020	8.6	7.23	2130	39.0	0.59	Semi-Annual, flow-through cell
	5/27/2020	7.3	7.91	1985	-33.2	3.52	
6/30/2020	8.6	7.95	2006	-147.7	2.25		
MW117	4/30/2019	8.9	7.32	2545	-51.5	0.16	Semi-Annual, flow-through cell
	6/25/2019	10.2	7.46	2301	-53.1	0.20	Baseline, flow-through cell
	7/10/2019	10.1	6.46	2219	-201.3	0.00	
	7/24/2019	11.4	7.34	2252	-223.9	0.24	
	10/15/2019	13.2	7.11	2102	-101.9	0.77	
	10/30/2019	11.9	7.17	2119	-6.7	0.18	Semi-Annual, flow-through cell
	1/22/2020	--	--	--	--	--	Not measured, tree roots in casing
	2/27/2020	--	--	--	--	--	Not measured, tree roots in casing
MW117R	3/26/2020	9.5	7.30	2105	-60.9	0.43	Replacement well for MW117
	4/8/2020	9.2	6.96	2128	120.4	0.47	Semi-Annual, flow-through cell
	5/27/2020	9.4	7.38	2139	-56.1	0.38	
	6/30/2020	9.5	7.07	2169	-6.7	0.89	

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW408	MW408-I	4/29/2019	9.3	7.63	2863	-16.8	8.53	Semi-Annual, flow-through cell
		6/26/2019	11.2	7.85	2742	-20.1	9.12	Baseline, flow-through cell
		7/10/2019	11.9	6.92	2443	179.9	10.49	Flow-through cell
		7/23/2019	12.5	7.73	2493	11.1	9.24	Flow-through cell
		10/16/2019	15.5	7.50	2554	-40.3	1.79	Flow-through cell
		11/1/2019	13.9	7.56	2542	165.0	6.55	Semi-Annual, flow-through cell
		1/22/2020	10.4	7.81	2452	-6.3	9.57	Flow-through cell
		2/27/2020	9.9	7.89	2619	-62.7	11.65	Flow-through cell
		3/30/2020	9.6	7.78	2718	-54.4	14.21	Flow-through cell
		4/8/2020	9.7	7.61	2509	72.9	10.79	Semi-Annual, flow-through cell
		5/27/2020	11.1	7.67	2564	-12.9	7.01	Flow-through cell
	6/30/2020	--	--	--	--	--	No parameters, submerged in water	
	MW408-D	4/29/2019	10.5	7.38	2174	-28.2	0.41	Semi-Annual, flow-through cell
		6/26/2019	12.0	7.58	2703	-44.1	0.17	Baseline, flow-through cell
		7/10/2019	12.2	6.67	2791	123.9	0.18	Flow-through cell
		7/23/2019	12.6	7.48	2931	12.1	0.07	Flow-through cell
		10/16/2019	13.7	7.49	3162	-80.3	0.12	Flow-through cell
		11/1/2019	12.4	7.54	3189	175.3	0.29	Semi-Annual, flow-through cell
		1/22/2020	10.8	7.48	2528	-31.5	0.38	Flow-through cell
		2/27/2020	11.0	7.75	2559	-88.8	4.01	Flow-through cell
		3/30/2020	11.0	7.79	2408	-61.7	4.01	Flow-through cell
		4/8/2020	10.8	7.51	2320	68.7	0.77	Semi-Annual, flow-through cell
5/27/2020		11.7	7.56	2218	-34.1	0.56	Flow-through cell	
6/30/2020	--	--	--	--	--	No parameters, submerged in water		
MW409	MW409-I	4/29/2019	8.1	7.52	1972	49.6	9.46	Semi-Annual, flow-through cell
		6/26/2019	11.6	7.60	1792	-64.1	9.75	Baseline, flow-through cell
		7/10/2019	12.4	6.69	1764	156.9	10.31	Flow-through cell
		7/23/2019	13.6	7.61	1657	-40.8	9.58	Flow-through cell
		10/16/2019	17.0	7.31	2063	-16.4	1.75	Flow-through cell
		11/1/2019	15.0	7.30	1915	167.2	6.45	Semi-Annual, flow-through cell
		1/22/2020	10.1	7.54	1972	-20.7	9.71	Flow-through cell
		2/27/2020	9.2	7.59	2287	-78.1	11.34	Flow-through cell
		3/30/2020	9.2	7.61	2563	-64.5	13.47	Flow-through cell
		4/8/2020	8.8	7.38	2513	58.5	9.60	Semi-Annual, flow-through cell
		5/27/2020	10.6	7.55	2291	-18.4	7.92	Flow-through cell
	6/30/2020	--	--	--	--	--	No parameters, submerged in water	
	MW409-D	4/29/2019	10.0	7.30	2175	-75.1	0.40	Semi-Annual, flow-through cell
		6/26/2019	12.2	7.44	2074	-128.5	0.48	Baseline, flow-through cell
		7/10/2019	12.2	6.50	1888	-57.2	1.49	Flow-through cell
		7/23/2019	13.1	7.39	2063	-165.0	0.49	Flow-through cell
		10/16/2019	14.5	7.35	1933	-123.9	0.17	Flow-through cell
		11/1/2019	12.9	7.31	1987	-39.4	1.44	Semi-Annual, flow-through cell
		1/22/2020	11.0	7.32	1951	-86.2	0.84	Flow-through cell
		2/27/2020	10.6	7.38	2010	-152.3	1.64	Flow-through cell
		3/30/2020	11.1	7.36	1964	-81.2	2.92	Flow-through cell
		4/8/2020	10.2	7.21	2033	34.8	1.73	Semi-Annual, flow-through cell
5/27/2020		11.5	7.41	2072	-67.6	1.33	Flow-through cell	
6/30/2020	--	--	--	--	--	No parameters, submerged in water		

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW410	MW410-I	4/29/2019	8.2	7.39	2122	-26.8	1.48	Semi-Annual, flow-through cell
		6/25/2019	10.0	7.32	2009	86.9	0.82	Baseline, flow-through cell
		7/11/2019	11.3	7.34	1964	-64.2	0.28	Flow-through cell
		7/23/2019	11.5	7.37	1927	-42.2	0.70	Flow-through cell
		10/16/2019	11.9	7.26	1956	-130.1	0.14	Flow-through cell
		10/30/2019	10.8	7.18	1980	174.8	0.19	Semi-Annual, flow-through cell
		1/22/2020	--	--	--	--	--	Not measured. MW410-D served as injection well for EBI-17. EVO present in well.
	MW410-D	4/29/2019	9.4	7.40	2136	-36.3	3.20	Semi-Annual, flow-through cell
		6/25/2019	10.5	7.39	2062	45.6	1.26	Baseline, flow-through cell
		7/11/2019	11.7	7.37	2018	-70.1	0.82	Flow-through cell
		7/23/2019	11.7	7.42	1982	-55.1	0.61	Flow-through cell
		10/16/2019	11.4	7.30	1969	-148.0	0.11	Flow-through cell
		10/30/2019	10.3	7.22	1985	168.9	0.16	Semi-Annual, flow-through cell
		1/22/2020	--	--	--	--	--	Not measured. Served as injection well for EBI-17. EVO present in well.
MW412	MW412-I	4/30/2019	7.4	7.32	1998	62.1	5.18	Semi-Annual, flow-through cell
		6/25/2019	9.6	7.53	1921	-139.8	4.41	Baseline, flow-through cell
		7/11/2019	11.2	7.42	1960	-11.9	4.31	Flow-through cell
		7/23/2019	11.5	7.45	1967	-14.1	3.78	Flow-through cell
		10/16/2019	13.4	7.38	1938	-119.2	0.73	Flow-through cell
		10/30/2019	11.9	7.35	1937	172.7	1.77	Semi-Annual, flow-through cell
		1/22/2020	9.9	7.37	2052	-8.7	2.30	Flow-through cell
		2/27/2020	--	--	--	--	--	Not measured. Served as injection well for EBI-14. EVO present in well.
	MW412-D	4/29/2019	9.5	7.36	2104	-17.8	0.14	Semi-Annual, flow-through cell
		6/25/2019	10.5	7.47	2077	-123.7	0.14	Baseline, flow-through cell
		7/11/2019	11.9	7.37	2043	-143.7	0.04	Flow-through cell
		7/23/2019	11.6	7.41	2016	-20.7	0.03	Flow-through cell
		10/16/2019	12.2	7.34	1958	-144.3	0.07	Flow-through cell
		10/30/2019	10.8	7.39	1971	174.1	0.17	Semi-Annual, flow-through cell
1/22/2020		10.9	7.29	1938	-32.1	0.27	Flow-through cell	
2/27/2020	--	--	--	--	--	Not measured. Served as injection well for EBI-14. EVO present in well.		

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW413	MW413-I	4/30/2019	8.7	7.29	1995	35.5	0.22	Semi-Annual, flow-through cell
		6/24/2019	11.5	7.43	1947	-25.9	0.24	Baseline, flow-through cell
		7/11/2019	12.4	7.28	1963	7.9	0.03	Flow-through cell
		7/23/2019	13.2	7.33	1940	2.2	0.03	Flow-through cell
		10/16/2019	13.3	7.24	1902	-136.4	0.11	Flow-through cell
		10/29/2019	11.9	7.20	1884	-86.2	0.20	Semi-Annual, flow-through cell
		1/22/2020	10.2	6.97	1972	-210.3	0.31	Flow-through cell
		2/27/2020	10.1	6.68	2008	-303.0	0.39	Flow-through cell
		3/30/2020	9.7	6.79	1741	-191.9	0.60	Flow-through cell
		4/15/2020	9.1	6.55	1690	-130.3	0.53	Semi-Annual, flow-through cell
		5/27/2020	10.3	7.02	1748	-244.6	0.38	Flow-through cell
	6/30/2020	11.5	7.11	1827	-313.4	0.35	Flow-through cell	
	MW413-D	4/30/2019	10.0	7.32	2105	42.5	0.17	Semi-Annual, flow-through cell
		6/24/2019	12.0	7.46	2049	-34.1	0.33	Baseline, flow-through cell
		7/11/2019	12.4	7.34	2033	7.2	0.07	Flow-through cell
		7/23/2019	12.6	7.39	2027	13.1	0.09	Flow-through cell
		10/16/2019	12.3	7.33	2000	-144.1	0.14	Flow-through cell
		10/29/2019	11.2	7.26	1989	-76.5	0.22	Semi-Annual, flow-through cell
		1/22/2020	10.9	7.31	1971	-3.8	0.23	Flow-through cell
		2/27/2020	11.0	7.13	1964	-245.6	0.59	Flow-through cell
		3/30/2020	11.0	7.27	1963	-104.3	0.69	Flow-through cell
		4/14/2020	10.6	7.22	2020	20.1	0.28	Semi-Annual, flow-through cell
5/27/2020		11.1	7.39	2018	-52.7	0.37	Flow-through cell	
6/30/2020	11.8	7.40	2045	-85.4	0.41	Flow-through cell		
MW451	MW451-I	4/29/2019	9.0	7.26	2154	43.4	2.70	Semi-Annual, flow-through cell
		6/26/2019	11.6	7.38	2053	42.3	3.26	Baseline, flow-through cell
		7/10/2019	11.5	6.87	2020	173.2	14.02	
		7/23/2019	11.5	7.62	2053	-7.3	8.42	
		10/16/2019	14.8	7.22	2071	-5.6	0.64	
		11/1/2019	13.3	7.17	2056	105.9	1.99	Semi-Annual, flow-through cell
		1/22/2020	11.0	7.58	2008	-37.3	7.14	
		2/27/2020	9.8	7.67	1986	-114.9	8.07	
		3/30/2020	9.4	7.30	2007	-96.3	1.61	
		4/15/2020	9.2	7.14	1994	-39.8	0.95	Semi-Annual, flow-through cell
		5/27/2020	10.1	7.29	2081	-43.6	0.63	
	6/30/2020	11.2	7.29	2111	-44.6	0.70		
	MW451-D	4/29/2019	9.8	7.24	2100	37.0	2.48	Semi-Annual, flow-through cell
		6/26/2019	11.8	7.37	2012	47.4	1.95	Baseline, flow-through cell
		7/10/2019	11.1	6.43	1971	159.0	3.26	
		7/23/2019	11.4	7.34	2016	-27.3	2.60	
		10/16/2019	12.6	7.25	2062	-8.1	0.19	
		11/1/2019	12.7	7.18	2006	106.8	0.74	Semi-Annual, flow-through cell
		1/22/2020	11.8	7.32	1959	-51.2	1.60	
		2/27/2020	11.3	7.28	1975	-171.3	1.04	
3/30/2020		11.3	7.30	1983	-99.6	1.21		
4/15/2020	10.0	7.12	1967	-57.0	0.52	Semi-Annual, flow-through cell		
5/27/2020	10.8	7.29	2027	-43.3	0.40			
6/30/2020	10.9	7.28	2046	-34.9	0.34			

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW452	MW452-I	4/25/2019	9.6	7.32	2048	-10.5	0.78	Semi-Annual, flow-through cell
		6/26/2019	11.6	7.34	1994	49.1	0.23	Baseline, flow-through cell
		7/10/2019	11.1	6.47	1969	174.0	0.03	
		7/23/2019	11.4	7.32	2012	-12.7	0.10	
		10/16/2019	13.7	7.22	2094	10.5	0.14	
		10/31/2019	13.2	7.02	2065	161.2	0.28	Semi-Annual, flow-through cell
		1/22/2020	10.9	7.27	2037	-32.9	0.87	
		2/27/2020	10.2	7.30	2032	-175.5	1.14	
		3/30/2020	10.1	7.32	2041	-48.6	2.03	
		4/15/2020	9.5	7.14	2019	2.3	0.70	Semi-Annual, flow-through cell
		5/27/2020	10.4	7.29	2072	-78.5	0.29	
	6/30/2020	11.2	7.26	2104	-50.6	0.35		
	MW452-D	4/25/2019	10.3	7.24	2061	-21.6	0.53	Semi-Annual, flow-through cell
		6/26/2019	11.8	7.26	2027	50.9	0.31	Baseline, flow-through cell
		7/10/2019	11.1	6.39	1984	180.1	0.31	
		7/23/2019	11.3	7.27	2041	-0.1	0.52	
		10/16/2019	12.8	7.17	2107	1.0	0.11	
		10/31/2019	12.8	6.97	2065	167.5	0.19	Semi-Annual, flow-through cell
		1/22/2020	11.9	7.24	2027	-33.1	0.30	
		2/27/2020	11.5	7.26	2032	-184.1	0.32	
		3/30/2020	11.0	7.26	2038	-55.6	3.87	
		4/15/2020	10.0	7.14	2022	-9.1	0.33	Semi-Annual, flow-through cell
5/27/2020		10.9	7.26	2071	-76.0	0.35		
6/30/2020	11.2	7.12	2122	-34.2	0.52			
MW453	MW453-I	5/1/2019	8.7	7.38	2102	6.9	0.19	Semi-Annual, flow-through cell
		6/26/2019	11.2	7.33	2015	49.1	0.28	Baseline, flow-through cell
		7/10/2019	11.0	6.51	1981	5.0	0.07	
		7/24/2019	11.4	7.44	2059	-87.9	0.01	
		10/16/2019	13.1	7.25	2054	-8.9	0.15	
		1/22/2020	8.2	7.32	1973	-112.8	0.23	
		2/27/2020	7.6	7.16	2054	-276.3	0.39	
		3/30/2020	7.6	7.09	2054	1.0	0.82	
		4/13/2020	7.3	6.98	2052	30.3	0.57	Semi-Annual, flow-through cell
		5/26/2020	9.0	7.17	1954	-57.6	0.53	
	6/30/2020	--	--	--	--	--	No parameters, submerged in water	
	MW453-D	5/1/2019	9.3	7.31	2055	30.9	0.20	Semi-Annual, flow-through cell
		6/26/2019	10.5	7.29	2010	55.6	0.42	Baseline, flow-through cell
		7/10/2019	9.9	6.49	1965	171.8	0.35	
		7/24/2019	10.4	7.41	2022	-74.5	0.06	
		10/16/2019	11.6	7.27	2003	-74.7	0.10	
		1/22/2020	10.2	7.31	1971	-111.2	0.22	
		2/27/2020	9.7	7.08	2026	-277.3	0.31	
		3/30/2020	9.3	7.02	2029	1.5	1.50	
		4/13/2020	8.5	6.92	2025	23.6	0.52	Semi-Annual, flow-through cell
5/26/2020		10.0	7.11	1928	-64.2	0.50		
6/30/2020	--	--	--	--	--	No parameters, submerged in water		

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW454	MW454-I	5/2/2019	9.7	7.37	1933	55.5	0.94	Semi-Annual, flow-through cell
		6/24/2019	11.0	7.52	1881	-10.5	0.32	Baseline, flow-through cell
		7/11/2019	10.0	7.38	1887	40.1	0.15	
		7/23/2019	10.4	7.41	1956	-128.2	0.55	
		10/15/2019	13.0	7.27	1997	-89.2	0.22	
		10/29/2019	12.0	7.19	2004	-66.4	0.19	Semi-Annual, flow-through cell
		1/22/2020	10.5	7.31	1988	-83.1	0.82	
		2/27/2020	9.9	7.35	2001	-258.5	0.98	
		3/26/2020	9.5	7.37	1991	-250.6	0.80	
		4/14/2020	9.3	7.20	2048	63.9	0.62	Semi-Annual, flow-through cell
		5/27/2020	9.5	7.36	2040	-147.4	0.33	
	6/30/2020	10.0	7.40	2051	-259.7	0.30		
	MW454-D	5/2/2019	10.2	7.33	1925	76.1	0.79	Semi-Annual, flow-through cell
		6/24/2019	11.4	7.59	1897	-18.8	0.31	Baseline, flow-through cell
		7/11/2019	10.6	7.55	1882	53.0	0.05	
		7/23/2019	10.9	7.59	1849	-139.3	0.04	
		10/15/2019	12.0	7.52	2002	-108.4	0.13	
		10/29/2019	12.0	7.21	2009	-58.4	0.21	Semi-Annual, flow-through cell
		1/22/2020	11.7	7.67	1933	-90.0	3.47	
		2/27/2020	11.2	7.58	1964	-248.9	2.56	
		3/26/2020	10.8	7.59	1990	-223.2	2.23	
		4/14/2020	9.8	7.10	2039	66.7	1.00	Semi-Annual, flow-through cell
5/27/2020		10.6	7.50	2019	-152.9	0.90		
6/30/2020	10.5	7.53	2052	-267.6	0.27			
MW455	MW455-I	5/2/2019	9.5	7.50	2151	-36.8	3.35	Semi-Annual, flow-through cell
		6/24/2019	11.0	7.60	2131	-33.9	0.20	Baseline, flow-through cell
		7/11/2019	10.1	7.30	2014	-160.2	0.00	
		7/23/2019	10.2	7.41	2093	-192.0	0.00	
		10/15/2019	12.1	7.18	2120	-94.8	0.40	
		10/29/2019	11.5	7.23	2077	-51.8	1.69	Semi-Annual, flow-through cell
		1/22/2020	10.7	6.88	1981	-217.4	0.21	
		2/27/2020	10.2	6.79	1984	-434.2	0.20	
		3/26/2020	9.7	6.91	1974	-441.2	0.31	
		4/10/2020	9.4	6.71	1913	-343.0	0.60	Semi-Annual, flow-through cell
		5/26/2020	9.7	7.16	2018	-365.6	0.22	
	6/30/2020	9.8	7.23	2090	-387.9	0.29		
	MW455-D	5/2/2019	10.7	7.35	2098	-86.3	0.23	Semi-Annual, flow-through cell
		6/24/2019	11.5	7.54	2041	-50.8	0.31	Baseline, flow-through cell
		7/11/2019	10.7	7.29	2042	-204.5	0.00	
		7/23/2019	10.7	7.36	2029	-226.8	0.00	
		10/15/2019	11.7	7.26	2071	-180.4	0.15	
		10/29/2019	11.0	7.24	2064	-89.6	1.10	Semi-Annual, flow-through cell
		1/22/2020	12.1	7.27	2002	-91.2	1.76	
		2/27/2020	11.5	7.31	2004	-203.8	1.55	
		3/26/2020	11.1	7.34	2018	-245.9	1.83	
		4/9/2020	10.3	7.24	2032	-93.5	0.33	Semi-Annual, flow-through cell
5/26/2020		10.6	7.39	2004	-152.3	0.32		
6/30/2020	10.3	7.46	2073	-271.3	0.30			

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW456	MW456-I	5/2/2019	8.9	7.58	2313	-325.4	0.74	Semi-Annual, flow-through cell
		6/25/2019	11.0	7.58	2131	-110.5	0.25	Baseline, flow-through cell
		7/11/2019	10.1	7.53	2353	-232.0	0.00	
		7/24/2019	10.4	7.81	2677	-241.8	0.00	
		10/15/2019	12.7	7.49	2211	-186.2	0.16	
		10/30/2019	11.6	7.32	2028	-69.0	0.75	Semi-Annual, flow-through cell
		1/22/2020	9.0	7.46	2016	-142.6	1.49	
		2/27/2020	9.2	7.55	1638	-307.2	0.30	
		3/26/2020	8.7	7.17	2053	-329.3	0.27	
		4/10/2020	8.4	6.94	1802	-114.7	2.02	Semi-Annual, flow-through cell
		5/26/2020	9.5	7.28	2238	-262.7	0.32	
	6/30/2020	10.7	7.28	2243	-282.4	0.40		
	MW456-D	5/2/2019	9.8	7.42	2166	-272.0	0.18	Semi-Annual, flow-through cell
		6/25/2019	10.9	7.54	2147	-142.7	0.22	Baseline, flow-through cell
		7/11/2019	10.1	7.37	2143	-209.9	0.06	
		7/24/2019	10.4	7.47	2155	-172.2	0.04	
		10/15/2019	11.2	7.39	2047	-170.8	0.14	
		10/30/2019	10.7	7.32	2035	-72.9	0.25	Semi-Annual, flow-through cell
		1/22/2020	11.0	7.40	1999	-205.7	0.18	
		2/27/2020	10.8	7.23	2069	-352.8	0.28	
		3/26/2020	10.6	7.42	2092	-395.9	0.18	
		4/9/2020	9.9	7.25	2080	-231.2	0.29	Semi-Annual, flow-through cell
5/26/2020		10.5	7.38	2154	-250.8	0.69		
6/30/2020	10.3	7.35	2173	-290.9	0.27			
MW457	MW457-I	5/2/2019	8.2	7.29	2375	-137.1	0.19	Semi-Annual, flow-through cell
		6/24/2019	12.0	7.29	2278	-86.0	0.24	Baseline, flow-through cell
		7/10/2019	11.0	6.42	2140	-39.7	0.00	
		7/24/2019	11.9	7.29	2173	-123.9	0.08	
		10/15/2019	14.9	7.20	2005	2.4	0.33	
		10/30/2019	13.5	7.07	1996	-71.0	0.23	Semi-Annual, flow-through cell
		1/22/2020	8.9	7.26	1962	-156.4	0.20	
		2/27/2020	7.7	7.29	1981	-241.5	0.39	
		3/26/2020	7.4	7.32	2010	-93.2	0.34	
		4/14/2020	7.5	7.11	2056	-76.5	0.42	Semi-Annual, flow-through cell
		5/26/2020	9.0	7.22	2038	-254.0	0.33	
	6/30/2020	11.1	7.24	2072	-152.3	0.38		
	MW457-D	5/2/2019	10.2	7.90	2695	-187.0	0.14	Semi-Annual, flow-through cell
		6/24/2019	11.5	7.97	2777	-95.8	0.25	Baseline, flow-through cell
		7/10/2019	10.5	7.23	2758	-169.9	0.00	
		7/24/2019	10.6	8.12	2969	-242.8	0.15	
		10/15/2019	11.3	7.99	3014	-225.6	0.16	
		10/30/2019	11.7	7.81	2787	-72.1	0.24	Semi-Annual, flow-through cell
		1/22/2020	11.0	7.89	2722	-199.8	0.23	
		2/27/2020	10.5	7.66	2396	-279.4	0.36	
3/26/2020		10.2	7.41	2416	-325.3	0.25		
4/14/2020	8.9	7.03	2423	-108.9	0.41	Semi-Annual, flow-through cell		
5/26/2020	10.2	7.65	2818	-316.0	0.23			
6/30/2020	10.2	7.99	3047	-212.9	0.30			

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments	
MW458	MW458-I	5/2/2019	7.8	7.34	2294	-112.6	0.16	Semi-Annual, flow-through cell
		6/24/2019	11.9	7.29	2319	-97.4	0.26	Baseline, flow-through cell
		7/10/2019	11.7	6.40	2255	6.7	0.34	
		7/24/2019	12.2	7.29	2259	-142.1	0.03	
		10/15/2019	15.2	7.14	2180	43.0	0.27	
		10/29/2019	13.2	7.12	2112	92.6	0.19	Semi-Annual, flow-through cell
		1/22/2020	8.9	7.21	2079	-273.5	0.22	
		2/27/2020	8.0	7.24	2079	-195.0	0.45	
		3/26/2020	7.5	7.28	2098	-12.2	0.36	
		4/14/2020	7.4	6.93	2137	98.9	0.47	Semi-Annual, flow-through cell
		5/27/2020	9.7	7.21	2133	-105.7	0.30	
	6/30/2020	11.9	7.19	2148	-80.2	0.44		
	MW458-D	5/2/2019	10.1	7.76	2976	-138.1	0.14	Semi-Annual, flow-through cell
		6/24/2019	11.2	7.87	2959	-116.7	0.24	Baseline, flow-through cell
		7/10/2019	10.6	7.24	3109	-147.4	0.35	
		7/24/2019	10.8	8.17	3226	-206.7	0.06	
		10/15/2019	11.6	8.04	3231	-195.8	0.23	
		10/29/2019	11.5	7.86	2930	-110.9	0.16	Semi-Annual, flow-through cell
		1/22/2020	11.5	8.07	3182	-304.4	0.14	
		2/27/2020	11.4	8.06	3190	-253.8	0.32	
		3/26/2020	11.1	8.08	3200	-231.0	0.21	
		4/13/2020	9.5	7.89	2942	-50.8	0.37	Semi-Annual, flow-through cell
5/27/2020		10.7	8.08	3231	-166.9	0.27		
6/30/2020	10.6	8.10	3300	-148.1	0.34			
MW459	MW459-I	8/12/2019	13.6	7.37	2066	-78.6	0.24	Pre-EA3 excavation, flow-through cell
		10/16/2019	13.0	7.31	2088	-9.9	1.59	
		10/29/2019	11.5	7.14	2087	-46.0	0.35	Semi-Annual, flow-through cell
		1/22/2020	9.4	7.12	2026	-107.9	0.22	
		2/27/2020	8.5	7.17	1973	-313.5	0.34	
		3/30/2020	8.3	7.25	2000	-195.4	0.54	
		4/13/2020	7.8	7.00	2009	18.0	0.58	Semi-Annual, flow-through cell
		5/27/2020	9.4	7.24	2055	-132.2	0.62	
	6/30/2020	10.4	7.18	2041	-243.6	0.42		
	MW459-D	8/12/2019	12.2	7.33	2095	-280.6	0.15	Pre-EA3 excavation, flow-through cell
		10/16/2019	11.6	7.24	2107	-179.7	0.11	
		10/29/2019	11.0	7.16	2079	-74.8	0.16	Semi-Annual, flow-through cell
		1/22/2020	12.0	7.23	2066	-125.2	0.19	
		2/27/2020	11.6	7.28	2078	-287.0	0.26	
		3/30/2020	11.2	7.27	2079	-125.6	0.61	
4/13/2020		9.7	7.09	2081	287.4	0.60	Semi-Annual, flow-through cell	
5/27/2020	10.7	7.29	2089	-135.0	0.26			
6/30/2020	10.5	7.34	2129	-246.2	0.28			

TABLE 7 (CONTINUED)
GROUNDWATER FIELD PARAMETER DATA
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Temperature (°C)	pH (standard units)	Specific Conductance (µS/cm)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Comments
PT-04	4/30/2019	7.6	7.50	3014	-144.3	0.15	Semi-Annual, flow-through cell
	6/25/2019	9.4	7.82	3555	-251.1	0.22	Baseline, flow-through cell
	7/11/2019	12.9	7.43	3007	-289.9	0.14	
	7/23/2019	10.1	7.93	3001	-481.1	0.00	
	10/16/2019	10.9	7.59	2803	-342.1	0.13	
	10/30/2019	10.1	7.40	2526	-90.1	0.14	Semi-Annual, flow-through cell
	1/22/2020	10.5	7.60	2773	-349.9	0.14	
	2/27/2020	9.8	7.43	2341	-368.8	0.30	
	3/26/2020	8.8	7.47	2382	-322.1	0.23	
	4/10/2020	9.9	7.60	2469	-275.0	0.51	Semi-Annual, flow-through cell
	5/26/2020	9.3	7.83	2959	-351.6	0.28	
6/30/2020	9.3	7.89	3101	-393.3	0.24		
EBI-9	8/12/2019	12.5	7.34	2073	-33.0	1.94	Pre-EA3 excavation, flow-through cell

Note:

Groundwater field parameter data was measured in situ unless otherwise noted.

I - Intermediate well.

D - Deep well.

EB EVO injections conducted November 2019 through March 2020.

In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively.

TABLE 8
GROUNDWATER FERROUS IRON CONCENTRATIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well		Date	Ferrous Iron (mg/L)	Comments
MW006		6/25/2019	0.00	Baseline
		4/8/2020	0.00	
MW007		6/24/2019	0.00	Baseline
		4/9/2020	1.00	
MW009		6/25/2019	0.00	Baseline
		4/10/2020	0.00	
MW117		6/25/2019	0.00	Baseline
MW117R		4/8/2020	0.00	Baseline
MW408	MW408-I	6/26/2019	0.00	Baseline
		7/10/2019	0.00	
		7/23/2019	0.00	
		4/8/2020	0.00	
	MW408-D	6/26/2019	0.00	Baseline
		7/10/2019	0.00	
		7/23/2019	0.00	
		4/8/2020	0.00	
MW409	MW409-I	6/26/2019	0.00	Baseline
		7/10/2019	0.00	
		7/23/2019	0.00	
		4/8/2020	0.00	
	MW409-D	6/26/2019	0.75	Baseline
		7/10/2019	0.50	
		7/23/2019	0.50	
		4/8/2020	0.50	
MW410	MW410-I	6/25/2019	0.00	Baseline
		7/11/2019	0.00	
		7/23/2019	0.00	
	MW410-D	6/25/2019	0.00	Baseline
		7/11/2019	0.00	
		7/23/2019	0.00	

TABLE 8 (CONTINUED)
GROUNDWATER FERROUS IRON CONCENTRATIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well		Date	Ferrous Iron (mg/L)	Comments
MW412	MW412-I	6/25/2019	0.00	Baseline
		7/11/2019	0.00	
		7/23/2019	0.00	
	MW412-D	6/25/2019	0.00	Baseline
		7/11/2019	0.00	
		7/23/2019	0.00	
MW413	MW413-I	6/24/2019	0.00	Baseline
		7/11/2019	0.00	
		7/23/2019	0.00	
		4/15/2020	0.00	
	MW413-D	6/24/2019	0.00	Baseline
		7/11/2019	0.00	
		7/23/2019	0.00	
		4/14/2020	0.00	
MW451	MW451-I	6/26/2019	0.00	Baseline
		4/15/2020	0.00	
	MW451-D	6/26/2019	0.00	Baseline
		4/15/2020	0.00	
MW452	MW452-I	6/26/2019	0.00	Baseline
		4/15/2020	0.00	
	MW452-D	6/26/2019	0.00	Baseline
		4/15/2020	0.00	
MW453	MW453-I	6/26/2019	0.00	Baseline
		4/13/2020	0.00	
	MW453-D	6/26/2019	0.00	Baseline
		4/13/2020	0.00	

TABLE 8 (CONTINUED)
GROUNDWATER FERROUS IRON CONCENTRATIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well		Date	Ferrous Iron (mg/L)	Comments
MW454	MW454-I	6/24/2019	0.00	Baseline
		4/14/2020	0.00	
	MW454-D	6/24/2019	0.00	Baseline
		4/14/2020	0.00	
MW455	MW455-I	6/24/2019	0.00	Baseline
		4/10/2020	0.50	
	MW455-D	6/24/2019	0.25	Baseline
		4/9/2020	0.00	
MW456	MW456-I	6/25/2019	0.50	Baseline
		4/10/2020	1.50	
	MW456-D	6/25/2019	0.00	Baseline
		4/9/2020	1.00	
MW457	MW457-I	6/24/2019	0.00	Baseline
		4/14/2020	0.00	
	MW457-D	6/24/2019	0.25	Baseline
		4/14/2020	1.00	
MW458	MW458-I	6/24/2019	0.00	Baseline
		4/14/2020	0.00	
	MW458-D	6/24/2019	0.25	Baseline
		4/13/2020	0.00	
MW459	MW459-I	4/13/2020	0.00	Baseline
	MW459-D	4/13/2020	0.00	Baseline

TABLE 8 (CONTINUED)
GROUNDWATER FERROUS IRON CONCENTRATIONS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

Well	Date	Ferrous Iron (mg/L)	Comments
PT-04	6/25/2019	0.00	Baseline
	4/10/2020	0.00	

Note:

I - Intermediate well.

D - Deep well.

**TABLE 9
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW006 3094.54	4/30/2019	7.90	3086.64	--
	6/25/2019	5.75	3088.79	2.15
	7/10/2019	6.02	3088.52	-0.27
	7/24/2019	6.35	3088.19	-0.33
	10/16/2019	7.61	3086.93	-1.26
	10/28/2019	7.81	3086.73	-0.20
	1/22/2020	8.42	3086.12	-0.61
	2/27/2020	8.63	3085.91	-0.21
	3/26/2020	8.62	3085.92	0.01
	4/8/2020	8.72	3085.82	-0.10
	5/27/2020	7.74	3086.80	0.98
	6/30/2020	4.49	3090.05	3.25
MW007 3096.64	4/29/2019	7.90	3088.74	--
	6/24/2019	6.46	3090.18	1.44
	7/10/2019	6.65	3089.99	-0.19
	7/24/2019	6.80	3089.84	-0.15
	10/15/2019	7.42	3089.22	-0.62
	10/29/2019	7.67	3088.97	-0.25
	1/22/2020	8.21	3088.43	-0.54
	2/27/2020	8.54	3088.10	-0.33
	3/26/2020	8.48	3088.16	0.06
	4/9/2020	8.59	3088.05	-0.11
	5/26/2020	7.68	3088.96	0.91
	6/30/2020	5.02	3091.62	2.66
MW009 3093.28	4/30/2019	6.60	3086.68	--
	6/25/2019	4.67	3088.61	1.93
	7/10/2019	4.88	3088.40	-0.21
	7/24/2019	5.21	3088.07	-0.33
	10/15/2019	6.39	3086.89	-1.18
	10/31/2019	6.68	3086.60	-0.29
	1/22/2020	7.25	3086.03	-0.57
	2/27/2020	7.44	3085.84	-0.19
	3/30/2020	7.48	3085.80	-0.04
	4/10/2020	7.42	3085.86	0.06
	5/27/2020	6.37	3086.91	1.05
	6/30/2020	3.35	3089.93	3.02

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW117 3094.47	4/30/2019	8.11	3086.36	--
	6/25/2019	6.03	3088.44	2.08
	7/10/2019	6.27	3088.20	-0.24
	7/24/2019	6.64	3087.83	-0.37
	10/15/2019	7.88	3086.59	-1.24
	10/30/2019	8.11	3086.36	-0.23
	1/22/2020	8.70	3085.77	-0.59
	2/27/2020	9.01	3085.46	-0.31
MW117R 3093.55	3/26/2020	8.25	3085.30	--
	4/8/2020	8.30	3085.25	-0.05
	5/27/2020	7.21	3086.34	1.09
	6/30/2020	4.13	3089.42	3.08
MW408-I 3094.75	4/29/2019	3.85	3090.90	--
	6/26/2019	2.86	3091.89	0.99
	7/10/2019	2.75	3092.00	0.11
	7/23/2019	2.70	3092.05	0.05
	10/16/2019	2.85	3091.90	-0.15
	11/1/2019	3.01	3091.74	-0.16
	1/22/2020	3.77	3090.98	-0.76
	2/27/2020	3.98	3090.77	-0.21
	3/30/2020	4.09	3090.66	-0.11
	4/8/2020	4.17	3090.58	-0.08
	5/27/2020	3.74	3091.01	0.43
MW408-D 3094.77	4/29/2019	3.89	3090.88	--
	6/26/2019	2.91	3091.86	0.98
	7/10/2019	2.79	3091.98	0.12
	7/23/2019	2.72	3092.05	0.07
	10/16/2019	2.91	3091.86	-0.19
	11/1/2019	3.39	3091.38	-0.48
	1/22/2020	3.77	3091.00	-0.38
	2/27/2020	4.09	3090.68	-0.32
	3/30/2020	4.15	3090.62	-0.06
	4/8/2020	4.28	3090.49	-0.13
	5/27/2020	3.80	3090.97	0.48

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW409-I 3094.42	4/29/2019	3.57	3090.85	--
	6/26/2019	2.58	3091.84	0.99
	7/10/2019	2.58	3091.84	0.00
	7/23/2019	2.42	3092.00	0.16
	10/16/2019	2.60	3091.82	-0.18
	11/1/2019	3.02	3091.40	-0.42
	1/22/2020	3.49	3090.93	-0.47
	2/27/2020	3.71	3090.71	-0.22
	3/30/2020	3.84	3090.58	-0.13
	4/8/2020	3.90	3090.52	-0.06
	5/27/2020	3.53	3090.89	0.37
MW409-D 3094.47	4/29/2019	3.62	3090.85	--
	6/26/2019	2.60	3091.87	1.02
	7/10/2019	2.53	3091.94	0.07
	7/23/2019	2.48	3091.99	0.05
	10/16/2019	2.63	3091.84	-0.15
	11/1/2019	3.10	3091.37	-0.47
	1/22/2020	3.51	3090.96	-0.41
	2/27/2020	3.78	3090.69	-0.27
	3/30/2020	3.88	3090.59	-0.10
	4/8/2020	3.92	3090.55	-0.04
	5/27/2020	3.58	3090.89	0.34
MW410-I 3093.49	4/29/2019	2.70	3090.79	--
	6/25/2019	1.63	3091.86	1.07
	7/11/2019	1.60	3091.89	0.03
	7/23/2019	1.58	3091.91	0.02
	10/16/2019	1.87	3091.62	-0.29
	10/30/2019	2.09	3091.40	-0.22
	1/22/2020 ^A	--	--	--
MW410-D 3093.44	4/29/2019	2.75	3090.69	--
	6/25/2019	1.67	3091.77	1.08
	7/11/2019	1.66	3091.78	0.01
	7/23/2019	1.60	3091.84	0.06
	10/16/2019	1.95	3091.49	-0.35
	10/30/2019	2.18	3091.26	-0.23
	1/22/2020 ^A	--	--	--

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW412-I 3093.44	4/30/2019	3.36	3090.08	--
	6/25/2019	2.21	3091.23	1.15
	7/11/2019	2.26	3091.18	-0.05
	7/23/2019	2.22	3091.22	0.04
	10/16/2019	2.58	3090.86	-0.36
	10/30/2019	2.92	3090.52	-0.34
	1/22/2020	3.31	3090.13	-0.39
	2/27/2020 ^A	--	--	--
MW412-D 3093.29	4/29/2019	3.19	3090.10	--
	6/25/2019	2.16	3091.13	1.03
	7/11/2019	2.09	3091.20	0.07
	7/23/2019	2.06	3091.23	0.03
	10/16/2019	2.42	3090.87	-0.36
	10/30/2019	2.74	3090.55	-0.32
	1/22/2020	3.16	3090.13	-0.42
	2/27/2020 ^A	--	--	--
MW413-I 3093.62	4/30/2019	4.62	3089.00	--
	6/24/2019	3.29	3090.33	1.33
	7/11/2019	3.38	3090.24	-0.09
	7/23/2019	3.44	3090.18	-0.06
	10/16/2019	4.04	3089.58	-0.60
	10/29/2019	4.35	3089.27	-0.31
	1/22/2020	4.91	3088.71	-0.56
	2/27/2020	5.19	3088.43	-0.28
	3/30/2020	5.24	3088.38	-0.05
	4/15/2020	5.17	3088.45	0.07
	5/27/2020	4.68	3088.94	0.49
	6/30/2020	1.83	3091.79	2.85

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW413-D 3093.61	4/30/2019	4.65	3088.96	--
	6/24/2019	3.30	3090.31	1.35
	7/11/2019	3.40	3090.21	-0.10
	7/23/2019	3.46	3090.15	-0.06
	10/16/2019	4.06	3089.55	-0.60
	10/29/2019	4.39	3089.22	-0.33
	1/22/2020	4.93	3088.68	-0.54
	2/27/2020	5.20	3088.41	-0.27
	3/30/2020	5.27	3088.34	-0.07
	4/14/2020	5.19	3088.42	0.08
	5/27/2020	4.70	3088.91	0.49
	6/30/2020	1.84	3091.77	2.86
MW451-I 3095.04	4/29/2019	3.95	3091.09	--
	6/26/2019	2.97	3092.07	0.98
	7/10/2019	2.84	3092.20	0.13
	7/23/2019	2.78	3092.26	0.06
	10/16/2019	3.01	3092.03	-0.23
	11/1/2019	3.39	3091.65	-0.38
	1/22/2020	3.85	3091.19	-0.46
	2/27/2020	4.08	3090.96	-0.23
	3/30/2020	4.22	3090.82	-0.14
	4/15/2020	4.18	3090.86	0.04
	5/27/2020	3.94	3091.10	0.24
	6/30/2020	1.47	3093.57	2.47
MW451-D 3094.96	4/29/2019	4.07	3090.89	--
	6/26/2019	2.95	3092.01	1.12
	7/10/2019	2.90	3092.06	0.05
	7/23/2019	2.71	3092.25	0.19
	10/16/2019	3.05	3091.91	-0.34
	11/1/2019	3.27	3091.69	-0.22
	1/22/2020	3.87	3091.09	-0.60
	2/27/2020	4.09	3090.87	-0.22
	3/30/2020	4.35	3090.61	-0.26
	4/15/2020	4.18	3090.78	0.17
	5/27/2020	3.94	3091.02	0.24
	6/30/2020	1.44	3093.52	2.50

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW452-I 3095.25	4/25/2019	4.74	3090.51	--
	6/26/2019	3.62	3091.63	1.12
	7/10/2019	3.51	3091.74	0.11
	7/23/2019	3.46	3091.79	0.05
	10/16/2019	3.98	3091.27	-0.52
	10/31/2019	3.96	3091.29	0.02
	1/22/2020	4.56	3090.69	-0.60
	2/27/2020	4.89	3090.36	-0.33
	3/30/2020	5.10	3090.15	-0.21
	4/15/2020	4.95	3090.30	0.15
	5/27/2020	4.63	3090.62	0.32
	6/30/2020	2.12	3093.13	2.51
MW452-D 3095.28	4/25/2019	4.75	3090.53	--
	6/26/2019	3.63	3091.65	1.12
	7/10/2019	3.57	3091.71	0.06
	7/23/2019	3.50	3091.78	0.07
	10/16/2019	3.79	3091.49	-0.29
	10/31/2019	4.08	3091.20	-0.29
	1/22/2020	4.62	3090.66	-0.54
	2/27/2020	4.92	3090.36	-0.30
	3/30/2020	4.98	3090.30	-0.06
	4/15/2020	4.94	3090.34	0.04
	5/27/2020	4.67	3090.61	0.27
	6/30/2020	2.11	3093.17	2.56
MW453-I 3090.37	5/1/2019	2.54	3087.83	--
	6/26/2019	0.88	3089.49	1.66
	7/10/2019	1.15	3089.22	-0.27
	7/24/2019	1.33	3089.04	-0.18
	10/16/2019	2.32	3088.05	-0.99
	1/22/2020	3.04	3087.33	-0.72
	2/27/2020	3.26	3087.11	-0.22
	3/30/2020	3.35	3087.02	-0.09
	4/13/2020	3.25	3087.12	0.10
	5/26/2020	2.41	3087.96	0.84
MW453-D 3090.43	5/1/2019	2.67	3087.76	--
	6/26/2019	1.09	3089.34	1.58
	7/10/2019	1.22	3089.21	-0.13
	7/24/2019	1.41	3089.02	-0.19
	10/16/2019	2.34	3088.09	-0.93
	1/22/2020	3.20	3087.23	-0.86
	2/27/2020	3.43	3087.00	-0.23
	3/30/2020	3.51	3086.92	-0.08
	4/13/2020	3.41	3087.02	0.10
5/26/2020	2.55	3087.88	0.86	

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW454-I 3093.37	5/2/2019	3.89	3089.48	--
	6/24/2019	2.68	3090.69	1.21
	7/11/2019	2.73	3090.64	-0.05
	7/23/2019	2.82	3090.55	-0.09
	10/15/2019	3.27	3090.10	-0.45
	10/29/2019	3.55	3089.82	-0.28
	1/22/2020	3.98	3089.39	-0.43
	2/27/2020	4.20	3089.17	-0.22
	3/26/2020	4.19	3089.18	0.01
	4/14/2020	4.19	3089.18	0.00
	5/27/2020	3.75	3089.62	0.44
	6/30/2020	1.11	3092.26	2.64
MW454-D 3093.42	5/2/2019	3.80	3089.62	--
	6/24/2019	2.61	3090.81	1.19
	7/11/2019	2.67	3090.75	-0.06
	7/23/2019	2.73	3090.69	-0.06
	10/15/2019	3.16	3090.26	-0.43
	10/29/2019	3.45	3089.97	-0.29
	1/22/2020	3.89	3089.53	-0.44
	2/27/2020	4.07	3089.35	-0.18
	3/26/2020	4.06	3089.36	0.01
	4/14/2020	4.09	3089.33	-0.03
	5/27/2020	3.63	3089.79	0.46
	6/30/2020	1.10	3092.32	2.53
MW455-I 3093.67	5/2/2019	3.97	3089.70	--
	6/24/2019	2.80	3090.87	1.17
	7/11/2019	2.93	3090.74	-0.13
	7/23/2019	2.89	3090.78	0.04
	10/15/2019	3.32	3090.35	-0.43
	10/29/2019	3.55	3090.12	-0.23
	1/22/2020	3.93	3089.74	-0.38
	2/27/2020	4.15	3089.52	-0.22
	3/26/2020	4.14	3089.53	0.01
	4/10/2020	4.15	3089.52	-0.01
	5/26/2020	3.75	3089.92	0.40
	6/30/2020	1.31	3092.36	2.44

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW455-D 3093.75	5/2/2019	3.98	3089.77	--
	6/24/2019	2.79	3090.96	1.19
	7/11/2019	3.03	3090.72	-0.24
	7/23/2019	2.81	3090.94	0.22
	10/15/2019	3.44	3090.31	-0.63
	10/29/2019	3.49	3090.26	-0.05
	1/22/2020	3.85	3089.90	-0.36
	2/27/2020	4.40	3089.35	-0.55
	3/26/2020	4.17	3089.58	0.23
	4/9/2020	4.23	3089.52	-0.06
	5/26/2020	3.95	3089.80	0.28
	6/30/2020	1.29	3092.46	2.66
MW456-I 3093.20	5/2/2019	3.89	3089.31	--
	6/25/2019	2.60	3090.60	1.29
	7/11/2019	2.79	3090.41	-0.19
	7/24/2019	3.12	3090.08	-0.33
	10/15/2019	3.35	3089.85	-0.23
	10/30/2019	3.53	3089.67	-0.18
	1/22/2020	3.99	3089.21	-0.46
	2/27/2020	4.31	3088.89	-0.32
	3/26/2020	4.32	3088.88	-0.01
	4/10/2020	4.32	3088.88	0.00
	5/26/2020	3.87	3089.33	0.45
	6/30/2020	1.23	3091.97	2.64
MW456-D 3093.26	5/2/2019	4.04	3089.22	--
	6/25/2019	2.71	3090.55	1.33
	7/11/2019	2.95	3090.31	-0.24
	7/24/2019	3.30	3089.96	-0.35
	10/15/2019	3.56	3089.70	-0.26
	10/30/2019	3.62	3089.64	-0.06
	1/22/2020	4.05	3089.21	-0.43
	2/27/2020	4.45	3088.81	-0.40
	3/26/2020	4.49	3088.77	-0.04
	4/9/2020	4.59	3088.67	-0.10
	5/26/2020	4.13	3089.13	0.46
	6/30/2020	1.74	3091.52	2.39

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW457-I 3093.48	5/2/2019	4.41	3089.07	--
	6/24/2019	2.98	3090.50	1.43
	7/10/2019	3.07	3090.41	-0.09
	7/24/2019	3.16	3090.32	-0.09
	10/15/2019	3.77	3089.71	-0.61
	10/30/2019	4.03	3089.45	-0.26
	1/22/2020	4.59	3088.89	-0.56
	2/27/2020	4.89	3088.59	-0.30
	3/26/2020	4.89	3088.59	0.00
	4/14/2020	4.86	3088.62	0.03
	5/26/2020	4.40	3089.08	0.46
	6/30/2020	1.61	3091.87	2.79
MW457-D 3093.37	5/2/2019	4.49	3088.88	--
	6/24/2019	2.93	3090.44	1.56
	7/10/2019	3.18	3090.19	-0.25
	7/24/2019	3.13	3090.24	0.05
	10/15/2019	3.82	3089.55	-0.69
	10/30/2019	4.05	3089.32	-0.23
	1/22/2020	4.57	3088.80	-0.52
	2/27/2020	4.92	3088.45	-0.35
	3/26/2020	4.93	3088.44	-0.01
	4/14/2020	4.97	3088.40	-0.04
	5/26/2020	4.45	3088.92	0.52
	6/30/2020	1.59	3091.78	2.86
MW458-I 3092.19	5/2/2019	4.29	3087.90	--
	6/24/2019	2.49	3089.70	1.80
	7/10/2019	2.70	3089.49	-0.21
	7/24/2019	2.87	3089.32	-0.17
	10/15/2019	3.79	3088.40	-0.92
	10/29/2019	4.11	3088.08	-0.32
	1/22/2020	4.67	3087.52	-0.56
	2/27/2020	4.91	3087.28	-0.24
	3/26/2020	4.91	3087.28	0.00
	4/14/2020	4.87	3087.32	0.04
	5/27/2020	4.35	3087.84	0.52
	6/30/2020	1.14	3091.05	3.21

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
MW458-D 3092.27	5/2/2019	4.73	3087.54	--
	6/24/2019	2.60	3089.67	2.13
	7/10/2019	2.88	3089.39	-0.28
	7/24/2019	2.97	3089.30	-0.09
	10/15/2019	3.96	3088.31	-0.99
	10/29/2019	4.22	3088.05	-0.26
	1/22/2020	4.70	3087.57	-0.48
	2/27/2020	5.09	3087.18	-0.39
	3/26/2020	5.01	3087.26	0.08
	4/13/2020	5.01	3087.26	0.00
	5/27/2020	4.58	3087.69	0.43
	6/30/2020	1.27	3091.00	3.31
MW459-I 3091.96	8/12/2019	1.98	3089.98	--
	10/16/2019	2.52	3089.44	-0.54
	10/29/2019	2.78	3089.18	-0.26
	1/22/2020	3.81	3088.15	-1.03
	2/27/2020	3.58	3088.38	0.23
	3/30/2020	3.63	3088.33	-0.05
	4/13/2020	3.54	3088.42	0.09
	5/27/2020	3.00	3088.96	0.54
6/30/2020	0.25	3091.71	2.75	
MW459-D 3091.99	8/12/2019	2.59	3089.40	--
	10/16/2019	2.88	3089.11	-0.29
	10/29/2019	3.17	3088.82	-0.29
	1/22/2020	3.74	3088.25	-0.57
	2/27/2020	4.01	3087.98	-0.27
	3/30/2020	4.02	3087.97	-0.01
	4/13/2020	3.96	3088.03	0.06
	5/27/2020	3.30	3088.69	0.66
6/30/2020	0.44	3091.55	2.86	
PT-04 3098.16	4/30/2019	7.57	3090.59	--
	6/25/2019	6.35	3091.81	1.22
	7/11/2019	6.25	3091.91	0.10
	7/23/2019	6.24	3091.92	0.01
	10/16/2019	6.50	3091.66	-0.26
	10/30/2019	6.81	3091.35	-0.31
	1/22/2020	7.38	3090.78	-0.57
	2/27/2020	7.68	3090.48	-0.30
	3/26/2020	7.68	3090.48	0.00
	4/10/2020	7.69	3090.47	-0.01
	5/26/2020	7.41	3090.75	0.28
6/30/2020	5.29	3092.87	2.12	

TABLE 9 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

TOC Elevation (ft)	Date	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft)	Difference from Previous (ft)
EBI-9 3092.53	8/12/2019	2.08	3090.45	--

Notes:

-- : Indicates measurement not made or data not available.

TOC - Top of Casing.

A - In January 2020 due to daylighting issues, EVO solution was injected into monitoring wells MW410-D and MW412-I/-D which served as the completed injections for EB injection wells EBI-17 and EBI-14, respectively. Wells not monitored due to presence of EVO in the wells.

Monitoring well MW117R replaced monitoring well MW117 due to tree roots present in the well casing.

TABLE 10
INVESTIGATION-DERIVED WASTE LIQUID MATRIX ANALYTICAL RESULTS
ENHANCED BIOREMEDIATION PILOT TEST
OPERABLE UNIT 2
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE

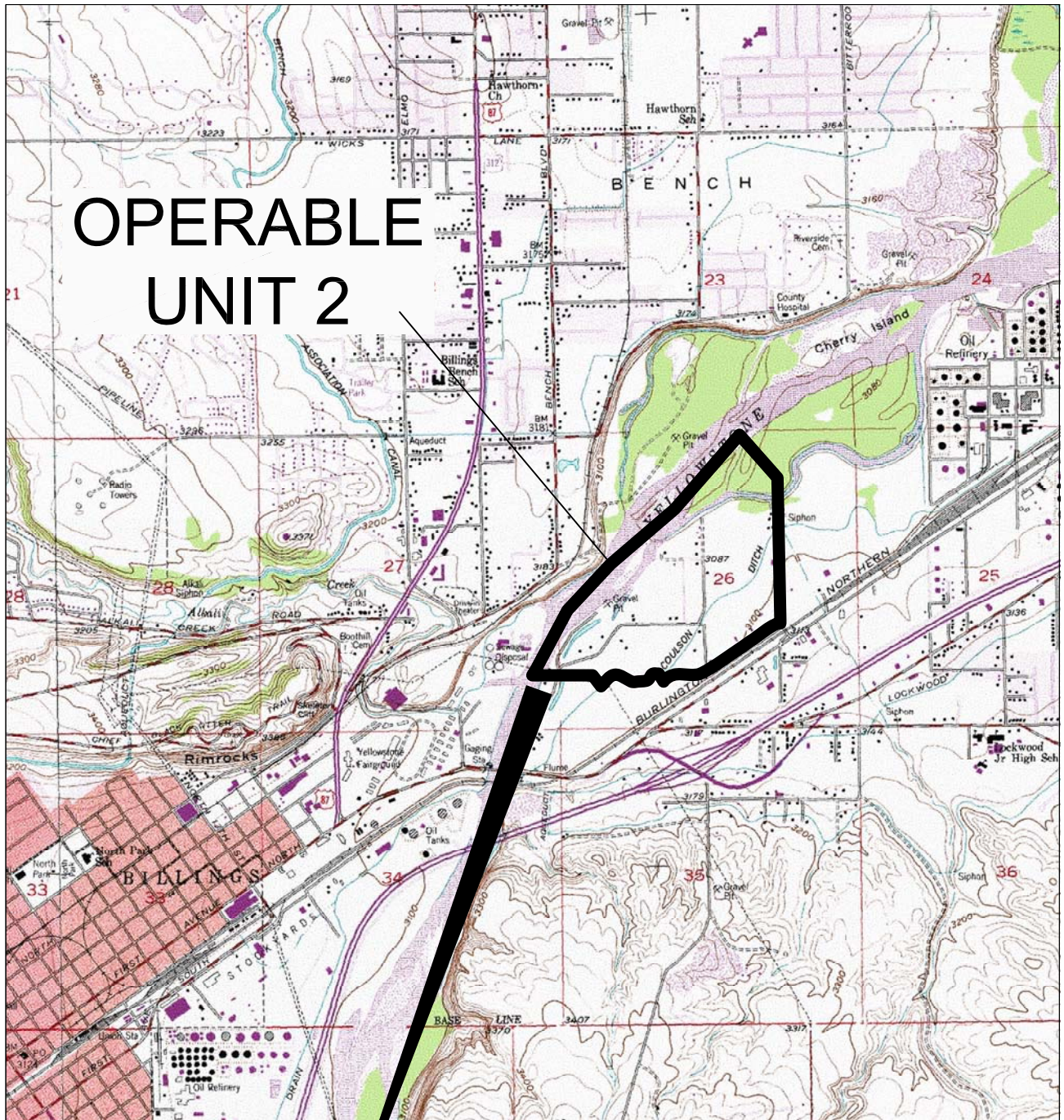
Analyte	Units	MCL	IDW001LM	TRIP BLANK
			6/12/2020	6/12/2020
Volatile Organic Compounds (Method 8260B)				
PCE	µg/L	5.0	< 0.50	< 0.50
TCE	µg/L	5.0	< 0.50	< 0.50
<i>cis</i> -1,2-DCE	µg/L	70	0.40 J	< 0.50
VC	µg/L	2.0	< 0.50	< 0.50

Notes:

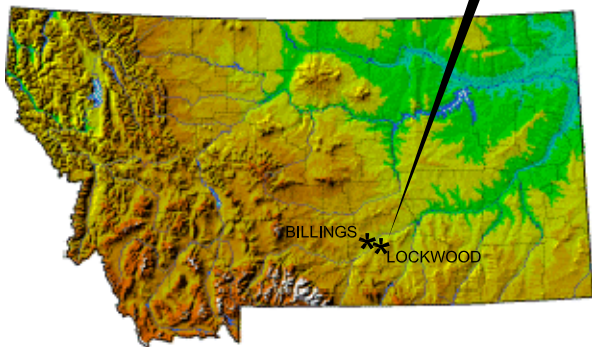
MCL - Maximum contaminant level as set forth in the 2005 LSGPS Record of Decision or DEQ-7 Montana Numeric Water Quality Standards.

Figures

OPERABLE UNIT 2



REF: USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)
BILLINGS WEST AND BILLINGS EAST
CONTOUR INTERVAL: 20 FEET



1000 0 2000



1"=2000'

SITE VICINITY MAP LOCKWOOD SOLVENT GROUNDWATER PLUME SITE SOCO WEST

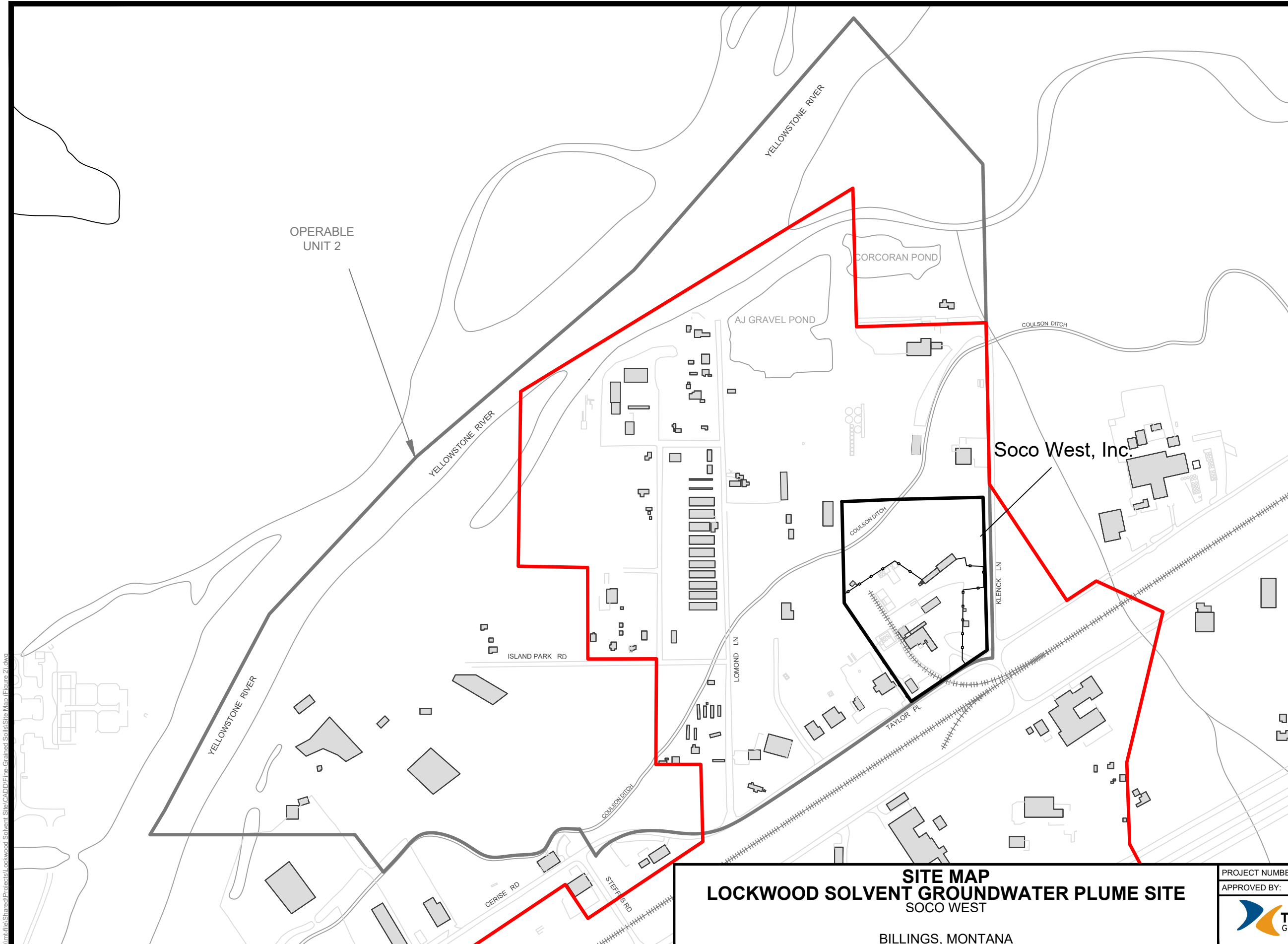
Billings, Montana

PROJECT NUMBER: 51.24884.0009	DATE: 03/30/2016	FIGURE
APPROVED BY: JS	DRAWN BY: JC	1



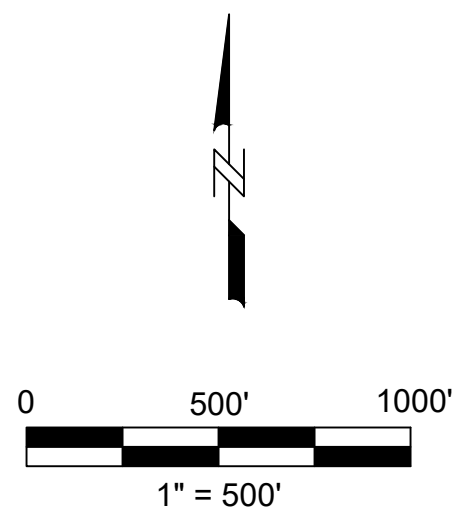
917 1st Avenue North
Billings, Montana 59101-2048

Ph: (406) 259-1033




LEGEND

- +++++ Railroad
- |— Fence
- Tank
- Building
- DNRC Controlled Groundwater Boundary



SITE MAP
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 SOCO WEST
 BILLINGS, MONTANA

PROJECT NUMBER: Z05100003	DATE: 9-21-2015	FIGURE
APPROVED BY: JS	DRAWN BY: JC	2
 TASMAN GEOSCIENCES		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

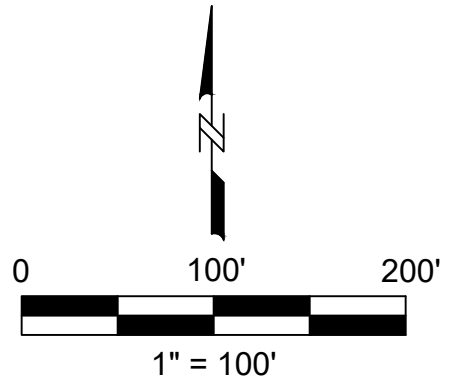
\\ntfile\Share\Projects\Lockwood Solvent Site\CADD\Fine-Grained Soils\Site Map (Figure 2).dwg

M:\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\SAP\Figure 5 OU2 Estimated Extent of Source Soils 2020 SAP Update.dwg



LEGEND

- +++++ Railroad
- +++++ Former Railroad Spur (Removed March 2017)
- Fence
- Former Fence Line
- Property Boundary
- Tank Location
- Building
- ▭ Existing Concrete/Tank Farm
- ▭ Former Tank Farm
- ◆ Monitoring Well Location
- Historic soil sample location with detected COCs greater than ROD Performance Standards
- Soil sample location with PCE greater than ROD Performance Standard (April 2019)
- Estimated Extent of Source Area Saturated Zone Soil
- Estimated Extent of Impacted Fine-Grained Soils That Exceed ROD Performance Standards
- Estimated Extent of Impacted Fine-Grained Soils That Exceed ROD Performance Standards (November 2018)
- Inferred Extent of Impacted Fine-Grained Soils That Exceed ROD Performance Standards (November 2018)
- - - Excavation Area 1 Surveyed Boundary (Excavated November 2017)
- - - Excavation Area 2 Surveyed Boundary (Excavated September 2018)
- - - Excavation Area 3 Surveyed Boundary (Excavated October 2019)
- ✕ Excavation Sidewall Soil Confirmation Sample greater than ROD Performance Standard
- - - Landfarm Treatment Cell Soil Berm



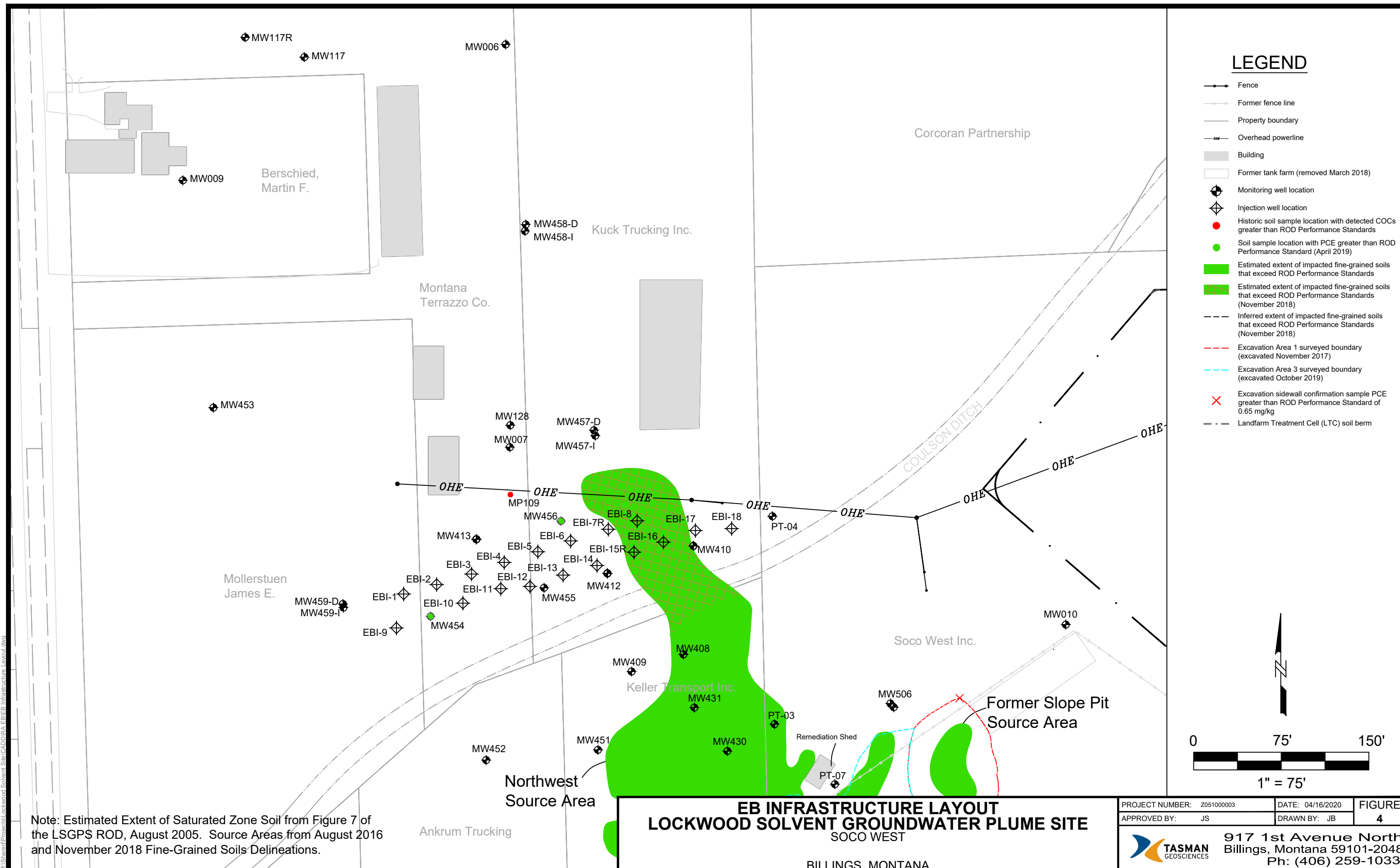
Note: Estimated Extent of Saturated Zone Soil from Figure 7 of the LSGPS ROD, August 2005. Source Areas from August 2016 and November 2018 Fine-Grained Soils Delineations.

OU2 ESTIMATED EXTENT OF SOURCE SOILS LOCKWOOD SOLVENT GROUNDWATER PLUME SITE SOCO WEST

BILLINGS, MONTANA

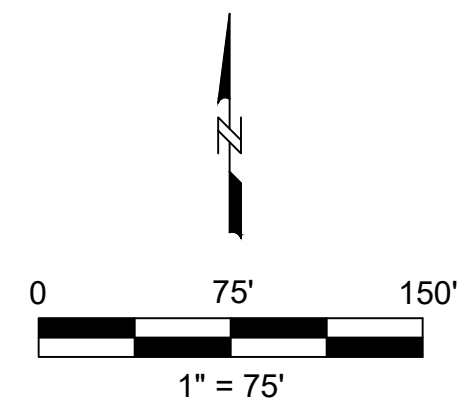
PROJECT NUMBER: Z05100003	DATE: 7/31/2020	FIGURE
APPROVED BY: JS	DRAWN BY: JB	3

917 1st Avenue North
 Billings, Montana 59101-2048
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LEGEND

- Fence
- Former fence line
- Property boundary
- Overhead powerline
- Building
- Former tank farm (removed March 2018)
- ⊕ Monitoring well location
- ⊕ Injection well location
- Historic soil sample location with detected COCs greater than ROD Performance Standards
- Soil sample location with PCE greater than ROD Performance Standard (April 2019)
- Estimated extent of impacted fine-grained soils that exceed ROD Performance Standards
- Estimated extent of impacted fine-grained soils that exceed ROD Performance Standards (November 2018)
- Inferred extent of impacted fine-grained soils that exceed ROD Performance Standards (November 2018)
- - - Excavation Area 1 surveyed boundary (excavated November 2017)
- - - Excavation Area 3 surveyed boundary (excavated October 2019)
- ✕ Excavation sidewall confirmation sample PCE greater than ROD Performance Standard of 0.65 mg/kg
- - - Landfarm Treatment Cell (LTC) soil berm



Note: Estimated Extent of Saturated Zone Soil from Figure 7 of the LSGPS ROD, August 2005. Source Areas from August 2016 and November 2018 Fine-Grained Soils Delineations.

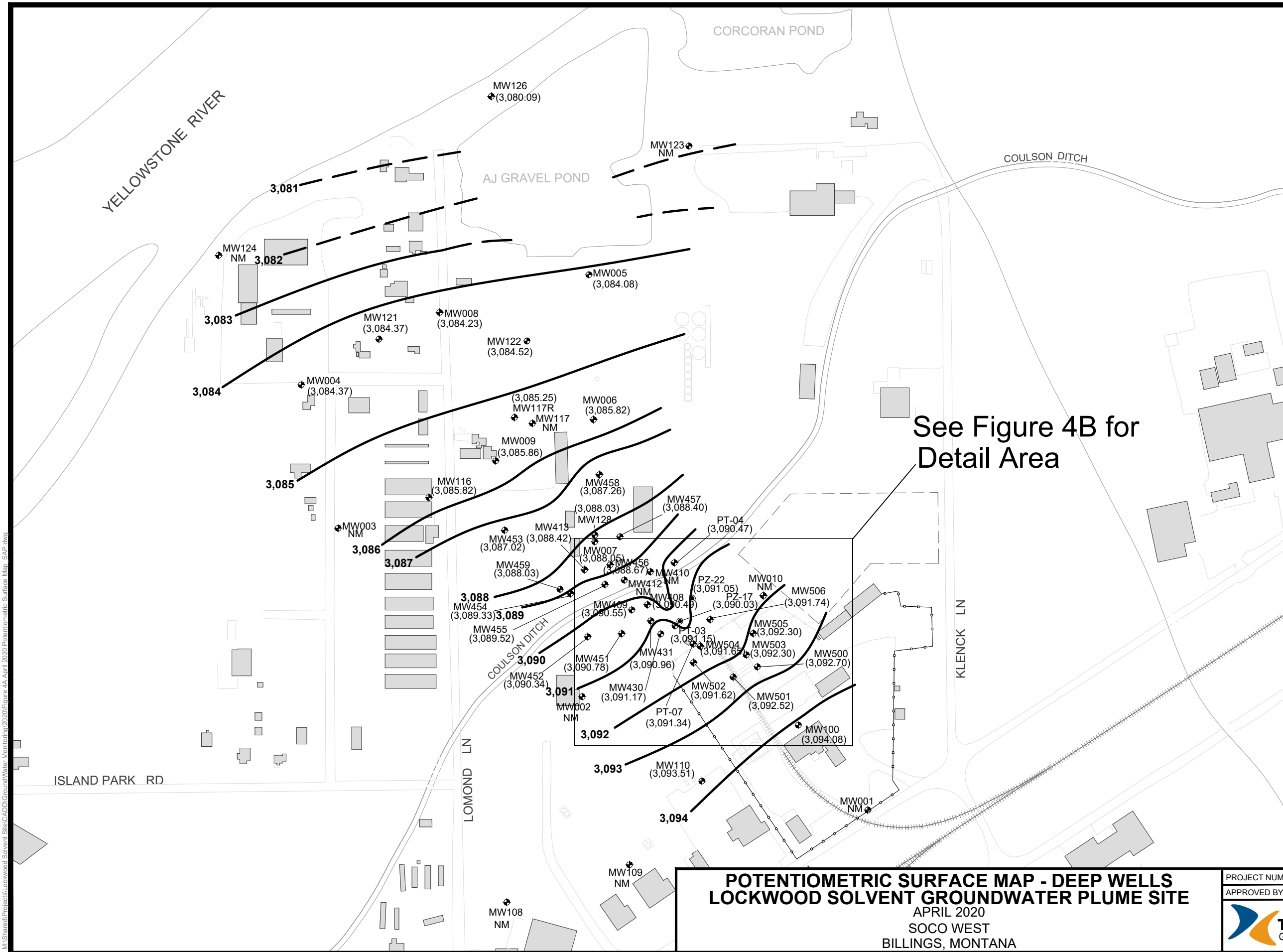
**EB INFRASTRUCTURE LAYOUT
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
SOCO WEST**

BILLINGS, MONTANA

PROJECT NUMBER: Z051000003	DATE: 04/16/2020	FIGURE
APPROVED BY: JS	DRAWN BY: JB	4

TASMAN GEOSCIENCES
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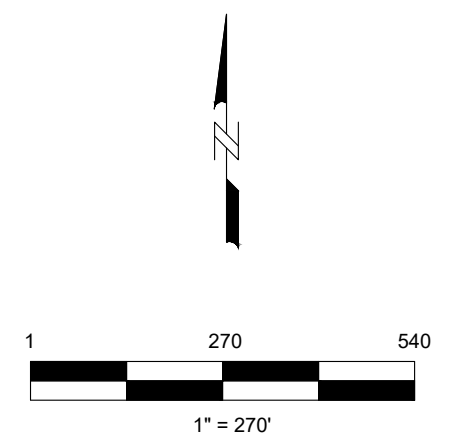
M:\Shared\Projects\Lockwood Solvent\Site\CADD\EB Infrastructure Layout.dwg



LEGEND

- +++++ Railroad
- +++++ Former Railroad Spur (Removed March 2017)
- Fence
- - - Landfarm Treatment Cell (LTC) Boundary
- Tank Location
- Building
- Concrete/Asphalt Cover and Containment
- ⊕ Monitoring Well Location
- Piezometer Location
- Groundwater Potentiometric Surface Contour
- - - Inferred Groundwater Potentiometric Surface Contour
- 3,092.70 Groundwater Elevation (ft)
- NM Not Measured

See Figure 4B for
Detail Area















POTENTIOMETRIC SURFACE MAP - DEEP WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

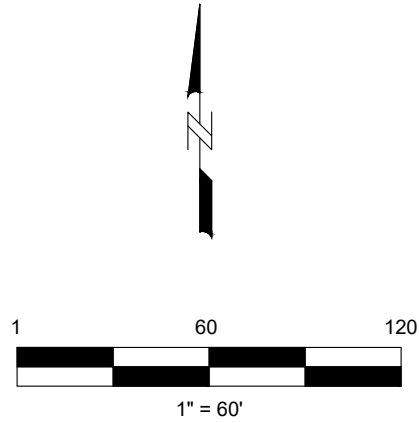
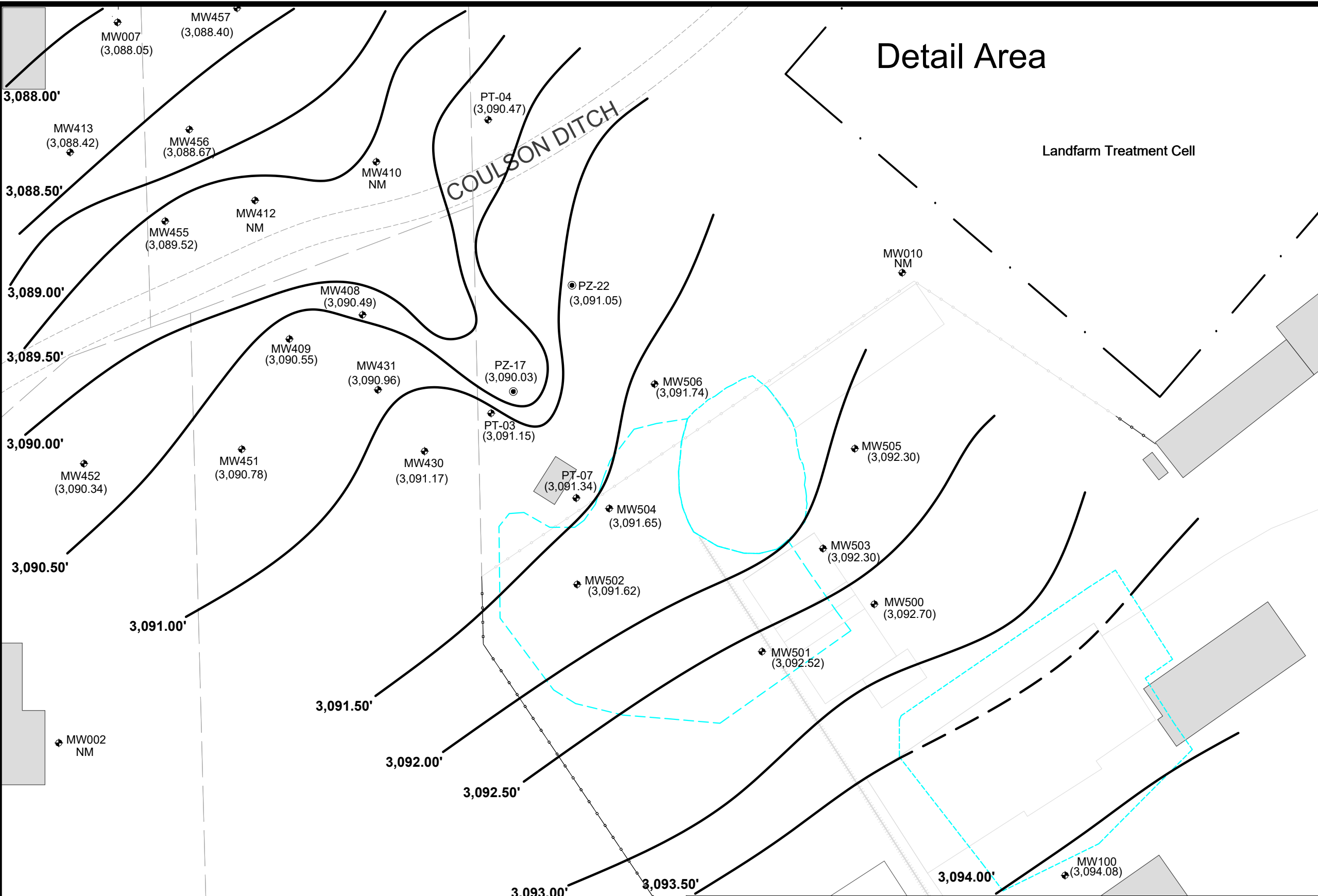
PROJECT NUMBER: 51.24884.0001	DATE: 08/26/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	5A
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 4A, April 2020 Potentiometric Surface Map - SAP.dwg


Detail Area

LEGEND

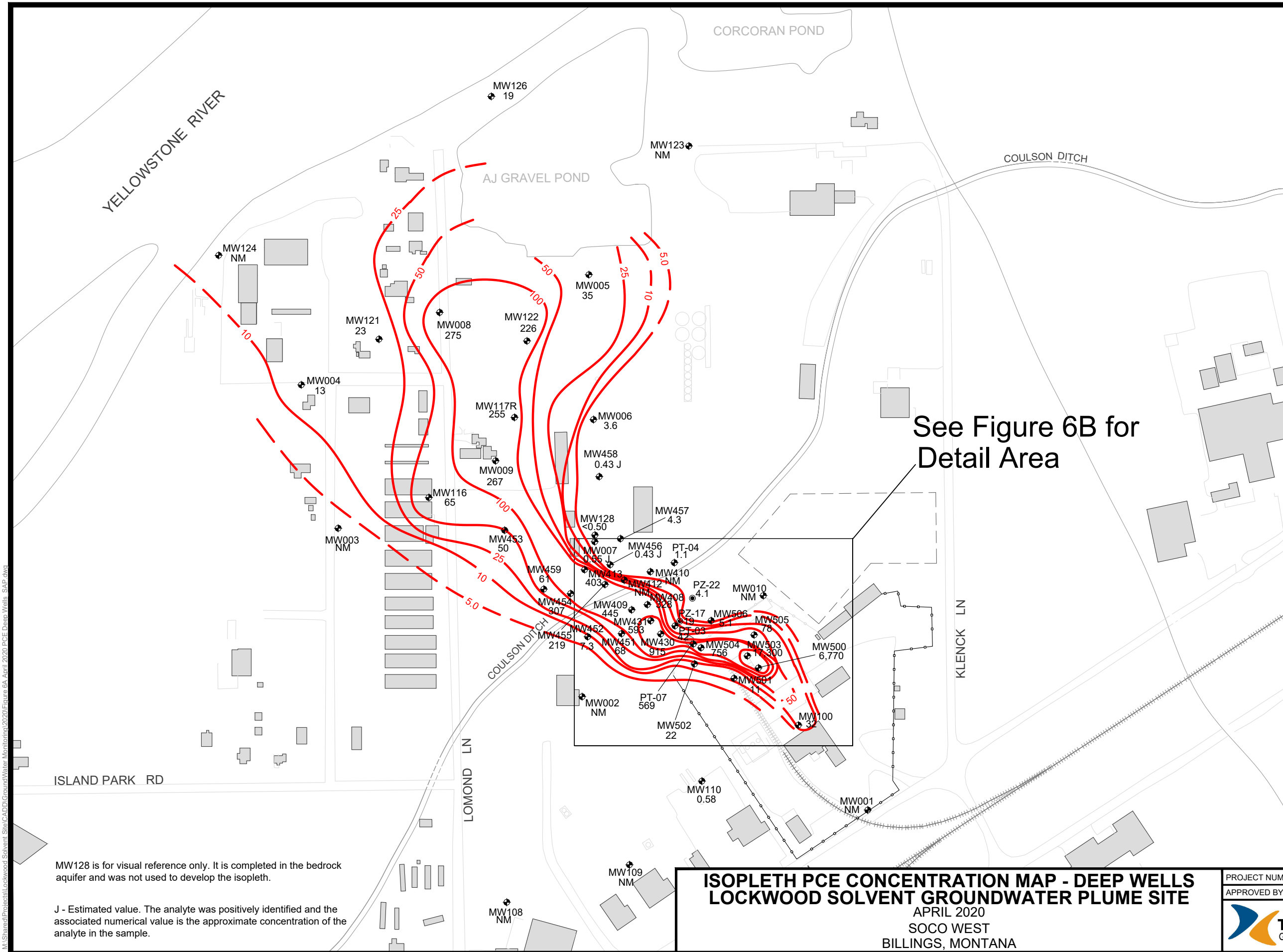
-  Former Railroad Spur (Removed March 2017)
-  Fence
-  Former Fence Line
-  Building
-  Landfarm Treatment Cell Soil Berm
-  Existing Concrete/Tank Farm
-  Former Concrete/Asphalt Cover and Containment
-  Monitoring Well Location
-  Piezometer Location
-  Surveyed Excavation Area Extent
-  Groundwater Potentiometric Surface Contour
-  Inferred Groundwater Potentiometric Surface Contour
- 3,092.70 Groundwater Elevation (ft)
- NM Not Monitored



POTENTIOMETRIC SURFACE MAP - DEEP WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/03/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	5B
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

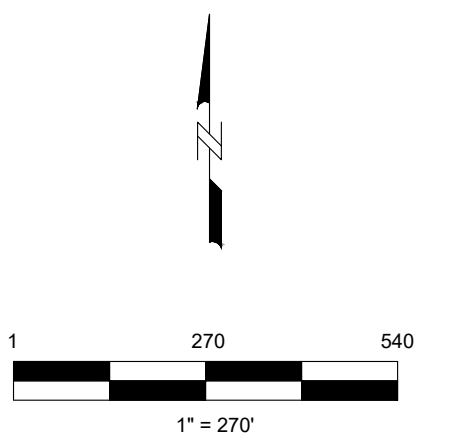
M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 4B March 2020 Potentiometric Surface Map - Detail Area_SAP.dwg



LEGEND

- +++++ Railroad
- +++++ Former Railroad Spur (Removed March 2017)
- Fence
- Landfarm Treatment Cell (LTC) Boundary
- Tank Location
- Building
- Concrete/Asphalt Cover and Containment
- ⊕ Monitoring Well Location
- Piezometer Location
- 5.0 — PCE Concentration Contour
- - - - - Inferred PCE Concentration Contour
- 61 Analytical Results, PCE (µg/L)
- NM Not Monitored


See Figure 6B for Detail Area



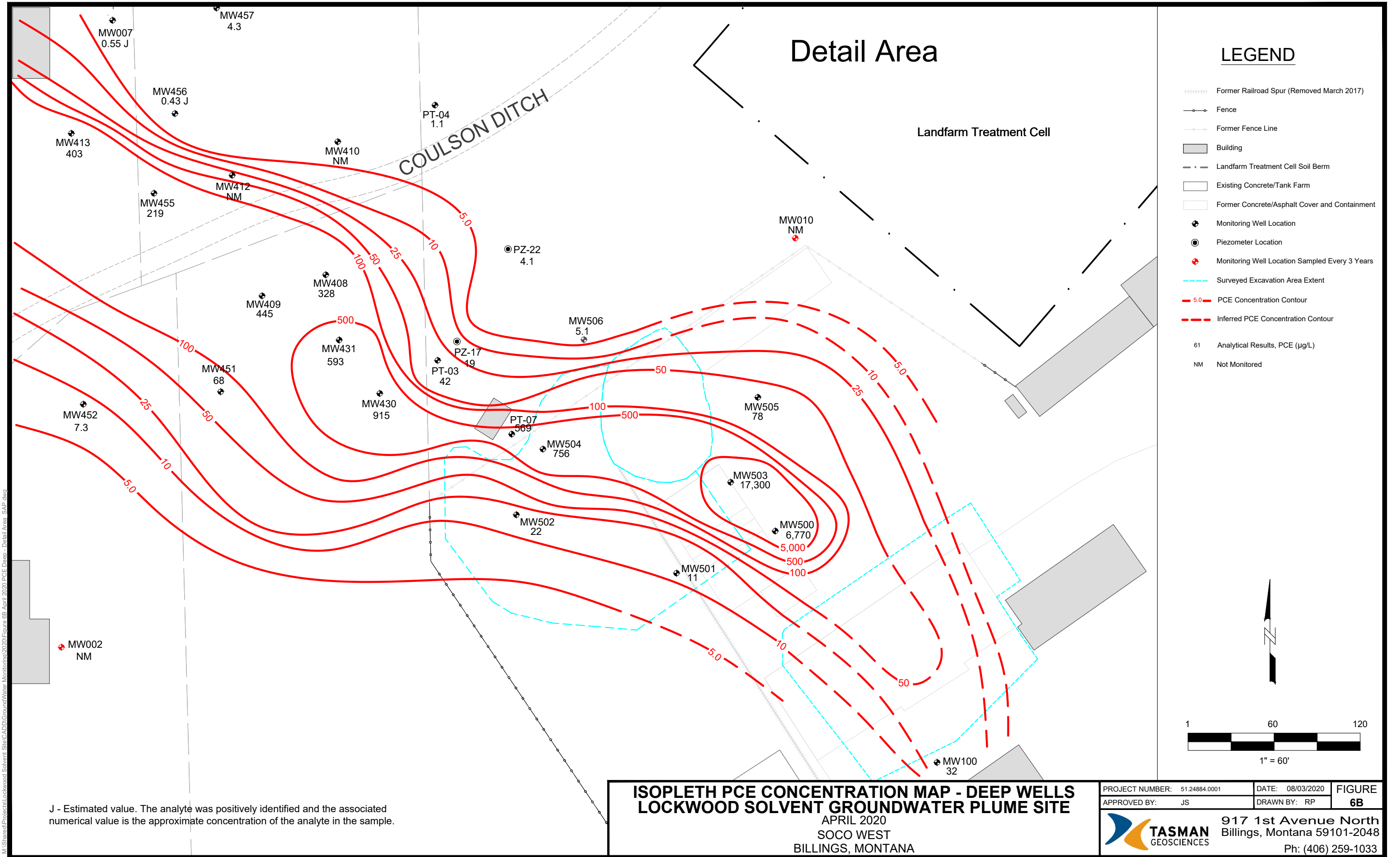
MW128 is for visual reference only. It is completed in the bedrock aquifer and was not used to develop the isopleth.

J - Estimated value. The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

**ISOPLETH PCE CONCENTRATION MAP - DEEP WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
APRIL 2020
SOCO WEST
BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/26/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	6A
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

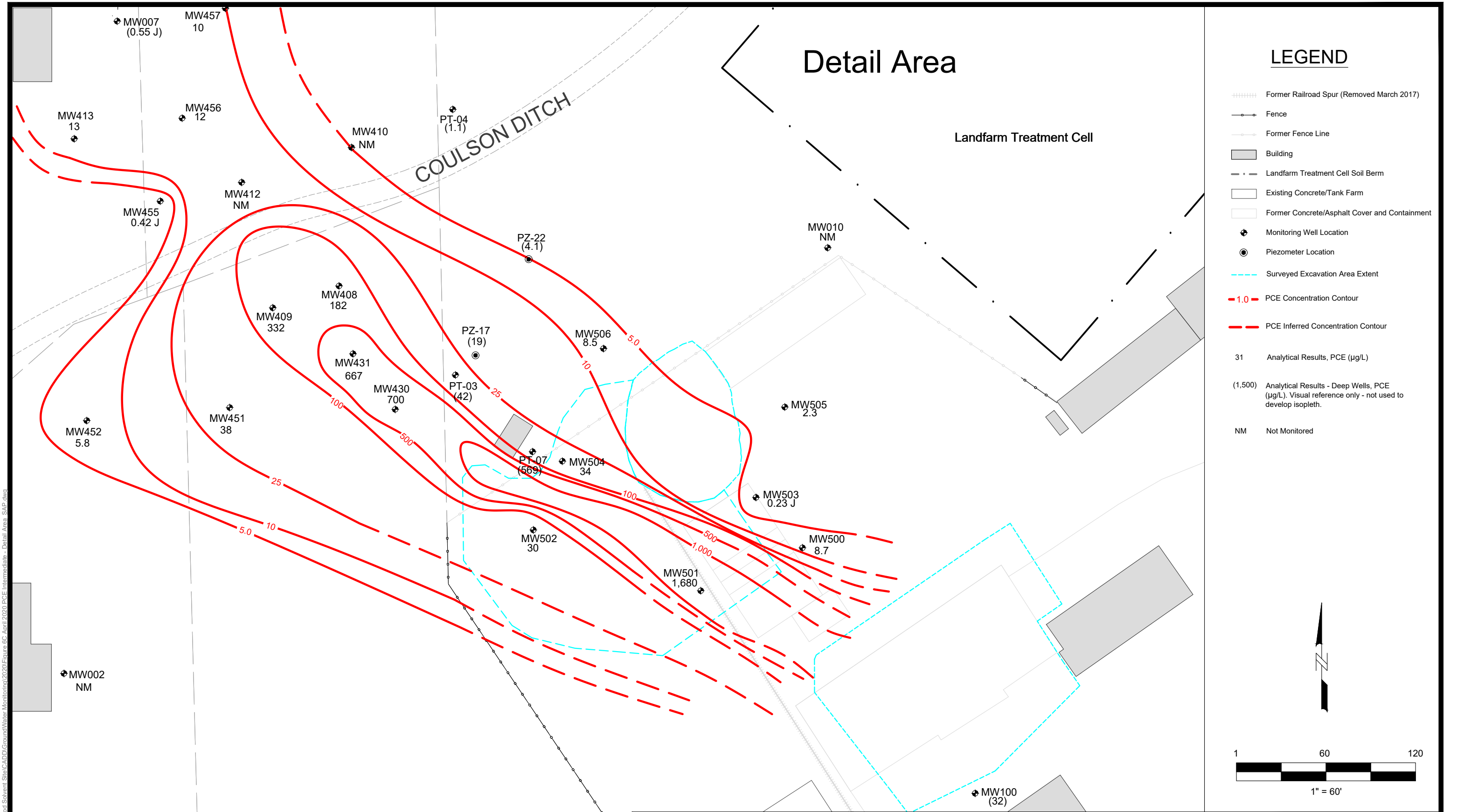
M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 6A April 2020 PCE Deep Wells SAP.dwg



J - Estimated value. The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 6B April 2020 PCE Deep - Detail Area - SAP.dwg

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 6C April 2020 PCE Intermediate - Detail Area_SAP.dwg

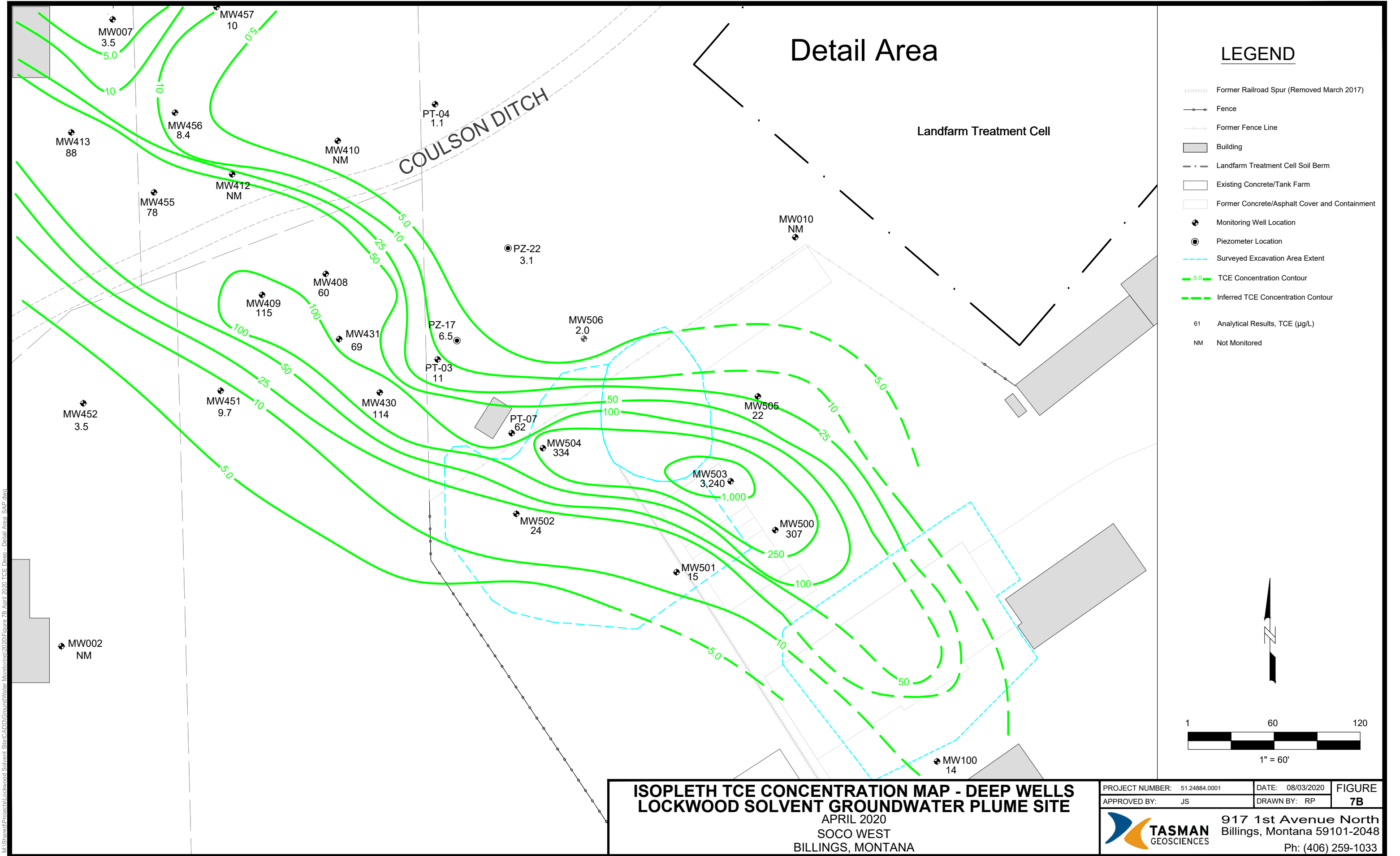


J - Estimated value. The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

ISOPLETH PCE CONCENTRATION MAP - INTERMEDIATE WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

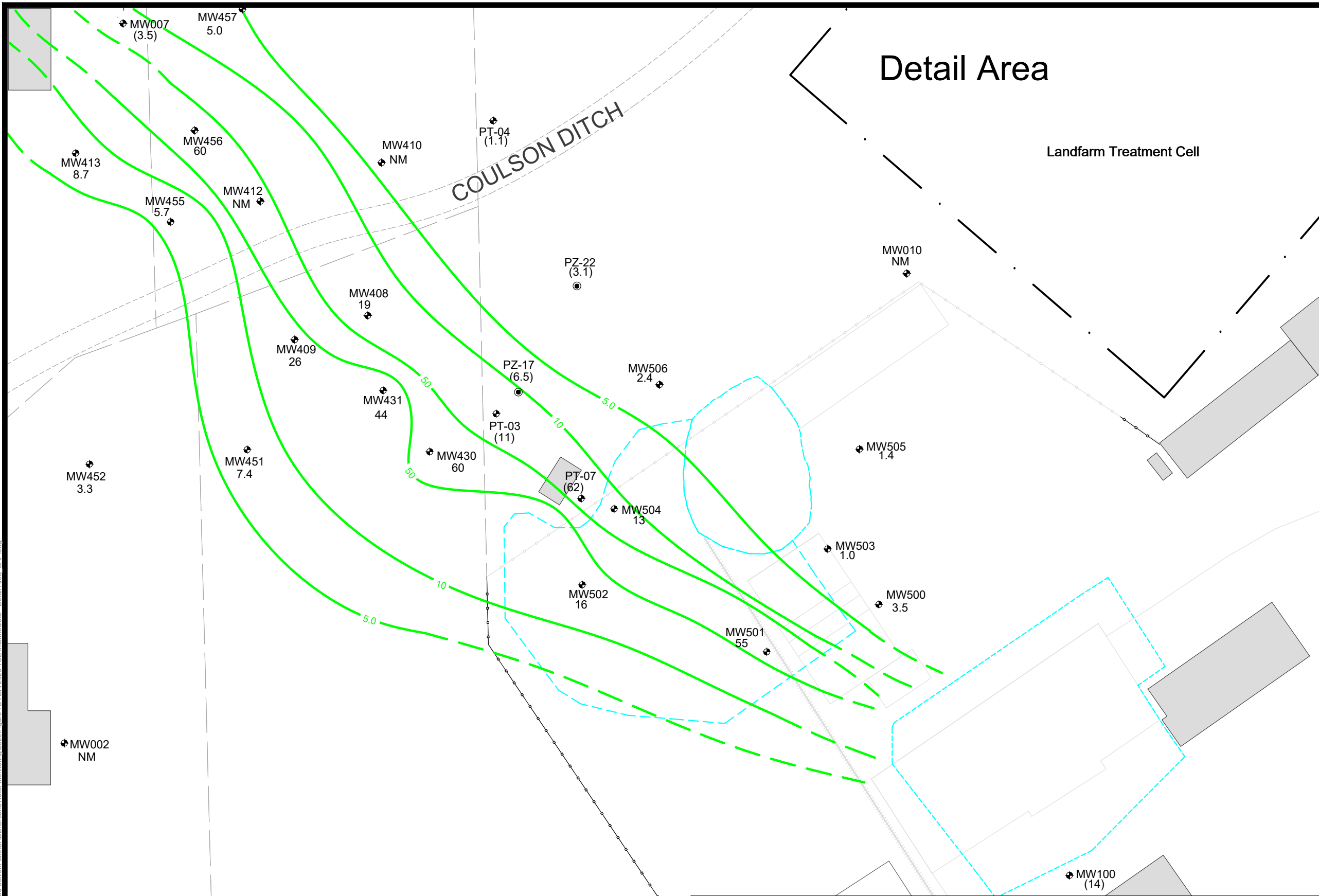
PROJECT NUMBER: 51.24884.0001	DATE: 08/03/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	6C

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 Ph: (406) 259-1033



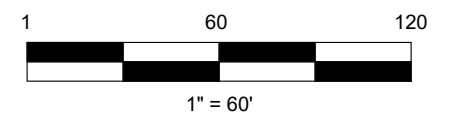
M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 7B April 2020 TCE Deep - Detail Area_SAP.dwg

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 7C April 2020 TCE Intermediate - Detail Area_SAP.dwg



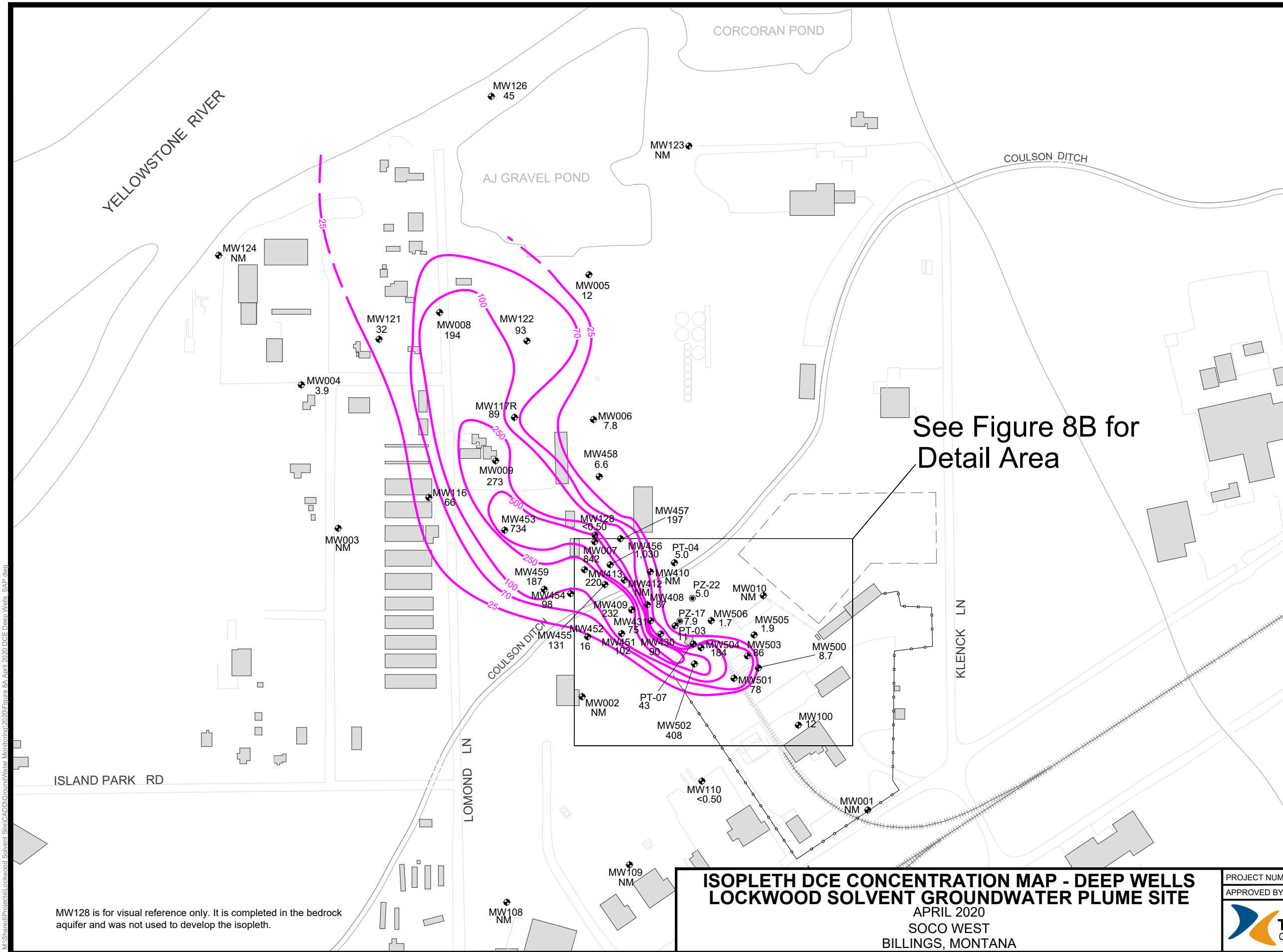
LEGEND

- Former Railroad Spur (Removed March 2017)
- Fence
- Former Fence Line
- Building
- Landfarm Treatment Cell Soil Berm
- Existing Concrete/Tank Farm
- Former Concrete/Asphalt Cover and Containment
- Monitoring Well Location
- Piezometer Location
- Surveyed Excavation Area Extent
- 1.0 TCE Concentration Contour
- TCE Inferred Concentration Contour
- 31 Analytical Results, TCE (µg/L)
- (1,500) Analytical Results - Deep Wells, TCE (µg/L). Visual reference only - not used to develop isopleth.
- NM Not Monitored



ISOPLETH TCE CONCENTRATION MAP - INTERMEDIATE WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

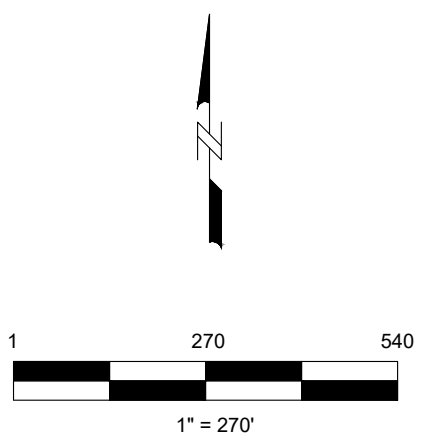
PROJECT NUMBER: 51.24884.0001	DATE: 08/03/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	7C
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033



LEGEND

- +++++ Railroad
- Former Railroad Spur (Removed March 2017)
- Fence
- - - Landfarm Treatment Cell (LTC) Boundary
- Tank Location
- Building
- Concrete/Asphalt Cover and Containment
- ⊕ Monitoring Well Location
- Piezometer Location
- 5.0 DCE Concentration Contour
- 250 DCE Concentration Contour
- 61 Analytical Results, DCE (µg/L)
- NM Not Monitored

See Figure 8B for
Detail Area



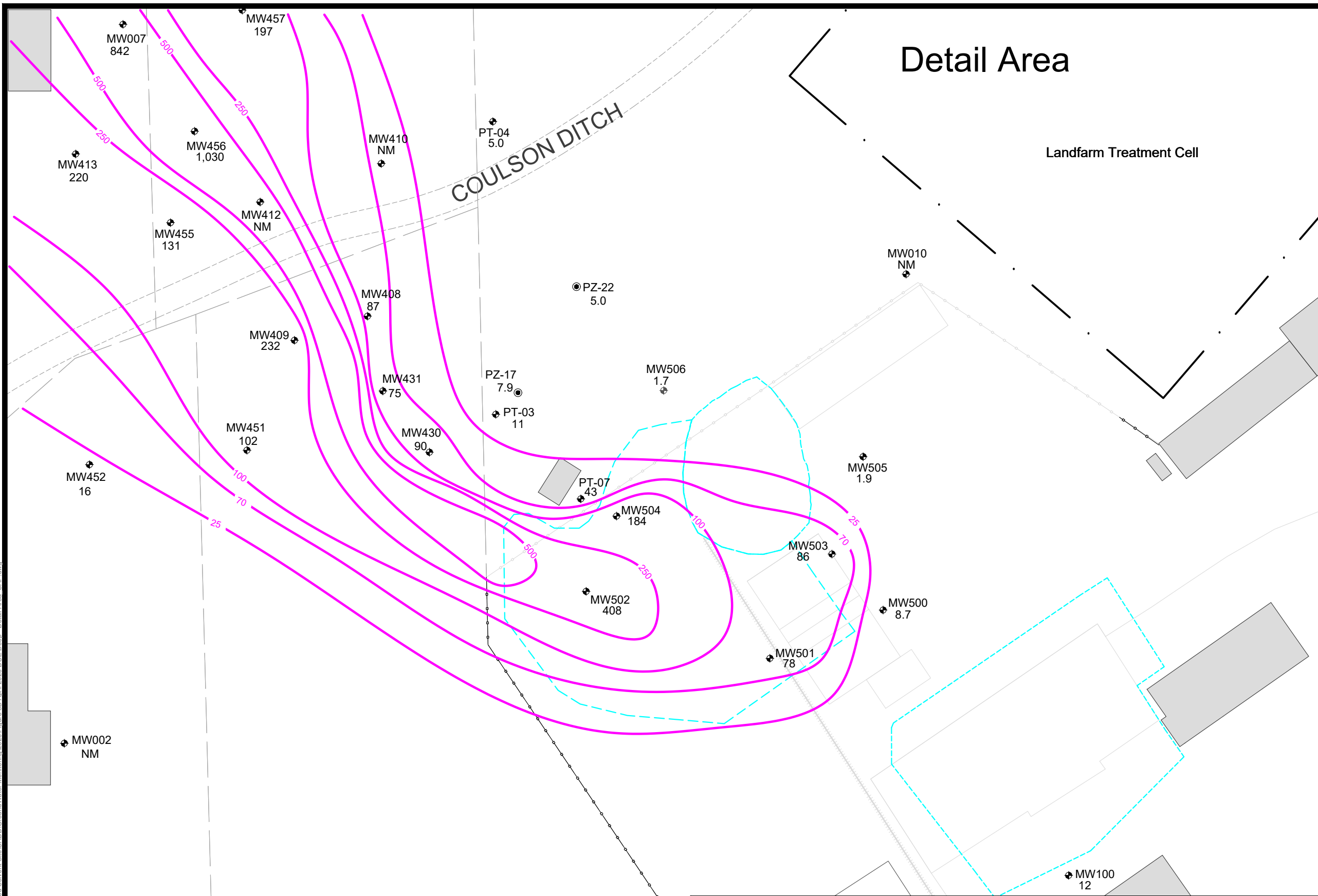
MW128 is for visual reference only. It is completed in the bedrock aquifer and was not used to develop the isopleth.

**ISOPLETH DCE CONCENTRATION MAP - DEEP WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
APRIL 2020
SOCO WEST
BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/26/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	8A
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 8A, April 2020 DCE Deep Wells SAP.dwg

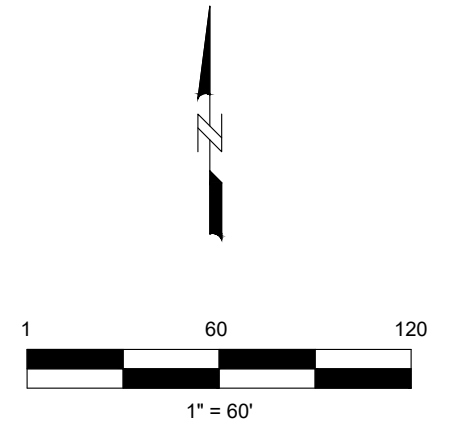
M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 8B April 2020 DCE Deep - Detail Area SAP.dwg



Detail Area

LEGEND

- Former Railroad Spur (Removed March 2017)
- Fence
- Former Fence Line
- Building
- Landfarm Treatment Cell Soil Berm
- Existing Concrete/Tank Farm
- Former Concrete/Asphalt Cover and Containment
- Monitoring Well Location
- Piezometer Location
- Surveyed Excavation Area Extent
- 5.0 DCE Concentration Contour
- 61 Analytical Results, DCE (µg/L)
- NM Not Monitored

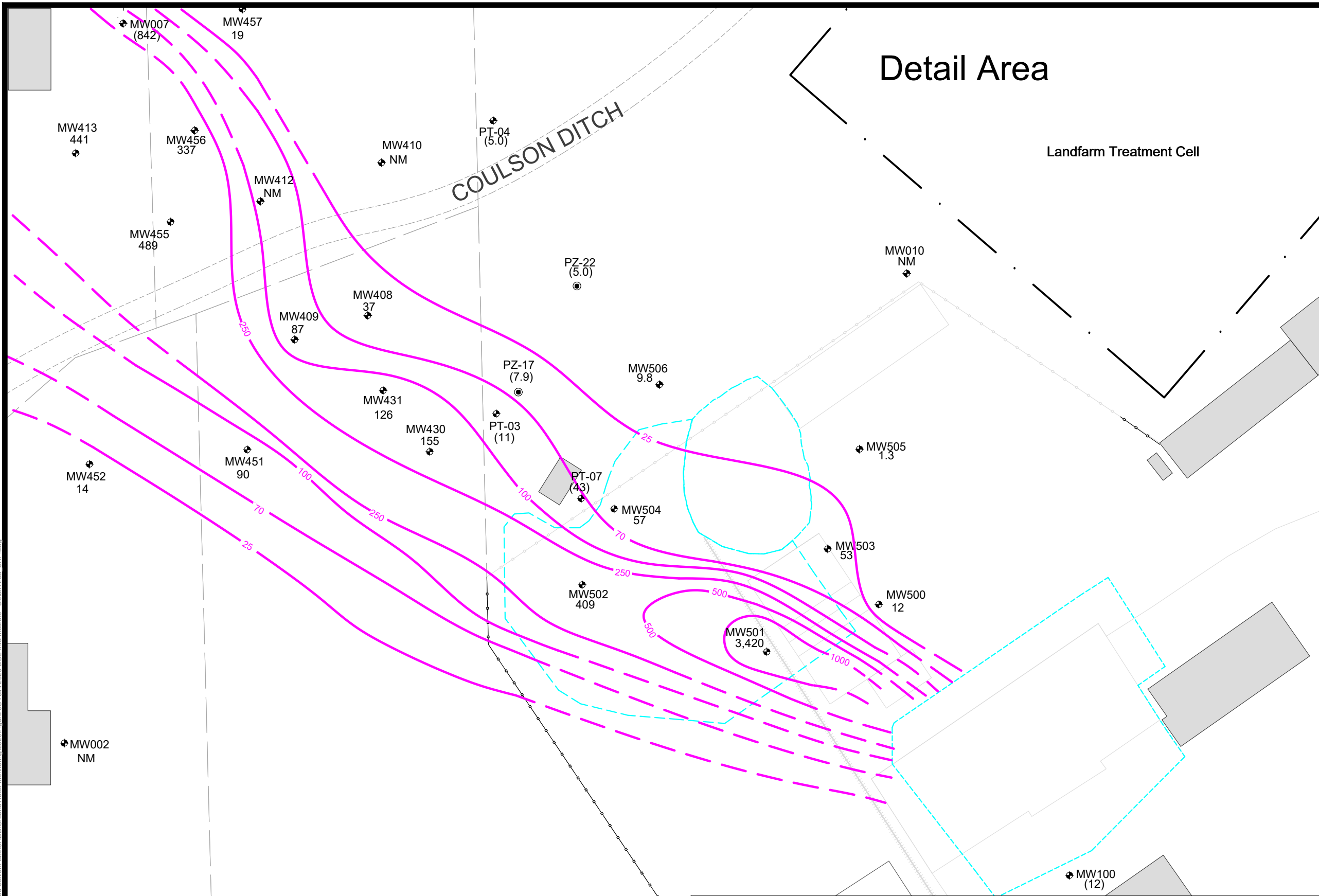


**ISOPLETH DCE CONCENTRATION MAP - DEEP WELLS
 LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/03/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	8B

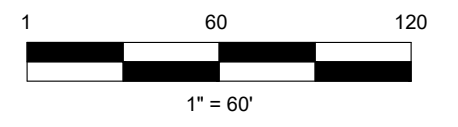
TASMAN
 GEOSCIENCES
 917 1st Avenue North
 Billings, Montana 59101-2048
 Ph: (406) 259-1033

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 8C April 2020 DCE Intermediate - Detail Area_SAP.dwg



LEGEND

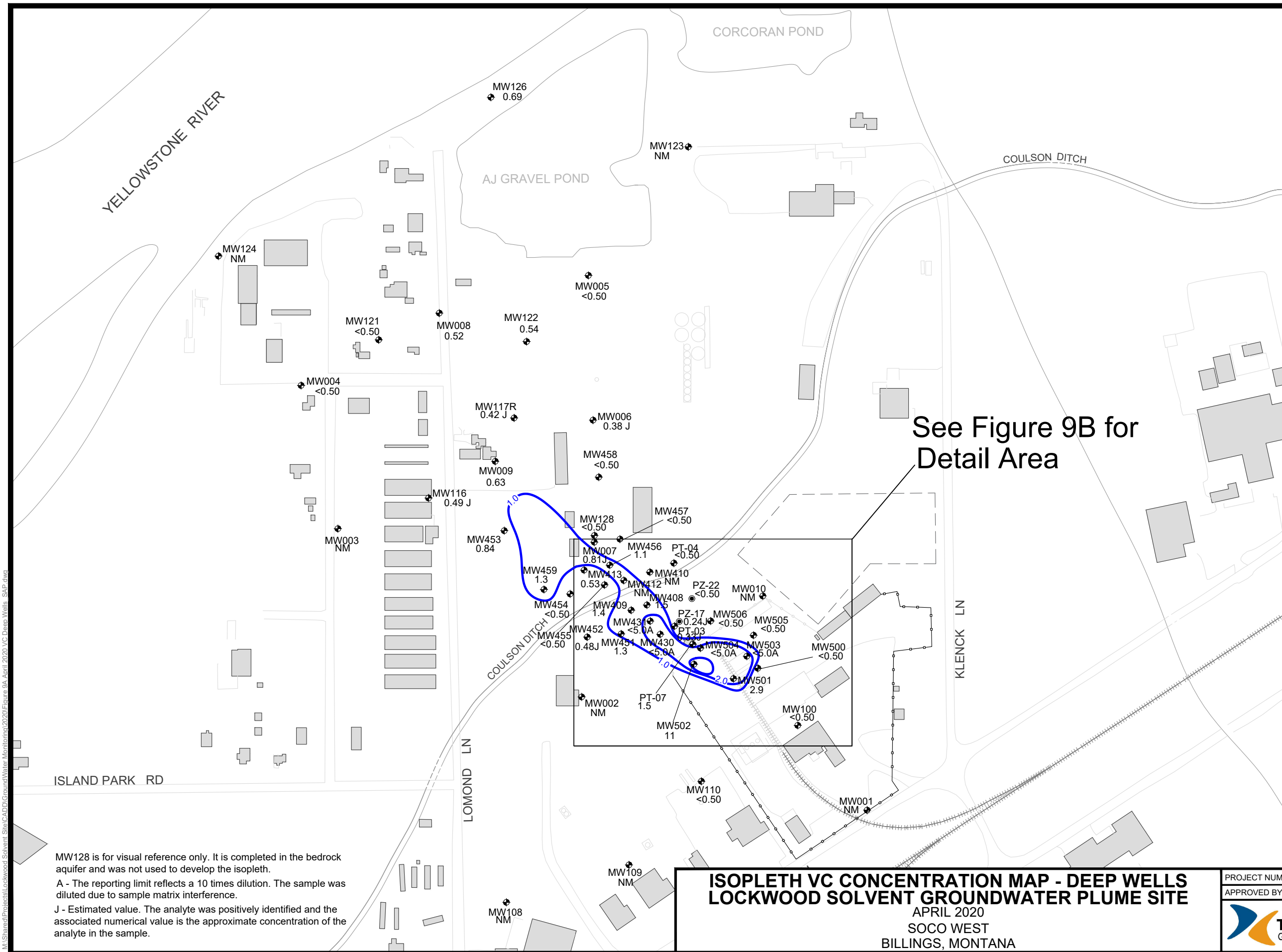
- Former Railroad Spur (Removed March 2017)
- Fence
- Former Fence Line
- Building
- Landfarm Treatment Cell Soil Berm
- Existing Concrete/Tank Farm
- Former Concrete/Asphalt Cover and Containment
- Monitoring Well Location
- Piezometer Location
- Surveyed Excavation Area Extent
- 1.0 DCE Concentration Contour
- DCE Inferred Concentration Contour
- 31 Analytical Results, DCE (µg/L)
- (1,500) Analytical Results - Deep Wells, DCE (µg/L). Visual reference only - not used to develop isopleth.
- NM Not Monitored



ISOPLETH DCE CONCENTRATION MAP - INTERMEDIATE WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/03/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	8C

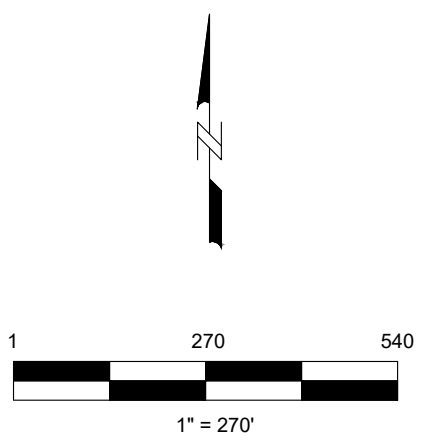
TASMAN GEOSCIENCES
 917 1st Avenue North
 Billings, Montana 59101-2048
 Ph: (406) 259-1033



LEGEND

- +++++ Railroad
- +++++ Former Railroad Spur (Removed March 2017)
- Fence
- Landfarm Treatment Cell (LTC) Boundary
- Tank Location
- Building
- Concrete/Asphalt Cover and Containment
- ⊕ Monitoring Well Location
- Piezometer Location
- 5.0 — VC Concentration Contour
- 61 Analytical Results, VC (µg/L)
- NM Not Monitored

See Figure 9B for
Detail Area

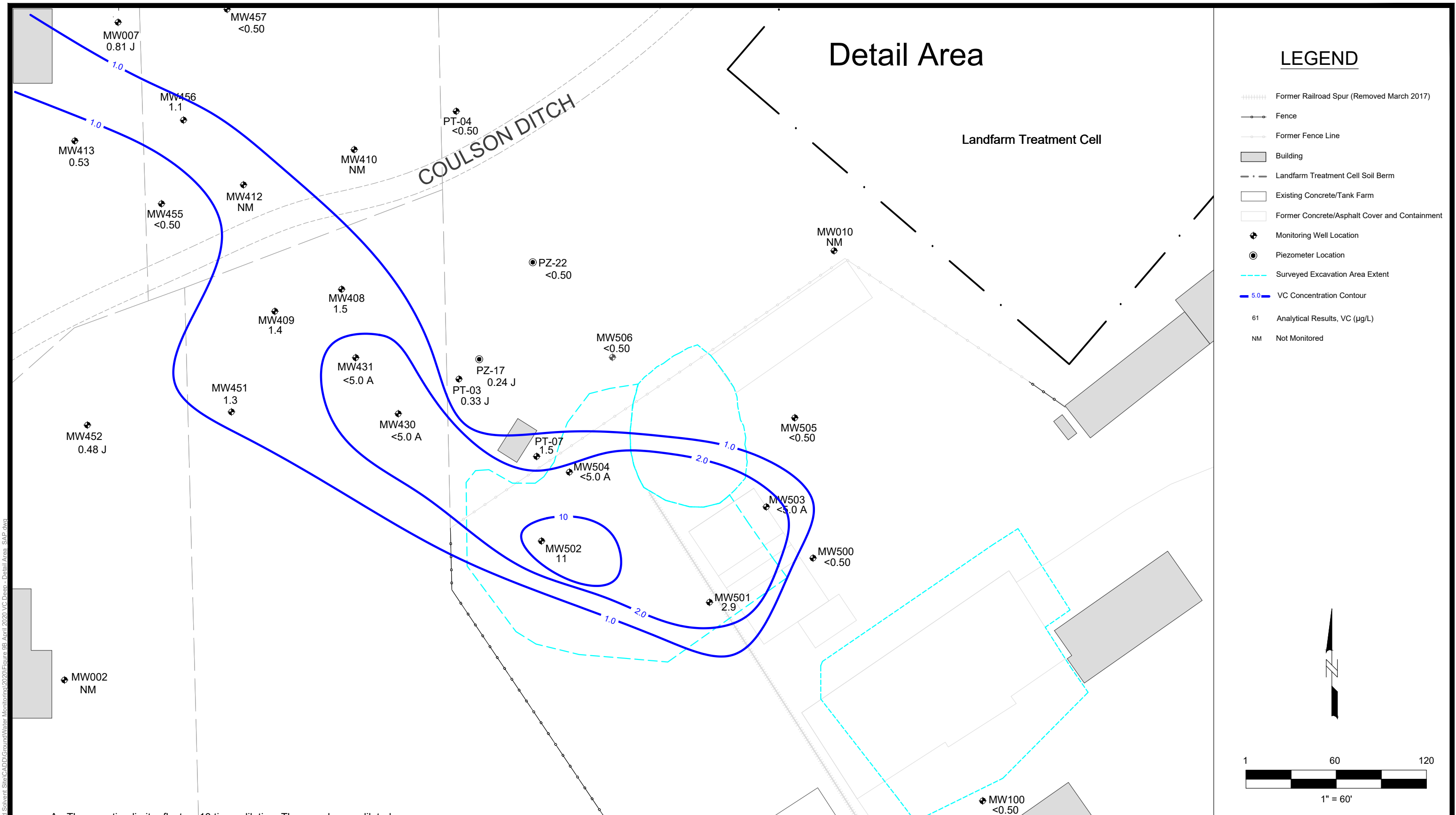


MW128 is for visual reference only. It is completed in the bedrock aquifer and was not used to develop the isopleth.
 A - The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.
 J - Estimated value. The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

**ISOPLETH VC CONCENTRATION MAP - DEEP WELLS
 LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

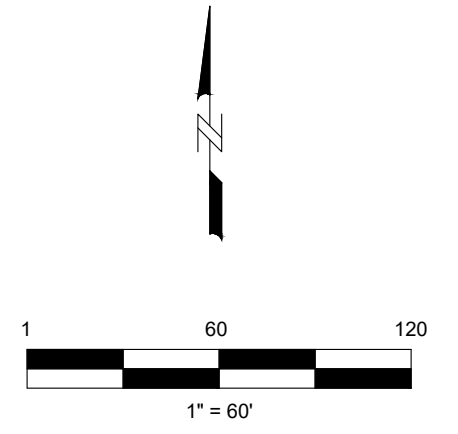
PROJECT NUMBER: 51.24884.0001	DATE: 08/26/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	9A
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 9A, April 2020, VC Deep Wells SAP.dwg



LEGEND

- Former Railroad Spur (Removed March 2017)
- Fence
- Former Fence Line
- Building
- - - Landfarm Treatment Cell Soil Berm
- Existing Concrete/Tank Farm
- Former Concrete/Asphalt Cover and Containment
- ⊕ Monitoring Well Location
- ⊙ Piezometer Location
- Surveyed Excavation Area Extent
- 5.0 VC Concentration Contour
- 61 Analytical Results, VC (µg/L)
- NM Not Monitored



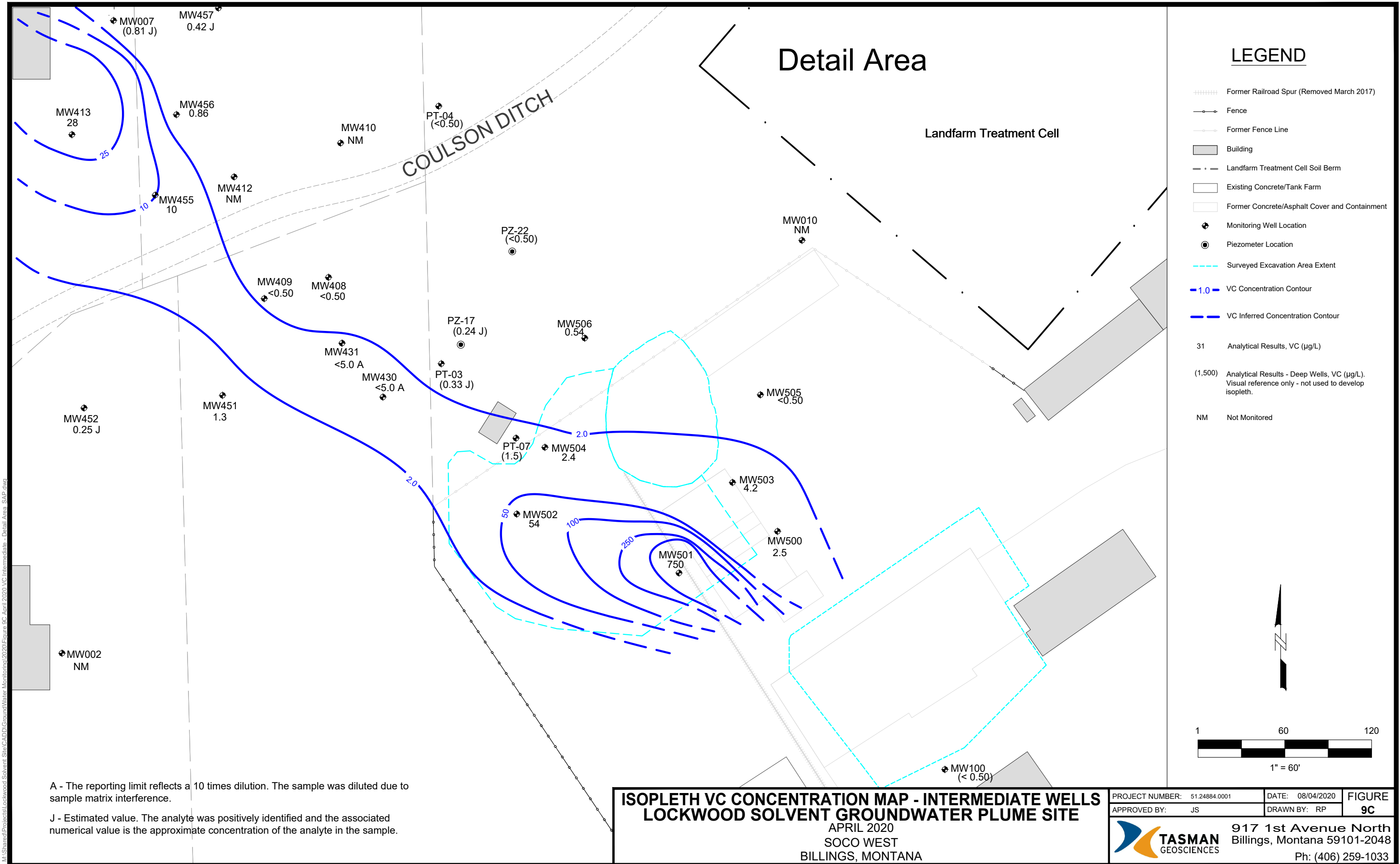
A - The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

J - Estimated value. The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

**ISOPLETH VC CONCENTRATION MAP - DEEP WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/03/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	9B
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

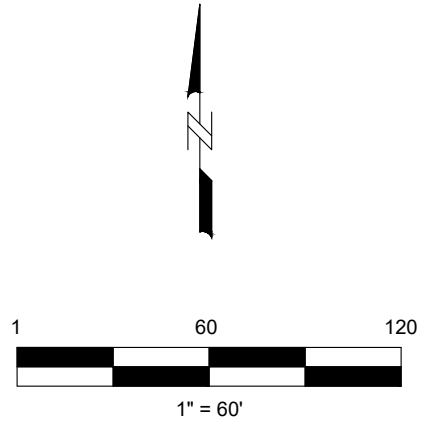
M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 9B_April 2020_VC_Deep - Detail Area_SAP.dwg



Detail Area

LEGEND

- Former Railroad Spur (Removed March 2017)
- Fence
- Former Fence Line
- Building
- Landfarm Treatment Cell Soil Berm
- Existing Concrete/Tank Farm
- Former Concrete/Asphalt Cover and Containment
- Monitoring Well Location
- Piezometer Location
- Surveyed Excavation Area Extent
- 1.0 VC Concentration Contour
- VC Inferred Concentration Contour
- 31 Analytical Results, VC (µg/L)
- (1,500) Analytical Results - Deep Wells, VC (µg/L). Visual reference only - not used to develop isopleth.
- NM Not Monitored



A - The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

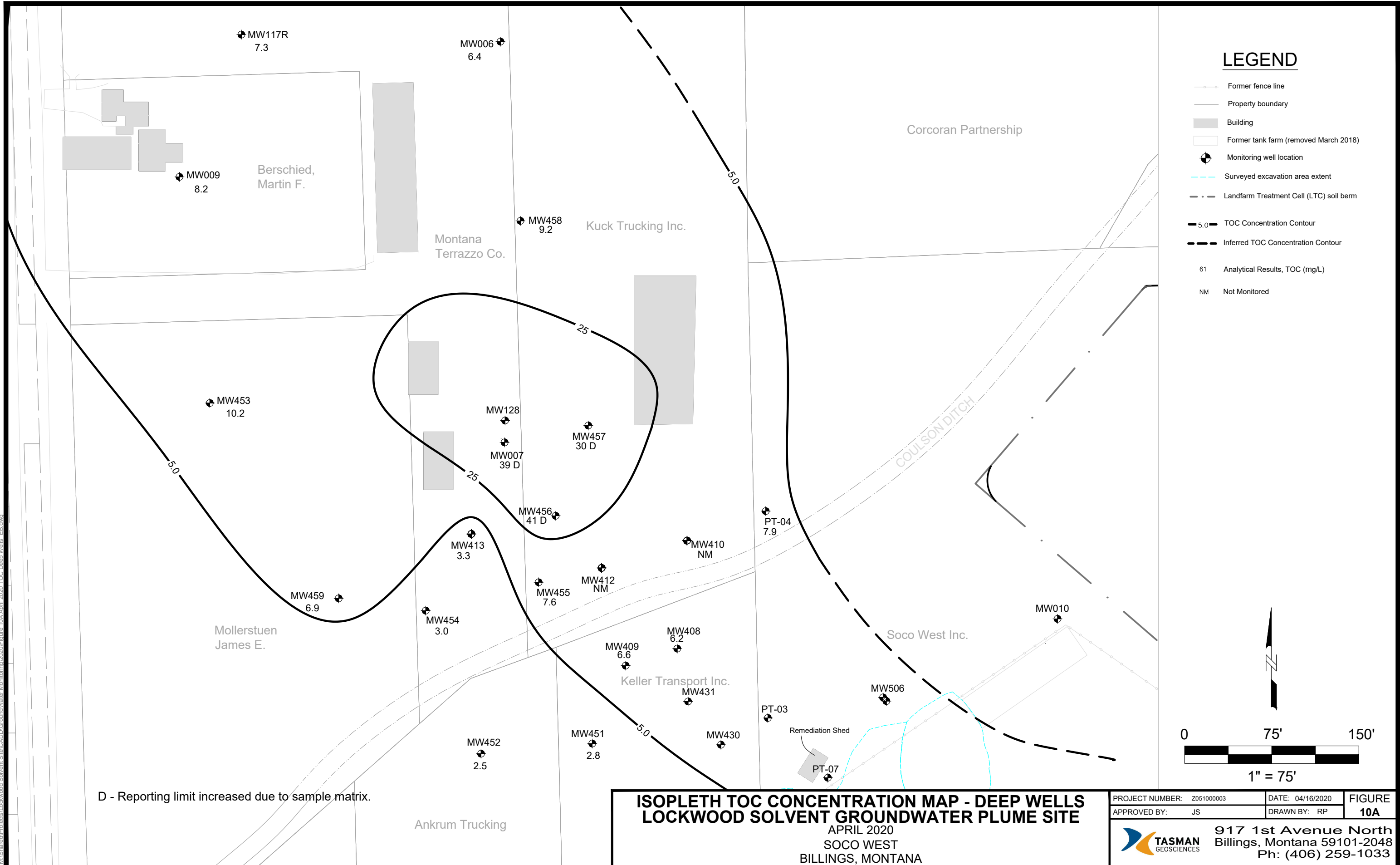
J - Estimated value. The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

**ISOPLETH VC CONCENTRATION MAP - INTERMEDIATE WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
APRIL 2020
SOCO WEST
BILLINGS, MONTANA

PROJECT NUMBER: 51.24884.0001	DATE: 08/04/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	9C
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

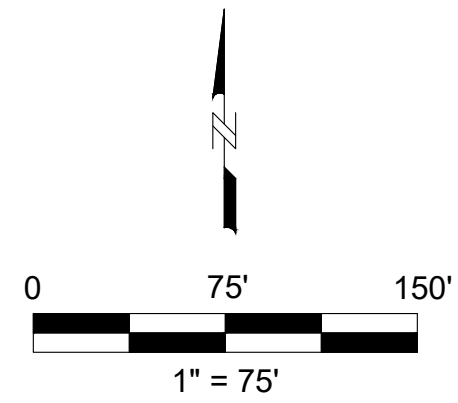
M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 9C_April 2020_VC Intermediate - Detail Area_SAP.dwg

M:\Shared\Projects\Lockwood Solvent Site\CADD\Groundwater Monitoring\2020\Figure 10A April 2020 TOC Deep Wells EB.dwg



LEGEND

- Former fence line
- Property boundary
- Building
- Former tank farm (removed March 2018)
- Monitoring well location
- Surveyed excavation area extent
- Landfarm Treatment Cell (LTC) soil berm
- 5.0 TOC Concentration Contour
- Inferred TOC Concentration Contour
- 61 Analytical Results, TOC (mg/L)
- NM Not Monitored

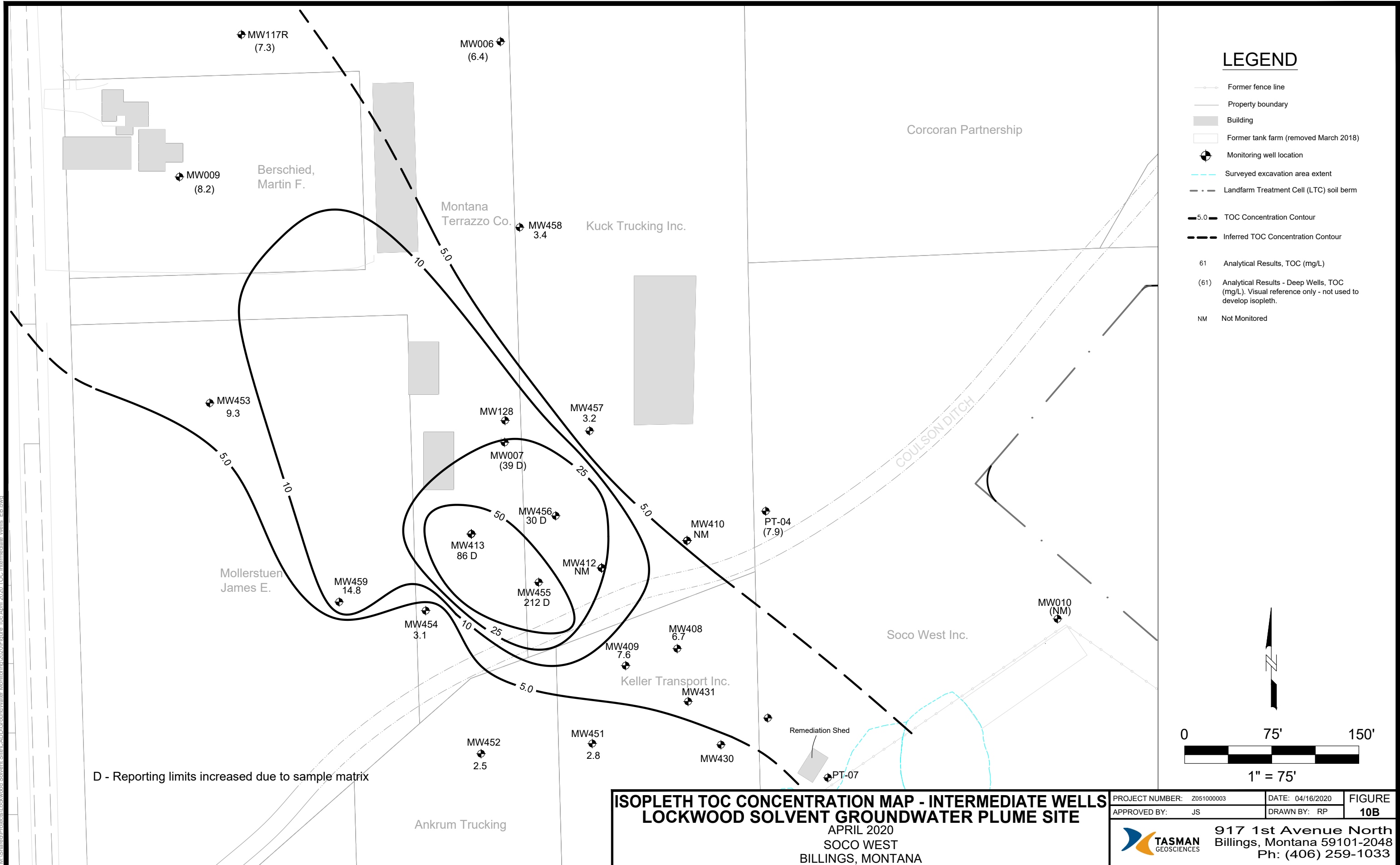


D - Reporting limit increased due to sample matrix.

ISOPLETH TOC CONCENTRATION MAP - DEEP WELLS
LOCKWOOD SOLVENT GROUNDWATER PLUME SITE
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

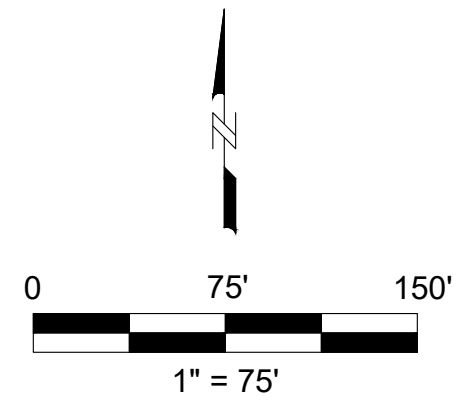
PROJECT NUMBER: 2051000003	DATE: 04/16/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	10A
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

M:\Shared\Projects\Lockwood Solvent\Site\CADD\GroundWater_Monitoring\2020\Figure 10c_April 2020_TOC Intermediate Wells_EB.dwg



LEGEND

- Former fence line
- Property boundary
- Building
- Former tank farm (removed March 2018)
- ⊕ Monitoring well location
- Surveyed excavation area extent
- - - Landfarm Treatment Cell (LTC) soil berm
- 5.0 — TOC Concentration Contour
- Inferred TOC Concentration Contour
- 61 Analytical Results, TOC (mg/L)
- (61) Analytical Results - Deep Wells, TOC (mg/L). Visual reference only - not used to develop isopleth.
- NM Not Monitored



D - Reporting limits increased due to sample matrix

**ISOPLETH TOC CONCENTRATION MAP - INTERMEDIATE WELLS
 LOCKWOOD SOLVENT GROUNDWATER PLUME SITE**
 APRIL 2020
 SOCO WEST
 BILLINGS, MONTANA

PROJECT NUMBER: 2051000003	DATE: 04/16/2020	FIGURE
APPROVED BY: JS	DRAWN BY: RP	10B
		917 1st Avenue North Billings, Montana 59101-2048 Ph: (406) 259-1033

Appendix A

April 2020 Groundwater Analytical Reports



ANALYTICAL SUMMARY REPORT

June 30, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20040570 Quote ID: B2871

Project Name: LSS Semi Annual GW

Energy Laboratories Inc Billings MT received the following 8 samples for Tasman Geosciences Inc on 4/8/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20040570-001	MW117RGW036	04/08/20 10:41	04/08/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20040570-002	MW006GW036	04/08/20 11:37	04/08/20	Aqueous	Same As Above
B20040570-003	MW409-D	04/08/20 12:38	04/08/20	Aqueous	Same As Above
B20040570-004	MW409-I	04/08/20 13:13	04/08/20	Aqueous	Same As Above
B20040570-005	MW408-D	04/08/20 14:06	04/08/20	Aqueous	Same As Above
B20040570-006	MW408-I	04/08/20 14:35	04/08/20	Aqueous	Same As Above
B20040570-007	PT-07GW036	04/08/20 15:28	04/08/20	Aqueous	Same As Above
B20040570-008	Trip Blank Lot03312020 B-JDB SHP0277	04/08/20 0:00	04/08/20	Trip Blank	8260-Volatile Organic Compounds- Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Tasman Geosciences Inc
Project: LSS Semi Annual GW
Work Order: B20040570

Revised Date: 06/30/20

Report Date: 04/17/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.

Revised Date: 6/30/2020

Revised Sample(s): MW408-D (B20040570-005)

On 6/29/2020 a request was received from Laura Heaton at Tasman Geosciences Inc. to revise this workorder by changing the collection time on the above sample from 13:45 to 14:06.

The report has been revised and replaces any previously issued report in its entirety.



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW117RGW036
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-001
Collection Date: 04/08/20 10:41
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	7.3	mg/L		0.5	0.2	A5310 C	04/14/20 00:15 / eli-c			SUB-C257335 : 8		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,1-Dichloroethane	0.47	ug/L	J	0.50	0.093	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,1-Dichloroethene	0.20	ug/L	J	0.50	0.15	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
cis-1,2-Dichloroethene	89	ug/L		10	2.5	SW8260B	04/14/20 06:44 / msc			5971A.I_200413B : 32		R340471
trans-1,2-Dichloroethene	1.2	ug/L		0.50	0.13	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW117RGW036
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-001
Collection Date: 04/08/20 10:41
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Tetrachloroethene	255	ug/L		10	2.2	SW8260B	04/14/20 06:44 / msc			5971A.I_200413B : 32		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Trichloroethene	31	ug/L		10	2.6	SW8260B	04/14/20 06:44 / msc			5971A.I_200413B : 32		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Vinyl chloride	0.42	ug/L	J	0.50	0.14	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Surr: 1,2-Dichloroethane-d4	106	%REC		70-130		SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Surr: Toluene-d8	98.0	%REC		79-122		SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471
Surr: p-Bromofluorobenzene	97.0	%REC		76-127		SW8260B	04/13/20 17:03 / msc			5971A.I_200413B : 8		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW006GW036
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-002
Collection Date: 04/08/20 11:37
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.4	mg/L		0.5	0.2	A5310 C	04/14/20 00:36 / eli-c			SUB-C257335 : 9		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,1-Dichloroethane	0.30	ug/L	J	0.50	0.093	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
cis-1,2-Dichloroethene	7.8	ug/L		0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
trans-1,2-Dichloroethene	0.31	ug/L	J	0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW006GW036
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-002
Collection Date: 04/08/20 11:37
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Tetrachloroethene	3.6	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Trichloroethene	1.1	ug/L		0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Vinyl chloride	0.38	ug/L	J	0.50	0.14	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Surr: 1,2-Dichloroethane-d4	105	%REC		70-130		SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Surr: Toluene-d8	102	%REC		79-122		SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471
Surr: p-Bromofluorobenzene	99.0	%REC		76-127		SW8260B	04/13/20 15:41 / msc			5971A.I_200413B : 5		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW409-D
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-003
Collection Date: 04/08/20 12:38
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.6	mg/L		0.5	0.2	A5310 C	04/14/20 00:58 / eli-c			SUB-C257335 : 10		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	0.28	ug/L	J	0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,1-Dichloroethane	0.75	ug/L		0.50	0.093	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,1-Dichloroethene	0.65	ug/L		0.50	0.15	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
cis-1,2-Dichloroethene	232	ug/L		25	6.4	SW8260B	04/14/20 05:21 / msc			5971A.I_200413B : 29		R340471
trans-1,2-Dichloroethene	1.9	ug/L		0.50	0.13	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW409-D
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-003
Collection Date: 04/08/20 12:38
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Tetrachloroethene	445	ug/L		25	5.4	SW8260B	04/14/20 05:21 / msc			5971A.I_200413B : 29		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Trichloroethene	115	ug/L		25	6.4	SW8260B	04/14/20 05:21 / msc			5971A.I_200413B : 29		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Vinyl chloride	1.4	ug/L		0.50	0.14	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Surr: 1,2-Dichloroethane-d4	103	%REC		70-130		SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471
Surr: p-Bromofluorobenzene	99.0	%REC		76-127		SW8260B	04/13/20 19:47 / msc			5971A.I_200413B : 14		R340471

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW409-I
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-004
Collection Date: 04/08/20 13:13
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	7.6	mg/L		0.5	0.2	A5310 C	04/14/20 02:13 / eli-c			SUB-C257335 : 11		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,1-Dichloroethane	0.27	ug/L	J	0.50	0.093	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
cis-1,2-Dichloroethene	87	ug/L		25	6.4	SW8260B	04/14/20 05:49 / msc			5971A.I_200413B : 30		R340471
trans-1,2-Dichloroethene	0.71	ug/L		0.50	0.13	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW409-I
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-004
Collection Date: 04/08/20 13:13
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Tetrachloroethene	332	ug/L		25	5.4	SW8260B	04/14/20 05:49 / msc			5971A.I_200413B : 30		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Trichloroethene	26	ug/L		5.0	1.3	SW8260B	04/14/20 23:13 / msc			5971A.I_200414A : 18		R340602
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Surr: 1,2-Dichloroethane-d4	109	%REC		70-130		SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Surr: Toluene-d8	97.0	%REC		79-122		SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/13/20 20:14 / msc			5971A.I_200413B : 15		R340471

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW408-D
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-005
Collection Date: 04/08/20 14:06
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.2	mg/L		0.5	0.2	A5310 C	04/14/20 03:18 / eli-c			SUB-C257335 : 14		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,1-Dichloroethane	0.41	ug/L	J	0.50	0.093	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,1-Dichloroethene	0.32	ug/L	J	0.50	0.15	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
cis-1,2-Dichloroethene	87	ug/L		25	6.4	SW8260B	04/14/20 06:16 / msc			5971A.I_200413B : 31		R340471
trans-1,2-Dichloroethene	0.83	ug/L		0.50	0.13	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW408-D
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-005
Collection Date: 04/08/20 14:06
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Tetrachloroethene	328	ug/L		25	5.4	SW8260B	04/14/20 06:16 / msc			5971A.I_200413B : 31		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Trichloroethene	60	ug/L		25	6.4	SW8260B	04/14/20 06:16 / msc			5971A.I_200413B : 31		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Vinyl chloride	1.5	ug/L		0.50	0.14	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471
Surr: p-Bromofluorobenzene	98.0	%REC		76-127		SW8260B	04/13/20 20:41 / msc			5971A.I_200413B : 16		R340471

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW408-I
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-006
Collection Date: 04/08/20 14:35
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.7	mg/L		0.5	0.2	A5310 C	04/14/20 03:38 / eli-c			SUB-C257335 : 15		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
cis-1,2-Dichloroethene	37	ug/L		5.0	1.3	SW8260B	04/14/20 08:05 / msc			5971A.I_200413B : 35		R340471
trans-1,2-Dichloroethene	0.35	ug/L	J	0.50	0.13	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW408-I
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-006
Collection Date: 04/08/20 14:35
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Tetrachloroethene	182	ug/L		5.0	1.1	SW8260B	04/14/20 08:05 / msc			5971A.I_200413B : 35		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Trichloroethene	19	ug/L		0.50	0.13	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Surr: 1,2-Dichloroethane-d4	107	%REC		70-130		SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Surr: Toluene-d8	99.0	%REC		79-122		SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/13/20 19:19 / msc			5971A.I_200413B : 13		R340471

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: PT-07GW036
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-007
Collection Date: 04/08/20 15:28
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.5	mg/L		0.5	0.2	A5310 C	04/14/20 03:59 / eli-c			SUB-C257335 : 16		C_R257335
VOLATILE ORGANIC COMPOUNDS												
Benzene	0.31	ug/L	J	0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,1-Dichloroethane	0.31	ug/L	J	0.50	0.093	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,1-Dichloroethene	0.31	ug/L	J	0.50	0.15	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
cis-1,2-Dichloroethene	43	ug/L		5.0	1.3	SW8260B	04/13/20 22:31 / msc			5971A.I_200413B : 19		R340471
trans-1,2-Dichloroethene	0.84	ug/L		0.50	0.13	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: PT-07GW036
Project: LSS Semi Annual GW
Matrix: Aqueous

Lab ID: B20040570-007
Collection Date: 04/08/20 15:28
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Tetrachloroethene	569	ug/L		50	11	SW8260B	04/14/20 04:54 / msc			5971A.I_200413B : 28		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Trichloroethene	62	ug/L		5.0	1.3	SW8260B	04/13/20 22:31 / msc			5971A.I_200413B : 19		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Vinyl chloride	1.5	ug/L		0.50	0.14	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Surr: 1,2-Dichloroethane-d4	107	%REC		70-130		SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Surr: Toluene-d8	93.0	%REC		79-122		SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630
Surr: p-Bromofluorobenzene	104	%REC		76-127		SW8260B	04/15/20 22:27 / msc			5971A.I_200415B : 9		R340630

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi Annual GW
Matrix: Trip Blank

Lab ID: B20040570-008
Collection Date: 04/08/20
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi Annual GW
Matrix: Trip Blank

Lab ID: B20040570-008
Collection Date: 04/08/20
Date Received: 04/08/20
Report Date: 04/17/20 **Revised Date:** 06/30/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Trichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Surr: Dibromofluoromethane	101	%REC			77-126	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Surr: 1,2-Dichloroethane-d4	106	%REC			70-130	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Surr: Toluene-d8	95.0	%REC			79-122	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471
Surr: p-Bromofluorobenzene	103	%REC			76-127	SW8260B	04/13/20 21:36 / msc			5971A.I_200413B : 17		R340471

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: C_R257335

Date: 17-Apr-20

Run ID :Run Order: SUB-C257335: 1		SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C	
Analysis Date: 04/13/20 15:30		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.16	0.50	5	0	103	90	109	0			

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Run ID :Run Order: SUB-C257335: 2		SampType: Method Blank				Lab ID: MBLK				Method: A5310 C	
Analysis Date: 04/13/20 16:05		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Run ID :Run Order: SUB-C257335: 5		SampType: Sample Matrix Spike				Lab ID: B20040508-0011				Method: A5310 C	
Analysis Date: 04/13/20 17:01		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	49.5	2.0	20	25.54	120	90	109	0			S

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Run ID :Run Order: SUB-C257335: 6		SampType: Sample Matrix Spike Duplicate				Lab ID: B20040508-0011				Method: A5310 C	
Analysis Date: 04/13/20 17:28		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	49.8	2.0	20	25.54	121	90	109	49.53	0.5	20	S

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Run ID :Run Order: SUB-C257335: 7		SampType: Continuing Calibration Verification Standar				Lab ID: CCV-11020				Method: A5310 C	
Analysis Date: 04/13/20 21:08		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.88	0.50	5	0	98	90	110	0			

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: C_R257335

Date: 17-Apr-20

Run ID :Run Order: SUB-C257335: 12	SampType: Sample Matrix Spike				Lab ID: C20040418-004AMS				Method: A5310 C		
Analysis Date: 04/14/20 02:34	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	13.1	0.50	5	7.62	110	90	109	0			S

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Run ID :Run Order: SUB-C257335: 13	SampType: Sample Matrix Spike Duplicate				Lab ID: C20040418-004AMSD				Method: A5310 C		
Analysis Date: 04/14/20 02:56	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	12.7	0.50	5	7.62	101	90	109	13.1	3.1	20	

Associated samples: **B20040570-001A, B20040570-002A, B20040570-003A, B20040570-004A, B20040570-005A, B20040570-006A, B20040570-007A**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 1		SampType: MS Tuning File			Lab ID: 13APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/13/20 12:37		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	19.1		100	0	19.1	15	40				
75, % of mass 95	41.6		100	0	41.6	30	60				
96, % of mass 95	6.80		100	0	6.8	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	74.1		100	0	74.1	50	99.99				
175, % of mass 174	7.50		100	0	7.5	5	9				
176, % of mass 174	97.1		100	0	97.1	95	101				
177, % of mass 176	6.90		100	0	6.9	5	9				

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Run ID :Run Order: 5971A.I_200413B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041320			Method: SW8260B			
Analysis Date: 04/13/20 13:27		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.87	0.50	5	0	97	70	130				
Bromobenzene	4.86	0.50	5	0	97	70	130				
Bromochloromethane	4.86	0.50	5	0	97	70	130				
Bromodichloromethane	4.93	0.50	5	0	99	70	130				
Bromoform	5.00	0.50	5	0	100	70	130				
Bromomethane	5.50	0.50	5	0	110	70	130				
n-Butylbenzene	4.68	0.50	5	0	94	70	130				
sec-Butylbenzene	4.72	0.50	5	0	94	70	130				
tert-Butylbenzene	4.67	0.50	5	0	93	70	130				
Carbon tetrachloride	5.25	0.50	5	0	105	70	130				
Chlorobenzene	4.54	0.50	5	0	91	70	130				
Chlorodibromomethane	4.81	0.50	5	0	96	70	130				
Chloroethane	5.08	0.50	5	0	102	70	130				
Chloroform	4.89	0.50	5	0	98	80	120				
Chloromethane	5.30	0.50	5	0	106	70	130				
1,2-Dibromo-3-chloropropane	5.13	1.0	5	0	103	70	130				
1,2-Dibromoethane	4.63	0.50	5	0	93	70	130				
2-Chlorotoluene	4.74	0.50	5	0	95	70	130				
Dibromomethane	4.77	0.50	5	0	95	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200413B: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041320**

Method: **SW8260B**

Analysis Date: **04/13/20 13:27**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.71	0.50	5	0	94	70	130				
4-Chlorotoluene	4.98	0.50	5	0	100	70	130				
1,3-Dichlorobenzene	4.69	0.50	5	0	94	70	130				
1,4-Dichlorobenzene	4.77	0.50	5	0	95	70	130				
Dichlorodifluoromethane	5.59	0.50	5	0	112	70	130				
1,1-Dichloroethane	5.06	0.50	5	0	101	70	130				
1,2-Dichloroethane	5.18	0.50	5	0	104	70	130				
1,1-Dichloroethene	4.99	0.50	5	0	100	80	120				
cis-1,2-Dichloroethene	4.84	0.50	5	0	97	70	130				
trans-1,2-Dichloroethene	4.92	0.50	5	0	98	70	130				
1,2-Dichloropropane	4.72	0.50	5	0	94	80	120				
1,3-Dichloropropane	4.76	0.50	5	0	95	70	130				
2,2-Dichloropropane	5.65	0.50	5	0	113	70	130				
1,1-Dichloropropene	5.13	0.50	5	0	103	70	130				
cis-1,3-Dichloropropene	4.93	0.50	5	0	99	70	130				
trans-1,3-Dichloropropene	5.00	0.50	5	0	100	70	130				
Ethylbenzene	4.77	0.50	5	0	95	80	120				
Hexachlorobutadiene	5.14	0.50	5	0	103	70	130				
Isopropylbenzene	4.78	0.50	5	0	96	70	130				
p-Isopropyltoluene	4.63	0.50	5	0	93	70	130				
Methyl tert-butyl ether (MTBE)	5.06	0.50	5	0	101	70	130				
Methylene chloride	4.68	0.50	5	0	94	70	130				
Naphthalene	5.20	0.50	5	0	104	70	130				
n-Propylbenzene	4.61	0.50	5	0	92	70	130				
Styrene	4.64	0.50	5	0	93	70	130				
1,1,1,2-Tetrachloroethane	4.74	0.50	5	0	95	70	130				
1,1,2,2-Tetrachloroethane	4.82	0.50	5	0	96	70	130				
Tetrachloroethene	4.94	0.50	5	0	99	70	130				
Toluene	4.71	0.50	5	0	94	80	120				
1,2,3-Trichlorobenzene	4.64	0.50	5	0	93	70	130				
1,2,4-Trichlorobenzene	5.13	0.50	5	0	103	70	130				
1,1,1-Trichloroethane	5.28	0.50	5	0	106	70	130				
1,1,2-Trichloroethane	4.70	0.50	5	0	94	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200413B: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041320**

Method: **SW8260B**

Analysis Date: **04/13/20 13:27**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.84	0.50	5	0	97	70	130				
Trichlorofluoromethane	5.38	0.50	5	0	108	70	130				
1,2,3-Trichloropropane	4.99	0.50	5	0	100	70	130				
1,2,4-Trimethylbenzene	4.81	0.50	5	0	96	70	130				
1,3,5-Trimethylbenzene	4.85	0.50	5	0	97	70	130				
Vinyl chloride	5.21	0.50	5	0	104	80	120				
m+p-Xylenes	9.46	0.50	10	0	95	70	130				
o-Xylene	4.73	0.50	5	0	95	70	130				
Xylenes, Total	14.2	0.50	15	0	95	70	130				
Surr: 1,2-Dichloroethane-d4	10.5	0.50	10	0	105	70	130				
Surr: Dibromofluoromethane	10.2	0.50	10	0	102	77	126				
Surr: p-Bromofluorobenzene	9.61	0.50	10	0	96	76	127				
Surr: Toluene-d8	9.72	0.50	10	0	97	79	122				

Associated samples: **B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A**

Run ID :Run Order: **5971A.I_200413B: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS041320**

Method: **SW8260B**

Analysis Date: **04/13/20 14:09**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.56	0.50	5	0	91	71	133				
Bromobenzene	5.09	0.50	5	0	102	78	133				
Bromochloromethane	4.61	0.50	5	0	92	68	131				
Bromodichloromethane	5.11	0.50	5	0	102	67	138				
Bromoform	5.30	0.50	5	0	106	64	136				
Bromomethane	5.55	0.50	5	0	111	60	138				
n-Butylbenzene	5.15	0.50	5	0	103	72	135				
sec-Butylbenzene	5.12	0.50	5	0	102	73	135				
tert-Butylbenzene	5.12	0.50	5	0	102	69	137				
Carbon tetrachloride	4.96	0.50	5	0	99	61	144				
Chlorobenzene	4.83	0.50	5	0	97	78	136				
Chlorodibromomethane	5.27	0.50	5	0	105	72	136				
Chloroethane	5.27	0.50	5	0	105	64	136				
Chloroform	4.83	0.50	5	0	97	69	133				
Chloromethane	4.99	0.50	5	0	100	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 3	SampType: Laboratory Control Sample				Lab ID: LCS041320			Method: SW8260B			
Analysis Date: 04/13/20 14:09	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	5.62	1.0	5	0	112	63	125				
1,2-Dibromoethane	4.81	0.50	5	0	96	75	131				
2-Chlorotoluene	4.87	0.50	5	0	97	74	135				
Dibromomethane	4.83	0.50	5	0	97	72	133				
1,2-Dichlorobenzene	5.11	0.50	5	0	102	78	129				
4-Chlorotoluene	5.27	0.50	5	0	105	79	135				
1,3-Dichlorobenzene	5.24	0.50	5	0	105	79	132				
1,4-Dichlorobenzene	5.14	0.50	5	0	103	78	131				
Dichlorodifluoromethane	5.59	0.50	5	0	112	55	141				
1,1-Dichloroethane	4.61	0.50	5	0	92	72	130				
1,2-Dichloroethane	4.97	0.50	5	0	99	57	146				
1,1-Dichloroethene	3.75	0.50	5	0	75	66	142				
cis-1,2-Dichloroethene	4.54	0.50	5	0	91	74	133				
trans-1,2-Dichloroethene	4.47	0.50	5	0	89	76	138				
1,2-Dichloropropane	4.74	0.50	5	0	95	72	135				
1,3-Dichloropropane	4.77	0.50	5	0	95	75	134				
2,2-Dichloropropane	5.25	0.50	5	0	105	42	167				
1,1-Dichloropropene	4.68	0.50	5	0	94	72	140				
cis-1,3-Dichloropropene	4.97	0.50	5	0	99	75	132				
trans-1,3-Dichloropropene	5.16	0.50	5	0	103	77	145				
Ethylbenzene	4.95	0.50	5	0	99	78	131				
Hexachlorobutadiene	5.94	0.50	5	0	119	65	141				
Isopropylbenzene	5.24	0.50	5	0	105	72	135				
p-Isopropyltoluene	4.82	0.50	5	0	96	71	134				
Methyl tert-butyl ether (MTBE)	4.98	0.50	5	0	100	58	151				
Methylene chloride	4.13	0.50	5	0	83	73	126				
Naphthalene	6.09	0.50	5	0	122	55	139				
n-Propylbenzene	5.14	0.50	5	0	103	70	139				
Styrene	4.97	0.50	5	0	99	76	134				
1,1,1,2-Tetrachloroethane	5.14	0.50	5	0	103	75	135				
1,1,2,2-Tetrachloroethane	5.36	0.50	5	0	107	72	132				
Tetrachloroethene	4.86	0.50	5	0	97	78	137				
Toluene	4.67	0.50	5	0	93	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 3		SampType: Laboratory Control Sample			Lab ID: LCS041320			Method: SW8260B			
Analysis Date: 04/13/20 14:09		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.46	0.50	5	0	109	42	152				
1,2,4-Trichlorobenzene	5.50	0.50	5	0	110	58	142				
1,1,1-Trichloroethane	4.60	0.50	5	0	92	64	141				
1,1,2-Trichloroethane	4.91	0.50	5	0	98	72	133				
Trichloroethene	4.61	0.50	5	0	92	75	138				
Trichlorofluoromethane	5.24	0.50	5	0	105	58	139				
1,2,3-Trichloropropane	5.17	0.50	5	0	103	67	133				
1,2,4-Trimethylbenzene	4.90	0.50	5	0	98	71	129				
1,3,5-Trimethylbenzene	5.05	0.50	5	0	101	68	135				
Vinyl chloride	5.21	0.50	5	0	104	66	140				
m+p-Xylenes	10.0	0.50	10	0	100	78	133				
o-Xylene	5.03	0.50	5	0	101	79	136				
Xylenes, Total	15.1	0.50	15	0	100	78	136				
Surr: 1,2-Dichloroethane-d4	10.5	0.50	10	0	105	70	130				
Surr: Dibromofluoromethane	9.97	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	9.67	0.50	10	0	97	76	127				
Surr: Toluene-d8	9.84	0.50	10	0	98	79	122				

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Run ID :Run Order: 5971A.I_200413B: 4		SampType: Method Blank			Lab ID: MBLK041320			Method: SW8260B			
Analysis Date: 04/13/20 15:04		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200413B: 4**

SampType: **Method Blank**

Lab ID: **MBLK041320**

Method: **SW8260B**

Analysis Date: **04/13/20 15:04**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 4		SampType: Method Blank			Lab ID: MBLK041320				Method: SW8260B		
Analysis Date: 04/13/20 15:04		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	10.4	0.50	10	0	104	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.71	0.50	10	0	97	76	127				
Surr: Toluene-d8	9.47	0.50	10	0	95	79	122				

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Run ID :Run Order: 5971A.I_200413B: 22		SampType: Sample Matrix Spike			Lab ID: B20040571-004AMS				Method: SW8260B		
Analysis Date: 04/13/20 23:53		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	22.5	2.5	25	0	90	71	133				
Bromobenzene	25.7	2.5	25	0	103	78	133				
Bromochloromethane	22.8	2.5	25	0	91	68	131				
Bromodichloromethane	24.5	2.5	25	0	98	67	138				
Bromoform	25.2	2.5	25	0	101	64	136				
Bromomethane	29.5	2.5	25	0	118	60	138				
n-Butylbenzene	27.9	2.5	25	0	111	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 22	SampType: Sample Matrix Spike				Lab ID: B20040571-004AMS			Method: SW8260B			
Analysis Date: 04/13/20 23:53	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	27.4	2.5	25	0	110	73	135				
tert-Butylbenzene	26.5	2.5	25	0	106	69	137				
Carbon tetrachloride	23.7	2.5	25	0	95	61	144				
Chlorobenzene	22.8	2.5	25	0	91	78	136				
Chlorodibromomethane	24.9	2.5	25	0	100	72	136				
Chloroethane	28.6	2.5	25	0	114	64	136				
Chloroform	24.1	2.5	25	0	96	69	133				
Chloromethane	27.1	2.5	25	0	108	63	149				
1,2-Dibromo-3-chloropropane	28.0	5.0	25	0	112	63	125				
1,2-Dibromoethane	22.6	2.5	25	0	90	75	131				
2-Chlorotoluene	26.5	2.5	25	0	106	74	135				
Dibromomethane	22.9	2.5	25	0	92	72	133				
1,2-Dichlorobenzene	26.3	2.5	25	0	105	78	129				
4-Chlorotoluene	27.0	2.5	25	0	108	79	135				
1,3-Dichlorobenzene	25.3	2.5	25	0	101	79	132				
1,4-Dichlorobenzene	25.8	2.5	25	0	103	78	131				
Dichlorodifluoromethane	29.9	2.5	25	0	119	55	141				
1,1-Dichloroethane	23.1	2.5	25	0	92	72	130				
1,2-Dichloroethane	26.0	2.5	25	0	104	57	146				
1,1-Dichloroethene	18.9	2.5	25	0	76	66	142				
cis-1,2-Dichloroethene	54.9	2.5	25	32.42	90	74	133				
trans-1,2-Dichloroethene	22.2	2.5	25	0	89	76	138				
1,2-Dichloropropane	23.0	2.5	25	0	92	72	135				
1,3-Dichloropropane	22.8	2.5	25	0	91	75	134				
2,2-Dichloropropane	23.0	2.5	25	0	92	42	167				
1,1-Dichloropropene	22.3	2.5	25	0	89	72	140				
cis-1,3-Dichloropropene	23.7	2.5	25	0	95	75	132				
trans-1,3-Dichloropropene	24.3	2.5	25	0	97	77	145				
Ethylbenzene	23.9	2.5	25	0	96	78	131				
Hexachlorobutadiene	24.6	2.5	25	0	98	65	141				
Isopropylbenzene	27.8	2.5	25	0	111	72	135				
p-Isopropyltoluene	26.9	2.5	25	0	108	71	134				
Methyl tert-butyl ether (MTBE)	26.4	2.5	25	0	105	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 22		SampType: Sample Matrix Spike			Lab ID: B20040571-004AMS			Method: SW8260B			
Analysis Date: 04/13/20 23:53		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	22.6	2.5	25	0	90	73	126				
Naphthalene	28.3	2.5	25	0	113	55	139				
n-Propylbenzene	26.5	2.5	25	0	106	70	139				
Styrene	23.8	2.5	25	0	95	76	134				
1,1,1,2-Tetrachloroethane	23.5	2.5	25	0	94	75	135				
1,1,2,2-Tetrachloroethane	27.9	2.5	25	0	112	72	132				
Tetrachloroethene	44.1	2.5	25	22.92	85	78	137				
Toluene	23.1	2.5	25	0	93	78	134				
1,2,3-Trichlorobenzene	25.7	2.5	25	0	103	42	152				
1,2,4-Trichlorobenzene	25.5	2.5	25	0	102	58	142				
1,1,1-Trichloroethane	23.4	2.5	25	0	94	64	141				
1,1,2-Trichloroethane	24.2	2.5	25	0	97	72	133				
Trichloroethene	27.1	2.5	25	4.775	89	75	138				
Trichlorofluoromethane	26.9	2.5	25	0	108	58	139				
1,2,3-Trichloropropane	26.6	2.5	25	0	106	67	133				
1,2,4-Trimethylbenzene	25.6	2.5	25	0	102	71	129				
1,3,5-Trimethylbenzene	25.9	2.5	25	0	104	68	135				
Vinyl chloride	27.8	2.5	25	0	111	66	140				
m+p-Xylenes	47.1	2.5	50	0	94	78	133				
o-Xylene	24.7	2.5	25	0	99	79	136				
Xylenes, Total	71.8	2.5	75	0	96	78	136				
Surr: 1,2-Dichloroethane-d4	52.6	2.5	50	0	105	70	130				
Surr: Dibromofluoromethane	49.6	2.5	50	0	99	77	126				
Surr: p-Bromofluorobenzene	49.2	2.5	50	0	98	76	127				
Surr: Toluene-d8	47.4	2.5	50	0	95	79	122				

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Run ID :Run Order: 5971A.I_200413B: 23		SampType: Sample Matrix Spike Duplicate			Lab ID: B20040571-004AMSD			Method: SW8260B			
Analysis Date: 04/14/20 00:20		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	23.4	2.5	25	0	93	71	133	22.51	3.7	20	
Bromobenzene	25.9	2.5	25	0	103	78	133	25.69	0.7	20	
Bromochloromethane	23.2	2.5	25	0	93	68	131	22.83	1.7	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 23	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040571-004AMSD				Method: SW8260B		
Analysis Date: 04/14/20 00:20	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	26.0	2.5	25	0	104	67	138	24.51	5.7	20	
Bromoform	26.1	2.5	25	0	104	64	136	25.22	3.5	20	
Bromomethane	30.9	2.5	25	0	124	60	138	29.46	4.8	20	
n-Butylbenzene	27.9	2.5	25	0	111	72	135	27.86	0.0	20	
sec-Butylbenzene	28.1	2.5	25	0	112	73	135	27.4	2.6	20	
tert-Butylbenzene	25.9	2.5	25	0	104	69	137	26.53	2.4	20	
Carbon tetrachloride	24.6	2.5	25	0	98	61	144	23.67	3.7	20	
Chlorobenzene	24.1	2.5	25	0	96	78	136	22.81	5.6	20	
Chlorodibromomethane	25.5	2.5	25	0	102	72	136	24.94	2.0	20	
Chloroethane	28.7	2.5	25	0	115	64	136	28.57	0.6	20	
Chloroform	24.2	2.5	25	0	97	69	133	24.08	0.4	20	
Chloromethane	27.8	2.5	25	0	111	63	149	27.1	2.7	20	
1,2-Dibromo-3-chloropropane	29.2	5.0	25	0	117	63	125	28.04	4.0	20	
1,2-Dibromoethane	24.2	2.5	25	0	97	75	131	22.61	6.8	20	
2-Chlorotoluene	26.0	2.5	25	0	104	74	135	26.47	1.7	20	
Dibromomethane	23.8	2.5	25	0	95	72	133	22.91	3.8	20	
1,2-Dichlorobenzene	26.2	2.5	25	0	105	78	129	26.28	0.3	20	
4-Chlorotoluene	28.1	2.5	25	0	113	79	135	26.96	4.3	20	
1,3-Dichlorobenzene	26.6	2.5	25	0	106	79	132	25.29	5.0	20	
1,4-Dichlorobenzene	25.8	2.5	25	0	103	78	131	25.8	0.1	20	
Dichlorodifluoromethane	30.4	2.5	25	0	122	55	141	29.87	1.9	20	
1,1-Dichloroethane	23.6	2.5	25	0	95	72	130	23.08	2.4	20	
1,2-Dichloroethane	26.8	2.5	25	0	107	57	146	26.04	2.9	20	
1,1-Dichloroethene	19.6	2.5	25	0	78	66	142	18.9	3.6	20	
cis-1,2-Dichloroethene	56.5	2.5	25	32.42	96	74	133	54.87	2.9	20	
trans-1,2-Dichloroethene	22.5	2.5	25	0	90	76	138	22.16	1.6	20	
1,2-Dichloropropane	24.1	2.5	25	0	96	72	135	22.97	4.8	20	
1,3-Dichloropropane	23.7	2.5	25	0	95	75	134	22.81	3.6	20	
2,2-Dichloropropane	23.7	2.5	25	0	95	42	167	23.04	3.0	20	
1,1-Dichloropropene	23.6	2.5	25	0	94	72	140	22.29	5.5	20	
cis-1,3-Dichloropropene	24.5	2.5	25	0	98	75	132	23.72	3.2	20	
trans-1,3-Dichloropropene	24.3	2.5	25	0	97	77	145	24.3	0.1	20	
Ethylbenzene	24.4	2.5	25	0	98	78	131	23.89	2.3	20	

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 23	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040571-004AMSD				Method: SW8260B		
Analysis Date: 04/14/20 00:20	Units: ug/L		Prep Info:			Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	29.6	2.5	25	0	118	65	141	24.62	18	20	
Isopropylbenzene	28.3	2.5	25	0	113	72	135	27.82	1.8	20	
p-Isopropyltoluene	26.8	2.5	25	0	107	71	134	26.91	0.3	20	
Methyl tert-butyl ether (MTBE)	25.9	2.5	25	0	104	58	151	26.37	1.7	20	
Methylene chloride	23.4	2.5	25	0	94	73	126	22.61	3.6	20	
Naphthalene	30.7	2.5	25	0	123	55	139	28.33	8.0	20	
n-Propylbenzene	26.2	2.5	25	0	105	70	139	26.47	0.9	20	
Styrene	24.7	2.5	25	0	99	76	134	23.81	3.7	20	
1,1,1,2-Tetrachloroethane	24.4	2.5	25	0	97	75	135	23.49	3.6	20	
1,1,2,2-Tetrachloroethane	28.4	2.5	25	0	114	72	132	27.89	1.7	20	
Tetrachloroethene	45.8	2.5	25	22.92	91	78	137	44.05	3.8	20	
Toluene	24.1	2.5	25	0	96	78	134	23.13	4.1	20	
1,2,3-Trichlorobenzene	28.5	2.5	25	0	114	42	152	25.68	10	20	
1,2,4-Trichlorobenzene	26.6	2.5	25	0	106	58	142	25.53	4.1	20	
1,1,1-Trichloroethane	24.1	2.5	25	0	96	64	141	23.43	2.9	20	
1,1,2-Trichloroethane	25.1	2.5	25	0	100	72	133	24.17	3.8	20	
Trichloroethene	27.8	2.5	25	4.775	92	75	138	27.06	2.5	20	
Trichlorofluoromethane	27.4	2.5	25	0	110	58	139	26.93	1.8	20	
1,2,3-Trichloropropane	26.6	2.5	25	0	106	67	133	26.61	0.0	20	
1,2,4-Trimethylbenzene	26.5	2.5	25	0	106	71	129	25.56	3.5	20	
1,3,5-Trimethylbenzene	27.5	2.5	25	0	110	68	135	25.88	6.2	20	
Vinyl chloride	28.2	2.5	25	0	113	66	140	27.8	1.4	20	
m+p-Xylenes	50.3	2.5	50	0	101	78	133	47.06	6.7	20	
o-Xylene	25.4	2.5	25	0	102	79	136	24.72	2.9	20	
Xylenes, Total	75.8	2.5	75	0	101	78	136	71.78			
Surr: 1,2-Dichloroethane-d4	53.7	2.5	50	0	107	70	130	0			
Surr: Dibromofluoromethane	50.1	2.5	50	0	100	77	126	0			
Surr: p-Bromofluorobenzene	49.1	2.5	50	0	98	76	127	0			
Surr: Toluene-d8	48.1	2.5	50	0	96	79	122	0			

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 24		SampType: MS Tuning File			Lab ID: 13APR29_D_TUNE			Method: SW8260B			
Analysis Date: 04/14/20 01:42		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	19.8		100	0	19.8	15	40				
75, % of mass 95	41.7		100	0	41.7	30	60				
96, % of mass 95	6.70		100	0	6.7	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	73.5		100	0	73.5	50	99.99				
175, % of mass 174	7.50		100	0	7.5	5	9				
176, % of mass 174	96.3		100	0	96.3	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Run ID :Run Order: 5971A.I_200413B: 25		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041320a			Method: SW8260B			
Analysis Date: 04/14/20 02:10		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.44	0.50	5	0	89	70	130				
Tetrachloroethene	4.18	0.50	5	0	84	70	130				
Trichloroethene	4.42	0.50	5	0	88	70	130				
Surr: 1,2-Dichloroethane-d4	10.7	0.50	10	0	107	70	130				
Surr: Dibromofluoromethane	9.84	0.50	10	0	98	77	126				
Surr: p-Bromofluorobenzene	9.74	0.50	10	0	97	76	127				
Surr: Toluene-d8	9.50	0.50	10	0	95	79	122				

Associated samples: B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A

Run ID :Run Order: 5971A.I_200413B: 26		SampType: Laboratory Control Sample			Lab ID: LCS041320a			Method: SW8260B			
Analysis Date: 04/14/20 02:37		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.15	0.50	5	0	83	74	133				
Tetrachloroethene	4.16	0.50	5	0	83	78	137				
Trichloroethene	4.12	0.50	5	0	82	75	138				
Surr: 1,2-Dichloroethane-d4	10.6	0.50	10	0	106	70	130				
Surr: Dibromofluoromethane	10.2	0.50	10	0	102	77	126				
Surr: p-Bromofluorobenzene	9.82	0.50	10	0	98	76	127				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340471

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200413B: 26	SampType: Laboratory Control Sample				Lab ID: LCS041320a			Method: SW8260B			
Analysis Date: 04/14/20 02:37	Units: ug/L		Prep Info: Prep Date:			Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	9.45	0.50	10	0	94	79	122				

Associated samples: **B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A**

Run ID :Run Order: 5971A.I_200413B: 27	SampType: Method Blank				Lab ID: MBLK041320a			Method: SW8260B			
Analysis Date: 04/14/20 03:59	Units: ug/L		Prep Info: Prep Date:			Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									
Tetrachloroethene	ND	0.50									
Trichloroethene	ND	0.50									
Surr: 1,2-Dichloroethane-d4	10.8	0.50	10	0	108	70	130				
Surr: Dibromofluoromethane	10.0	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	10.00	0.50	10	0	100	76	127				
Surr: Toluene-d8	9.34	0.50	10	0	93	79	122				

Associated samples: **B20040570-001B, B20040570-002B, B20040570-003B, B20040570-004B, B20040570-005B, B20040570-006B, B20040570-007B, B20040570-008A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340602

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200414A: 1		SampType: MS Tuning File			Lab ID: 14APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/14/20 13:25		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.3		100	0	20.3	15	40				
75, % of mass 95	42.6		100	0	42.6	30	60				
96, % of mass 95	6.70		100	0	6.7	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	69.5		100	0	69.5	50	99.99				
175, % of mass 174	7.90		100	0	7.9	5	9				
176, % of mass 174	99.2		100	0	99.2	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: B20040570-004B

Run ID :Run Order: 5971A.I_200414A: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041420			Method: SW8260B			
Analysis Date: 04/14/20 14:06		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.64	0.50	5	0	93	70	130				

Associated samples: B20040570-004B

Run ID :Run Order: 5971A.I_200414A: 3		SampType: Laboratory Control Sample			Lab ID: LCS041420			Method: SW8260B			
Analysis Date: 04/14/20 14:51		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.79	0.50	5	0	96	75	138				

Associated samples: B20040570-004B

Run ID :Run Order: 5971A.I_200414A: 4		SampType: Method Blank			Lab ID: MBLK041420			Method: SW8260B			
Analysis Date: 04/14/20 15:45		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	ND	0.50									

Associated samples: B20040570-004B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340602

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200414A: 21	SampType: Sample Matrix Spike				Lab ID: B20040689-002AMS			Method: SW8260B			
Analysis Date: 04/15/20 00:35	Units: ug/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	59.1	5.0	50	8.807	101	75	138				

Associated samples: **B20040570-004B**

Run ID :Run Order: 5971A.I_200414A: 22	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040689-002AMSD			Method: SW8260B			
Analysis Date: 04/15/20 01:02	Units: ug/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	56.9	5.0	50	8.807	96	75	138	59.11	3.8	20	

Associated samples: **B20040570-004B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200415B: 1		SampType: MS Tuning File			Lab ID: 15APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/15/20 10:27		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.8		100	0	20.8	15	40				
75, % of mass 95	41.2		100	0	41.2	30	60				
96, % of mass 95	6.90		100	0	6.9	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	73.0		100	0	73	50	99.99				
175, % of mass 174	7.00		100	0	7	5	9				
176, % of mass 174	97.8		100	0	97.8	95	101				
177, % of mass 176	6.40		100	0	6.4	5	9				

Associated samples: **B20040570-007B**

Run ID :Run Order: 5971A.I_200415B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041520			Method: SW8260B			
Analysis Date: 04/15/20 11:09		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.82	0.50	5	0	96	70	130				
Bromobenzene	4.60	0.50	5	0	92	70	130				
Bromochloromethane	4.64	0.50	5	0	93	70	130				
Bromodichloromethane	4.60	0.50	5	0	92	70	130				
Bromoform	4.39	0.50	5	0	88	70	130				
Bromomethane	3.82	0.50	5	0	76	70	130				
n-Butylbenzene	4.83	0.50	5	0	97	70	130				
sec-Butylbenzene	4.59	0.50	5	0	92	70	130				
tert-Butylbenzene	4.53	0.50	5	0	91	70	130				
Carbon tetrachloride	5.21	0.50	5	0	104	70	130				
Chlorobenzene	4.22	0.50	5	0	84	70	130				
Chlorodibromomethane	4.32	0.50	5	0	86	70	130				
Chloroethane	5.50	0.50	5	0	110	70	130				
Chloroform	5.07	0.50	5	0	101	80	120				
Chloromethane	5.39	0.50	5	0	108	70	130				
1,2-Dibromo-3-chloropropane	4.57	1.0	5	0	91	70	130				
1,2-Dibromoethane	4.37	0.50	5	0	87	70	130				
2-Chlorotoluene	4.41	0.50	5	0	88	70	130				
Dibromomethane	4.51	0.50	5	0	90	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200415B: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041520**

Method: **SW8260B**

Analysis Date: **04/15/20 11:09**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.38	0.50	5	0	88	70	130				
4-Chlorotoluene	4.88	0.50	5	0	98	70	130				
1,3-Dichlorobenzene	4.42	0.50	5	0	88	70	130				
1,4-Dichlorobenzene	4.60	0.50	5	0	92	70	130				
Dichlorodifluoromethane	5.79	0.50	5	0	116	70	130				
1,1-Dichloroethane	5.22	0.50	5	0	104	70	130				
1,2-Dichloroethane	5.50	0.50	5	0	110	70	130				
1,1-Dichloroethene	4.95	0.50	5	0	99	80	120				
trans-1,2-Dichloroethene	5.00	0.50	5	0	100	70	130				
1,2-Dichloropropane	4.47	0.50	5	0	89	80	120				
1,3-Dichloropropane	4.55	0.50	5	0	91	70	130				
2,2-Dichloropropane	5.70	0.50	5	0	114	70	130				
1,1-Dichloropropene	5.21	0.50	5	0	104	70	130				
cis-1,3-Dichloropropene	4.42	0.50	5	0	88	70	130				
trans-1,3-Dichloropropene	4.47	0.50	5	0	89	70	130				
Ethylbenzene	4.45	0.50	5	0	89	80	120				
Hexachlorobutadiene	4.45	0.50	5	0	89	70	130				
Isopropylbenzene	4.80	0.50	5	0	96	70	130				
p-Isopropyltoluene	4.54	0.50	5	0	91	70	130				
Methyl tert-butyl ether (MTBE)	5.16	0.50	5	0	103	70	130				
Methylene chloride	4.97	0.50	5	0	99	70	130				
Naphthalene	4.61	0.50	5	0	92	70	130				
n-Propylbenzene	4.59	0.50	5	0	92	70	130				
Styrene	4.41	0.50	5	0	88	70	130				
1,1,1,2-Tetrachloroethane	4.30	0.50	5	0	86	70	130				
1,1,2,2-Tetrachloroethane	4.83	0.50	5	0	97	70	130				
Toluene	4.29	0.50	5	0	86	80	120				
1,2,3-Trichlorobenzene	4.38	0.50	5	0	88	70	130				
1,2,4-Trichlorobenzene	4.63	0.50	5	0	93	70	130				
1,1,1-Trichloroethane	5.37	0.50	5	0	107	70	130				
1,1,2-Trichloroethane	4.46	0.50	5	0	89	70	130				
Trichlorofluoromethane	5.52	0.50	5	0	110	70	130				
1,2,3-Trichloropropane	4.94	0.50	5	0	99	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200415B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041520			Method: SW8260B			
Analysis Date: 04/15/20 11:09		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trimethylbenzene	4.60	0.50	5	0	92	70	130				
1,3,5-Trimethylbenzene	4.60	0.50	5	0	92	70	130				
Vinyl chloride	5.02	0.50	5	0	100	80	120				
m+p-Xylenes	8.51	0.50	10	0	85	70	130				
o-Xylene	4.40	0.50	5	0	88	70	130				
Xylenes, Total	12.9	0.50	15	0	86	70	130				
Surr: 1,2-Dichloroethane-d4	11.1	0.50	10	0	111	70	130				
Surr: Dibromofluoromethane	10.2	0.50	10	0	102	77	126				
Surr: p-Bromofluorobenzene	9.76	0.50	10	0	98	76	127				
Surr: Toluene-d8	9.09	0.50	10	0	91	79	122				

Associated samples: B20040570-007B

Run ID :Run Order: 5971A.I_200415B: 3		SampType: Laboratory Control Sample			Lab ID: LCS041520			Method: SW8260B			
Analysis Date: 04/15/20 11:36		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.97	0.50	5	0	99	71	133				
Bromobenzene	4.76	0.50	5	0	95	78	133				
Bromochloromethane	4.59	0.50	5	0	92	68	131				
Bromodichloromethane	4.89	0.50	5	0	98	67	138				
Bromoform	4.43	0.50	5	0	89	64	136				
Bromomethane	4.66	0.50	5	0	93	60	138				
n-Butylbenzene	5.06	0.50	5	0	101	72	135				
sec-Butylbenzene	5.18	0.50	5	0	104	73	135				
tert-Butylbenzene	4.71	0.50	5	0	94	69	137				
Carbon tetrachloride	5.20	0.50	5	0	104	61	144				
Chlorobenzene	4.48	0.50	5	0	90	78	136				
Chlorodibromomethane	4.62	0.50	5	0	92	72	136				
Chloroethane	5.69	0.50	5	0	114	64	136				
Chloroform	5.00	0.50	5	0	100	69	133				
Chloromethane	5.25	0.50	5	0	105	63	149				
1,2-Dibromo-3-chloropropane	5.10	1.0	5	0	102	63	125				
1,2-Dibromoethane	4.65	0.50	5	0	93	75	131				
2-Chlorotoluene	4.85	0.50	5	0	97	74	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200415B: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS041520**

Method: **SW8260B**

Analysis Date: **04/15/20 11:36**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromomethane	4.65	0.50	5	0	93	72	133				
1,2-Dichlorobenzene	4.91	0.50	5	0	98	78	129				
4-Chlorotoluene	5.16	0.50	5	0	103	79	135				
1,3-Dichlorobenzene	4.91	0.50	5	0	98	79	132				
1,4-Dichlorobenzene	4.73	0.50	5	0	95	78	131				
Dichlorodifluoromethane	6.04	0.50	5	0	121	55	141				
1,1-Dichloroethane	5.25	0.50	5	0	105	72	130				
1,2-Dichloroethane	5.79	0.50	5	0	116	57	146				
1,1-Dichloroethene	5.13	0.50	5	0	103	66	142				
trans-1,2-Dichloroethene	5.16	0.50	5	0	103	76	138				
1,2-Dichloropropane	4.82	0.50	5	0	96	72	135				
1,3-Dichloropropane	4.68	0.50	5	0	94	75	134				
2,2-Dichloropropane	5.75	0.50	5	0	115	42	167				
1,1-Dichloropropene	5.23	0.50	5	0	105	72	140				
cis-1,3-Dichloropropene	4.80	0.50	5	0	96	75	132				
trans-1,3-Dichloropropene	4.88	0.50	5	0	98	77	145				
Ethylbenzene	4.68	0.50	5	0	94	78	131				
Hexachlorobutadiene	5.27	0.50	5	0	105	65	141				
Isopropylbenzene	5.25	0.50	5	0	105	72	135				
p-Isopropyltoluene	4.79	0.50	5	0	96	71	134				
Methyl tert-butyl ether (MTBE)	5.07	0.50	5	0	101	58	151				
Methylene chloride	5.25	0.50	5	0	105	73	126				
Naphthalene	5.61	0.50	5	0	112	55	139				
n-Propylbenzene	4.93	0.50	5	0	99	70	139				
Styrene	4.53	0.50	5	0	90	76	134				
1,1,1,2-Tetrachloroethane	4.51	0.50	5	0	90	75	135				
1,1,2,2-Tetrachloroethane	5.03	0.50	5	0	101	72	132				
Toluene	4.51	0.50	5	0	90	78	134				
1,2,3-Trichlorobenzene	5.34	0.50	5	0	107	42	152				
1,2,4-Trichlorobenzene	5.19	0.50	5	0	104	58	142				
1,1,1-Trichloroethane	5.50	0.50	5	0	110	64	141				
1,1,2-Trichloroethane	4.70	0.50	5	0	94	72	133				
Trichlorofluoromethane	5.53	0.50	5	0	111	58	139				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: 5971A.I_200415B: 3		SampType: Laboratory Control Sample			Lab ID: LCS041520			Method: SW8260B			
Analysis Date: 04/15/20 11:36		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichloropropane	4.95	0.50	5	0	99	67	133				
1,2,4-Trimethylbenzene	4.76	0.50	5	0	95	71	129				
1,3,5-Trimethylbenzene	4.84	0.50	5	0	97	68	135				
Vinyl chloride	5.37	0.50	5	0	107	66	140				
m+p-Xylenes	9.15	0.50	10	0	92	78	133				
o-Xylene	4.62	0.50	5	0	92	79	136				
Xylenes, Total	13.8	0.50	15	0	92	78	136				
Surr: 1,2-Dichloroethane-d4	11.1	0.50	10	0	111	70	130				
Surr: Dibromofluoromethane	10.3	0.50	10	0	102	77	126				
Surr: p-Bromofluorobenzene	9.99	0.50	10	0	100	76	127				
Surr: Toluene-d8	9.35	0.50	10	0	94	79	122				

Associated samples: **B20040570-007B**

Run ID :Run Order: 5971A.I_200415B: 4		SampType: Method Blank			Lab ID: MBLK041520			Method: SW8260B			
Analysis Date: 04/15/20 13:01		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200415B: 4**

SampType: **Method Blank**

Lab ID: **MBLK041520**

Method: **SW8260B**

Analysis Date: **04/15/20 13:01**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040570

BatchID: R340630

Date: 17-Apr-20

Run ID :Run Order: **5971A.I_200415B: 4**

SampType: **Method Blank**

Lab ID: **MBLK041520**

Method: **SW8260B**

Analysis Date: **04/15/20 13:01**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	10.9	0.50	10	0	109	70	130				
Surr: Dibromofluoromethane	9.92	0.50	10	0	99	77	126				
Surr: p-Bromofluorobenzene	10.2	0.50	10	0	102	76	127				
Surr: Toluene-d8	9.27	0.50	10	0	93	79	122				

Associated samples: **B20040570-007B**

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Tasman Geosciences Inc

B20040570

Login completed by: Briana G. Sangiuliano

Date Received: 4/8/2020

Reviewed by: BL2000\gmccartney

Received by: qej

Reviewed Date: 4/10/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.0°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

The collection time indicated on the container label for sample MW408-D is 14:06 and on the Chain of Custody it is 13:45. Proceeded with the collection time as indicated on the Chain of Custody.



ANALYTICAL SUMMARY REPORT

April 20, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20040702 Quote ID: B2871

Project Name: LSS Semi-Annual GW

Energy Laboratories Inc Billings MT received the following 7 samples for Tasman Geosciences Inc on 4/9/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20040702-001	MW007GW036-701	04/09/20 7:30	04/09/20	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Carbon, Total Organic Headspace Gas Analysis Chloride Sulfate/Anions by Ion Chromatography 8260-Volatile Organic Compounds-Short List
B20040702-002	MW007GW036	04/09/20 9:38	04/09/20	Aqueous	Same As Above
B20040702-003	MW456-D	04/09/20 11:10	04/09/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds-Short List
B20040702-004	MW455-D	04/09/20 12:07	04/09/20	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Carbon, Total Organic Headspace Gas Analysis Chloride Sulfate/Anions by Ion Chromatography 8260-Volatile Organic Compounds-Short List
B20040702-005	MW430-I	04/09/20 13:46	04/09/20	Aqueous	8260-Volatile Organic Compounds-Short List
B20040702-006	MW430-D	04/09/20 15:13	04/09/20	Aqueous	Same As Above
B20040702-007	Trip Blank Lot03312020 B-JDB SHP0277	04/09/20 0:00	04/09/20	Trip Blank	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Tasman Geosciences Inc
Project: LSS Semi-Annual GW
Work Order: B20040702

Report Date: 04/20/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW007GW036-701
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-001
Collection Date: 04/09/20 07:30
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS												
Alkalinity, Total as CaCO3	766	mg/L		4	4	A2320 B	04/13/20 15:46 / ean			Metrohm 2_200413A : 97		R340341
Bicarbonate as HCO3	933	mg/L		4	4	A2320 B	04/13/20 15:46 / ean			Metrohm 2_200413A : 97		R340341
Carbonate as CO3	ND	mg/L		4	4	A2320 B	04/13/20 15:46 / ean			Metrohm 2_200413A : 97		R340341
Chloride	60	mg/L	D	2	0.2	E300.0	04/14/20 17:35 / mrc			METROHM 2_200413A : 104		R340428
Sulfate	273	mg/L	D	5	0.8	E300.0	04/14/20 17:35 / mrc			METROHM 2_200413A : 104		R340428
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	40	mg/L	D	4	1	A5310 C	04/16/20 19:25 / eli-c			SUB-C257429 : 10		C_R257429
METALS, DISSOLVED												
Arsenic	0.016	mg/L		0.001	0.00009	SW6020	04/11/20 01:05 / pap			ICPMS206-B_200410A : 134		R340336
Calcium	156	mg/L		1	0.2	SW6010B	04/13/20 14:14 / rlh			ICP203-B_200413A : 78		R340346
Magnesium	101	mg/L		1	0.1	SW6010B	04/13/20 14:14 / rlh			ICP203-B_200413A : 78		R340346
Potassium	4	mg/L		1	0.04	SW6020	04/11/20 01:05 / pap			ICPMS206-B_200410A : 134		R340336
Sodium	151	mg/L		1	0.6	SW6010B	04/13/20 14:14 / rlh			ICP203-B_200413A : 78		R340346
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW007GW036-701
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-001
Collection Date: 04/09/20 07:30
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
cis-1,2-Dichloroethene	872	ug/L		50	13	SW8260B	04/15/20 20:38 / msc			5971A.I_200415B : 5		R340630
trans-1,2-Dichloroethene	10	ug/L		5.0	1.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Tetrachloroethene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW007GW036-701
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-001
Collection Date: 04/09/20 07:30
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Trichloroethene	3.8	ug/L	J	5.0	1.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Vinyl chloride	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Surr: 1,2-Dichloroethane-d4	104	%REC		70-130		SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
Surr: p-Bromofluorobenzene	99.0	%REC		76-127		SW8260B	04/14/20 20:28 / msc			5971A.I_200414A : 14		R340602
- The sample was received in the laboratory with a pH > 2. The pH was 3. - The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.												
ORGANIC CHARACTERISTICS												
Methane	0.0045	mg/L		0.0010	0.00070	SW8015M	04/15/20 10:11 / jd			D-HEADSPACE_200415A : 6		R340568
Ethane	ND	mg/L		0.0010	0.00031	SW8015M	04/15/20 10:11 / jd			D-HEADSPACE_200415A : 6		R340568
Ethene	ND	mg/L		0.0010	0.00023	SW8015M	04/15/20 10:11 / jd			D-HEADSPACE_200415A : 6		R340568

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW007GW036
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-002
Collection Date: 04/09/20 09:38
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS												
Alkalinity, Total as CaCO3	765	mg/L		4	4	A2320 B	04/13/20 15:59 / ean			Metrohm 2_200413A : 99		R340341
Bicarbonate as HCO3	933	mg/L		4	4	A2320 B	04/13/20 15:59 / ean			Metrohm 2_200413A : 99		R340341
Carbonate as CO3	ND	mg/L		4	4	A2320 B	04/13/20 15:59 / ean			Metrohm 2_200413A : 99		R340341
Chloride	60	mg/L	D	2	0.2	E300.0	04/14/20 18:21 / mrc			METROHM 2_200413A : 107		R340428
Sulfate	273	mg/L	D	5	0.8	E300.0	04/14/20 18:21 / mrc			METROHM 2_200413A : 107		R340428
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	39	mg/L	D	4	1	A5310 C	04/16/20 19:45 / eli-c			SUB-C257429 : 11		C_R257429
METALS, DISSOLVED												
Arsenic	0.015	mg/L		0.001	0.00009	SW6020	04/11/20 01:51 / pap			ICPMS206-B_200410A : 142		R340336
Calcium	153	mg/L		1	0.2	SW6010B	04/13/20 14:18 / rlh			ICP203-B_200413A : 79		R340346
Magnesium	99	mg/L		1	0.1	SW6010B	04/13/20 14:18 / rlh			ICP203-B_200413A : 79		R340346
Potassium	4	mg/L		1	0.04	SW6020	04/11/20 01:51 / pap			ICPMS206-B_200410A : 142		R340336
Sodium	149	mg/L		1	0.6	SW6010B	04/13/20 14:18 / rlh			ICP203-B_200413A : 79		R340346
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW007GW036
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-002
Collection Date: 04/09/20 09:38
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,1-Dichloroethane	0.37	ug/L	J	0.50	0.093	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,1-Dichloroethene	0.52	ug/L		0.50	0.15	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
cis-1,2-Dichloroethene	842	ug/L		25	6.4	SW8260B	04/15/20 05:37 / msc			5971A.I_200414B : 5		R340629
trans-1,2-Dichloroethene	10	ug/L		0.50	0.13	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Tetrachloroethene	0.55	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW007GW036
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-002
Collection Date: 04/09/20 09:38
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Trichloroethene	3.5	ug/L		0.50	0.13	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Vinyl chloride	0.81	ug/L		0.50	0.14	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Surr: 1,2-Dichloroethane-d4	109	%REC		70-130		SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
Surr: p-Bromofluorobenzene	103	%REC		76-127		SW8260B	04/14/20 19:33 / msc			5971A.I_200414A : 12		R340602
ORGANIC CHARACTERISTICS												
Methane	0.0044	mg/L		0.0010	0.00070	SW8015M	04/15/20 10:33 / jd			D-HEADSPACE_200415A : 7		R340568
Ethane	ND	mg/L		0.0010	0.00031	SW8015M	04/15/20 10:33 / jd			D-HEADSPACE_200415A : 7		R340568
Ethene	ND	mg/L		0.0010	0.00023	SW8015M	04/15/20 10:33 / jd			D-HEADSPACE_200415A : 7		R340568



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW456-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-003
Collection Date: 04/09/20 11:10
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	41	mg/L	D	4	1	A5310 C	04/16/20 20:06 / eli-c			SUB-C257429 : 12		C_R257429
VOLATILE ORGANIC COMPOUNDS												
Benzene	0.22	ug/L	J	0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,1-Dichloroethane	0.44	ug/L	J	0.50	0.093	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,1-Dichloroethene	0.54	ug/L		0.50	0.15	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
cis-1,2-Dichloroethene	1030	ug/L		50	13	SW8260B	04/15/20 21:05 / msc			5971A.I_200415B : 6		R340630
trans-1,2-Dichloroethene	14	ug/L		0.50	0.13	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602

Report Definitions: RL - Analyte Reporting Limit
D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW456-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-003
Collection Date: 04/09/20 11:10
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Tetrachloroethene	0.43	ug/L	J	0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Trichloroethene	8.4	ug/L		0.50	0.13	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Vinyl chloride	1.1	ug/L		0.50	0.14	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/14/20 19:06 / msc			5971A.I_200414A : 11		R340602

- The sample was received in the laboratory with a pH > 2. The pH was 4.

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW455-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-004
Collection Date: 04/09/20 12:07
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS												
Alkalinity, Total as CaCO3	366	mg/L		4	4	A2320 B	04/13/20 16:11 / ean			Metrohm 2_200413A : 101		R340341
Bicarbonate as HCO3	446	mg/L		4	4	A2320 B	04/13/20 16:11 / ean			Metrohm 2_200413A : 101		R340341
Carbonate as CO3	ND	mg/L		4	4	A2320 B	04/13/20 16:11 / ean			Metrohm 2_200413A : 101		R340341
Chloride	63	mg/L	D	2	0.2	E300.0	04/14/20 18:37 / mrc			METROHM 2_200413A : 108		R340428
Sulfate	771	mg/L	D	5	0.8	E300.0	04/14/20 18:37 / mrc			METROHM 2_200413A : 108		R340428
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	7.6	mg/L		0.5	0.1	A5310 C	04/16/20 04:11 / eli-c			SUB-C257415 : 34		C_R257415
METALS, DISSOLVED												
Arsenic	0.001	mg/L		0.001	0.00009	SW6020	04/11/20 01:56 / pap			ICPMS206-B_200410A : 143		R340336
Calcium	167	mg/L		1	0.2	SW6010B	04/13/20 14:22 / rlh			ICP203-B_200413A : 80		R340346
Magnesium	102	mg/L		1	0.1	SW6010B	04/13/20 14:22 / rlh			ICP203-B_200413A : 80		R340346
Potassium	7	mg/L		1	0.04	SW6020	04/11/20 01:56 / pap			ICPMS206-B_200410A : 143		R340336
Sodium	172	mg/L		1	0.6	SW6010B	04/13/20 14:22 / rlh			ICP203-B_200413A : 80		R340346
VOLATILE ORGANIC COMPOUNDS												
Benzene	0.30	ug/L	J	0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602

Report RL - Analyte Reporting Limit

Definitions: D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level

J - Estimated value - analyte was present but less than the Reporting Limit (RL)

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW455-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-004
Collection Date: 04/09/20 12:07
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,1-Dichloroethane	0.41	ug/L	J	0.50	0.093	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
cis-1,2-Dichloroethene	131	ug/L		10	2.5	SW8260B	04/15/20 07:27 / msc			5971A.I_200414B : 8		R340629
trans-1,2-Dichloroethene	1.2	ug/L		0.50	0.13	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Tetrachloroethene	219	ug/L		10	2.2	SW8260B	04/15/20 07:27 / msc			5971A.I_200414B : 8		R340629
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW455-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-004
Collection Date: 04/09/20 12:07
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Trichloroethene	78	ug/L		10	2.6	SW8260B	04/15/20 07:27 / msc			5971A.I_200414B : 8		R340629
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Surr: 1,2-Dichloroethane-d4	106	%REC		70-130		SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/14/20 18:38 / msc			5971A.I_200414A : 10		R340602
ORGANIC CHARACTERISTICS												
Methane	0.0020	mg/L		0.0010	0.00070	SW8015M	04/15/20 10:46 / jd			D-HEADSPACE_200415A : 8		R340568
Ethane	0.0018	mg/L		0.0010	0.00031	SW8015M	04/15/20 10:46 / jd			D-HEADSPACE_200415A : 8		R340568
Ethene	ND	mg/L		0.0010	0.00023	SW8015M	04/15/20 10:46 / jd			D-HEADSPACE_200415A : 8		R340568

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW430-I
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-005
Collection Date: 04/09/20 13:46
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
cis-1,2-Dichloroethene	155	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
trans-1,2-Dichloroethene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW430-I
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-005
Collection Date: 04/09/20 13:46
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Tetrachloroethene	700	ug/L		25	5.4	SW8260B	04/15/20 22:00 / msc			5971A.I_200415B : 8		R340630
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Trichloroethene	60	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Vinyl chloride	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Surr: 1,2-Dichloroethane-d4	112	%REC		70-130		SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602
Surr: p-Bromofluorobenzene	102	%REC		76-127		SW8260B	04/14/20 20:55 / msc			5971A.I_200414A : 15		R340602

- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW430-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-006
Collection Date: 04/09/20 15:13
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
cis-1,2-Dichloroethene	90	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
trans-1,2-Dichloroethene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW430-D
Project: LSS Semi-Annual GW
Matrix: Aqueous

Lab ID: B20040702-006
Collection Date: 04/09/20 15:13
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Tetrachloroethene	915	ug/L		50	11	SW8260B	04/15/20 21:32 / msc			5971A.I_200415B : 7		R340630
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Trichloroethene	114	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Vinyl chloride	ND	ug/L		5.0	1.4	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Surr: 1,2-Dichloroethane-d4	107	%REC		70-130		SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Surr: Toluene-d8	97.0	%REC		79-122		SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/14/20 20:01 / msc			5971A.I_200414A : 13		R340602

- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GW
Matrix: Trip Blank

Lab ID: B20040702-007
Collection Date: 04/09/20
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GW
Matrix: Trip Blank

Lab ID: B20040702-007
Collection Date: 04/09/20
Date Received: 04/09/20
Report Date: 04/20/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Trichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Surr: 1,2-Dichloroethane-d4	111	%REC		70-130		SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Surr: Toluene-d8	90.0	%REC		79-122		SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602
Surr: p-Bromofluorobenzene	102	%REC		76-127		SW8260B	04/14/20 22:45 / msc			5971A.I_200414A : 17		R340602

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: C_R257415

Date: 17-Apr-20

Run ID :Run Order: SUB-C257415: 1		SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C	
Analysis Date: 04/15/20 16:04		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.25	0.50	5	0	105	90	109	0			

Associated samples: **B20040702-004C**

Run ID :Run Order: SUB-C257415: 2		SampType: Method Blank				Lab ID: MBLK				Method: A5310 C	
Analysis Date: 04/15/20 16:34		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	0.2	0.2									

Associated samples: **B20040702-004C**

Run ID :Run Order: SUB-C257415: 28		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C	
Analysis Date: 04/16/20 01:37		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.95	0.50	5	0	99	90	110	0			

Associated samples: **B20040702-004C**

Run ID :Run Order: SUB-C257415: 30		SampType: Sample Matrix Spike				Lab ID: C20040488-001CMS				Method: A5310 C	
Analysis Date: 04/16/20 02:32		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	46.4	0.50	5	41.1	106	90	109	0			E

Associated samples: **B20040702-004C**

Run ID :Run Order: SUB-C257415: 31		SampType: Sample Matrix Spike Duplicate				Lab ID: C20040488-001CMSD				Method: A5310 C	
Analysis Date: 04/16/20 02:58		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	47.6	0.50	5	41.1	130	90	109	46.41	2.5	20	SE

Associated samples: **B20040702-004C**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: C_R257429

Date: 17-Apr-20

Run ID :Run Order: SUB-C257429: 1		SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C	
Analysis Date: 04/16/20 16:24		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.26	0.50	5	0	105	90	109	0			

Associated samples: **B20040702-001C, B20040702-002C, B20040702-003A**

Run ID :Run Order: SUB-C257429: 2		SampType: Method Blank				Lab ID: MBLK				Method: A5310 C	
Analysis Date: 04/16/20 17:00		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: **B20040702-001C, B20040702-002C, B20040702-003A**

Run ID :Run Order: SUB-C257429: 3		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C	
Analysis Date: 04/16/20 17:19		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.97	0.50	5	0	99	90	110	0			

Associated samples: **B20040702-001C, B20040702-002C, B20040702-003A**

Run ID :Run Order: SUB-C257429: 5		SampType: Sample Matrix Spike				Lab ID: C20040486-009EMS				Method: A5310 C	
Analysis Date: 04/16/20 17:54		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.19	0.50	5	0.1969	100	90	109	0			

Associated samples: **B20040702-001C, B20040702-002C, B20040702-003A**

Run ID :Run Order: SUB-C257429: 6		SampType: Sample Matrix Spike Duplicate				Lab ID: C20040486-009EMSD				Method: A5310 C	
Analysis Date: 04/16/20 18:13		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.34	0.50	5	0.1969	103	90	109	5.19	2.8	20	

Associated samples: **B20040702-001C, B20040702-002C, B20040702-003A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340336

Date: 17-Apr-20

Run ID :Run Order: ICPMS206-B_200410A: 118		SampType: Interference Check Sample A				Lab ID: ICSA			Method: SW6020		
Analysis Date: 04/10/20 23:34		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	-0.0000310	0.0010		0							
Potassium	39.0	0.081	50	0	78						

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICPMS206-B_200410A: 119		SampType: Interference Check Sample AB				Lab ID: ICSAB			Method: SW6020		
Analysis Date: 04/10/20 23:40		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.00998	0.0010	0.01	0	100	80	120				
Potassium	38.9	0.081	40	0	97	80	120				

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICPMS206-B_200410A: 135		SampType: Sample Matrix Spike				Lab ID: B20040702-001BMS			Method: SW6020		
Analysis Date: 04/11/20 01:11		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0693	0.0010	0.05	0.01576	107	75	125				
Potassium	51.8	1.0	50	3.707	96	75	125				E

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICPMS206-B_200410A: 136		SampType: Sample Matrix Spike Duplicate				Lab ID: B20040702-001BMSD			Method: SW6020		
Analysis Date: 04/11/20 01:17		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0697	0.0010	0.05	0.01576	108	75	125	0.06932	0.5	20	
Potassium	52.2	1.0	50	3.707	97	75	125	51.8	0.8	20	E

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICPMS206-B_200410A: 192		SampType: Initial Calibration Verification Standard				Lab ID: QCS			Method: SW6020		
Analysis Date: 04/10/20 15:28		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0515	0.0010	0.05	0	103	90	110				
Potassium	2.55	0.081	2.5	0	102	90	110				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340336

Date: 17-Apr-20

Run ID :Run Order: ICPMS206-B_200410A: 192	SampType: Initial Calibration Verification Standard	Lab ID: QCS	Method: SW6020								
Analysis Date: 04/10/20 15:28	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICPMS206-B_200410A: 193	SampType: Method Blank	Lab ID: LRB	Method: SW6020								
Analysis Date: 04/10/20 15:56	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.00009									
Potassium	ND	0.04									

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICPMS206-B_200410A: 194	SampType: Laboratory Fortified Blank	Lab ID: LFB	Method: SW6020								
Analysis Date: 04/10/20 16:31	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0527	0.0010	0.05	0	105	85	115				
Potassium	49.9	0.084	50	0	100	85	115				

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340341

Date: 17-Apr-20

Run ID :Run Order: Metrohm 2_200413A: 65		SampType: Method Blank			Lab ID: MBLK				Method: A2320 B		
Analysis Date: 04/13/20 13:59		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	4									

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: Metrohm 2_200413A: 66		SampType: Laboratory Control Sample			Lab ID: LCS				Method: A2320 B		
Analysis Date: 04/13/20 14:02		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	102	4.0	100	0	102	90	110				

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: Metrohm 2_200413A: 69		SampType: Sample Duplicate			Lab ID: B20040688-005ADUP				Method: A2320 B		
Analysis Date: 04/13/20 14:15		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	81.8	4.0		0				81.58	0.2	10	
Bicarbonate as HCO3	99.7	4.0		0				99.47	0.2	10	
Carbonate as CO3	ND	4.0		0				0		10	

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: Metrohm 2_200413A: 73		SampType: Sample Matrix Spike			Lab ID: B20040688-006AMS				Method: A2320 B		
Analysis Date: 04/13/20 14:29		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	231	4.0	171	62.25	99	80	120				

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: Metrohm 2_200413A: 95		SampType: Sample Duplicate			Lab ID: B20040696-001ADUP				Method: A2320 B		
Analysis Date: 04/13/20 15:39		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	375	4.0		0				374.8	0.1	10	
Bicarbonate as HCO3	457	4.0		0				457	0.1	10	
Carbonate as CO3	ND	4.0		0				0		10	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340341

Date: 17-Apr-20

Run ID :Run Order: Metrohm 2_200413A: 95	SampType: Sample Duplicate	Lab ID: B20040696-001ADUP	Method: A2320 B								
Analysis Date: 04/13/20 15:39	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340346

Date: 17-Apr-20

Run ID :Run Order: ICP203-B_200413A: 14		SampType: Method Blank			Lab ID: MB-6500DIS200413A				Method: SW6010B		
Analysis Date: 04/13/20 09:51		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.08									
Magnesium	ND	0.02									
Sodium	ND	0.06									

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICP203-B_200413A: 16		SampType: Laboratory Fortified Blank			Lab ID: LFB-6500DIS200413A				Method: SW6010B		
Analysis Date: 04/13/20 10:00		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	49.8	1.0	50	0	100	80	120				
Magnesium	49.8	1.0	50	0	100	80	120				
Sodium	48.7	1.0	50	0	97	80	120				

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICP203-B_200413A: 17		SampType: Initial Calibration Verification Standard			Lab ID: QCS				Method: SW6010B		
Analysis Date: 04/13/20 10:03		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.1	1.0	40	0	100	90	110				
Magnesium	40.0	1.0	40	0	100	90	110				
Sodium	38.9	1.0	40	0	97	90	110				

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICP203-B_200413A: 18		SampType: Interference Check Sample A			Lab ID: ICSA				Method: SW6010B		
Analysis Date: 04/13/20 10:07		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	457	1.0	500	0	91	80	120				
Magnesium	489	1.0	500	0	98	80	120				
Sodium	0.0183	1.0		0							

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340346

Date: 17-Apr-20

Run ID :Run Order: ICP203-B_200413A: 19		SampType: Interference Check Sample AB			Lab ID: ICSAB			Method: SW6010B			
Analysis Date: 04/13/20 10:12		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	463	1.0	500	0	93	80	120				
Magnesium	504	1.0	500	0	101	80	120				
Sodium	19.9	1.0	20	0	100	80	120				

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICP203-B_200413A: 100		SampType: Serial Dilution			Lab ID: B20040690-018BDIL			Method: SW6010B			
Analysis Date: 04/13/20 15:45		Units: mg/L			Prep Info: Prep Date: 4/10/2020			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	1.0		0		0	0	0		10	
Magnesium	ND	1.0		0		0	0	0		10	
Sodium	ND	1.5		0		0	0	0.2152		10	

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICP203-B_200413A: 101		SampType: Sample Matrix Spike			Lab ID: B20040690-018BMS2			Method: SW6010B			
Analysis Date: 04/13/20 15:50		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	51.9	1.0	50	0	104	75	125				
Magnesium	52.0	1.0	50	0	104	75	125				
Sodium	52.3	1.0	50	0.2152	104	75	125				

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Run ID :Run Order: ICP203-B_200413A: 102		SampType: Sample Matrix Spike Duplicate			Lab ID: B20040690-018BMSD2			Method: SW6010B			
Analysis Date: 04/13/20 15:53		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	51.9	1.0	50	0	104	75	125	51.9	0.1	20	
Magnesium	51.9	1.0	50	0	104	75	125	52.02	0.2	20	
Sodium	52.4	1.0	50	0.2152	104	75	125	52.25	0.2	20	

Associated samples: **B20040702-001B, B20040702-002B, B20040702-004B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340428

Date: 17-Apr-20

Run ID :Run Order: IC METROHM 2_200413A: 1		SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0		
Analysis Date: 04/13/20 14:58		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.1	1.0	25	0	97	90	110				
Sulfate	97.8	1.0	100	0	98	90	110				

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: IC METROHM 2_200413A: 2		SampType: Method Blank				Lab ID: ICB			Method: E300.0		
Analysis Date: 04/13/20 15:14		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.05									
Sulfate	ND	0.2									

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: IC METROHM 2_200413A: 3		SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0		
Analysis Date: 04/13/20 15:29		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25.1	1.0	25	0	101	90	110				
Sulfate	101	1.1	100	0	101	90	110				

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: IC METROHM 2_200413A: 105		SampType: Sample Matrix Spike				Lab ID: B20040702-001AMS			Method: E300.0		
Analysis Date: 04/14/20 17:50		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	192	1.6	125	60.16	106	90	110				
Sulfate	797	5.3	500	273	105	90	110				

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**

Run ID :Run Order: IC METROHM 2_200413A: 106		SampType: Sample Matrix Spike Duplicate				Lab ID: B20040702-001AMSD			Method: E300.0		
Analysis Date: 04/14/20 18:06		Units: mg/L				Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	191	1.6	125	60.16	105	90	110	192.1	0.5	20	
Sulfate	794	5.3	500	273	104	90	110	797.3	0.4	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340428

Date: 17-Apr-20

Run ID :Run Order: IC METROHM 2_200413A: 106	SampType: Sample Matrix Spike Duplicate	Lab ID: B20040702-001AMSD	Method: E300.0								
Analysis Date: 04/14/20 18:06	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040702-001A, B20040702-002A, B20040702-004A**



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340568

Date: 20-Apr-20

Run ID :Run Order: FID-HEADSPACE_200415A: 3		SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: SW8015M			
Analysis Date: 04/15/20 09:02		Units: ppm			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	495	2.0	500	0	99	85	115				
Ethane	477	2.0	500	0	95	85	115				
Ethene	485	2.0	500	0	97	85	115				

Associated samples: **B20040702-001E, B20040702-002E, B20040702-004E**

Run ID :Run Order: FID-HEADSPACE_200415A: 4		SampType: Laboratory Control Sample			Lab ID: LCS			Method: SW8015M			
Analysis Date: 04/15/20 09:09		Units: ppm			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	104	2.0	100	0	104	85	115				
Ethane	101	2.0	100	0	101	85	115				
Ethene	102	2.0	100	0	102	85	115				

Associated samples: **B20040702-001E, B20040702-002E, B20040702-004E**

Run ID :Run Order: FID-HEADSPACE_200415A: 5		SampType: Method Blank			Lab ID: MBLK			Method: SW8015M			
Analysis Date: 04/15/20 10:01		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	ND	0.0010									
Ethane	ND	0.0010									
Ethene	ND	0.0010									

Associated samples: **B20040702-001E, B20040702-002E, B20040702-004E**

Run ID :Run Order: FID-HEADSPACE_200415A: 9		SampType: Sample Duplicate			Lab ID: B20040702-004EDUP			Method: SW8015M			
Analysis Date: 04/15/20 10:57		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.00203	0.0010		0				0.00197	3.2	20	
Ethane	0.00183	0.0010		0				0.001826	0.1	20	
Ethene	ND	0.0010		0				0		20	

Associated samples: **B20040702-001E, B20040702-002E, B20040702-004E**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340568

Date: 20-Apr-20

Run ID :Run Order: FID-HEADSPACE_200415A: 16	SampType: Continuing Calibration Verification Standar	Lab ID: CCV	Method: SW8015M								
Analysis Date: 04/15/20 12:06	Units: ppm	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	500	2.0	500	0	100	85	115				
Ethane	482	2.0	500	0	96	85	115				
Ethene	490	2.0	500	0	98	85	115				

Associated samples: **B20040702-001E, B20040702-002E, B20040702-004E**



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: **5971A.I_200414A: 1**

SampType: **MS Tuning File**

Lab ID: **14APR02_D_TUNE**

Method: **SW8260B**

Analysis Date: **04/14/20 13:25**

Units: **%**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.3		100	0	20.3	15	40				
75, % of mass 95	42.6		100	0	42.6	30	60				
96, % of mass 95	6.70		100	0	6.7	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	69.5		100	0	69.5	50	99.99				
175, % of mass 174	7.90		100	0	7.9	5	9				
176, % of mass 174	99.2		100	0	99.2	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: **B20040702-001D, B20040702-002D, B20040702-003B, B20040702-004D, B20040702-005A, B20040702-006A, B20040702-007A**

Run ID :Run Order: **5971A.I_200414A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041420**

Method: **SW8260B**

Analysis Date: **04/14/20 14:06**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.75	0.50	5	0	95	70	130				
Bromobenzene	4.95	0.50	5	0	99	70	130				
Bromochloromethane	4.63	0.50	5	0	93	70	130				
Bromodichloromethane	4.81	0.50	5	0	96	70	130				
Bromoform	4.71	0.50	5	0	94	70	130				
Bromomethane	5.80	0.50	5	0	116	70	130				
n-Butylbenzene	4.81	0.50	5	0	96	70	130				
sec-Butylbenzene	4.75	0.50	5	0	95	70	130				
tert-Butylbenzene	4.73	0.50	5	0	95	70	130				
Carbon tetrachloride	5.08	0.50	5	0	102	70	130				
Chlorobenzene	4.47	0.50	5	0	89	70	130				
Chlorodibromomethane	4.58	0.50	5	0	92	70	130				
Chloroethane	5.24	0.50	5	0	105	70	130				
Chloroform	4.87	0.50	5	0	97	80	120				
Chloromethane	5.56	0.50	5	0	111	70	130				
1,2-Dibromo-3-chloropropane	4.71	1.0	5	0	94	70	130				
1,2-Dibromoethane	4.41	0.50	5	0	88	70	130				
2-Chlorotoluene	4.61	0.50	5	0	92	70	130				
Dibromomethane	4.66	0.50	5	0	93	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 2	SampType: Continuing Calibration Verification Standar				Lab ID: CCV041420	Method: SW8260B					
Analysis Date: 04/14/20 14:06	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.66	0.50	5	0	93	70	130				
4-Chlorotoluene	5.04	0.50	5	0	101	70	130				
1,3-Dichlorobenzene	4.83	0.50	5	0	97	70	130				
1,4-Dichlorobenzene	4.91	0.50	5	0	98	70	130				
Dichlorodifluoromethane	5.69	0.50	5	0	114	70	130				
1,1-Dichloroethane	4.93	0.50	5	0	99	70	130				
1,2-Dichloroethane	5.11	0.50	5	0	102	70	130				
1,1-Dichloroethene	4.82	0.50	5	0	96	80	120				
cis-1,2-Dichloroethene	4.72	0.50	5	0	94	70	130				
trans-1,2-Dichloroethene	4.81	0.50	5	0	96	70	130				
1,2-Dichloropropane	4.71	0.50	5	0	94	80	120				
1,3-Dichloropropane	4.63	0.50	5	0	93	70	130				
2,2-Dichloropropane	5.54	0.50	5	0	111	70	130				
1,1-Dichloropropene	5.03	0.50	5	0	101	70	130				
cis-1,3-Dichloropropene	4.74	0.50	5	0	95	70	130				
trans-1,3-Dichloropropene	4.87	0.50	5	0	97	70	130				
Ethylbenzene	4.56	0.50	5	0	91	80	120				
Hexachlorobutadiene	4.64	0.50	5	0	93	70	130				
Isopropylbenzene	4.95	0.50	5	0	99	70	130				
p-Isopropyltoluene	4.54	0.50	5	0	91	70	130				
Methyl tert-butyl ether (MTBE)	5.19	0.50	5	0	104	70	130				
Methylene chloride	4.60	0.50	5	0	92	70	130				
Naphthalene	5.04	0.50	5	0	101	70	130				
n-Propylbenzene	4.82	0.50	5	0	96	70	130				
Styrene	4.68	0.50	5	0	94	70	130				
1,1,1,2-Tetrachloroethane	4.58	0.50	5	0	92	70	130				
1,1,2,2-Tetrachloroethane	5.15	0.50	5	0	103	70	130				
Tetrachloroethene	4.60	0.50	5	0	92	70	130				
Toluene	4.66	0.50	5	0	93	80	120				
1,2,3-Trichlorobenzene	4.26	0.50	5	0	85	70	130				
1,2,4-Trichlorobenzene	4.75	0.50	5	0	95	70	130				
1,1,1-Trichloroethane	4.98	0.50	5	0	100	70	130				
1,1,2-Trichloroethane	4.63	0.50	5	0	93	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 2		SampType: Continuing Calibration Verification Standar				Lab ID: CCV041420			Method: SW8260B		
Analysis Date: 04/14/20 14:06		Units: ug/L		Prep Info:			Prep Date:		Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.64	0.50	5	0	93	70	130				
Trichlorofluoromethane	5.54	0.50	5	0	111	70	130				
1,2,3-Trichloropropane	5.08	0.50	5	0	102	70	130				
1,2,4-Trimethylbenzene	4.79	0.50	5	0	96	70	130				
1,3,5-Trimethylbenzene	4.84	0.50	5	0	97	70	130				
Vinyl chloride	5.26	0.50	5	0	105	80	120				
m+p-Xylenes	9.19	0.50	10	0	92	70	130				
o-Xylene	4.62	0.50	5	0	92	70	130				
Xylenes, Total	13.8	0.50	15	0	92	70	130				
Surr: 1,2-Dichloroethane-d4	10.7	0.50	10	0	107	70	130				
Surr: Dibromofluoromethane	9.84	0.50	10	0	98	77	126				
Surr: p-Bromofluorobenzene	10.2	0.50	10	0	102	76	127				
Surr: Toluene-d8	9.60	0.50	10	0	96	79	122				

Associated samples: B20040702-001D, B20040702-002D, B20040702-003B, B20040702-004D, B20040702-005A, B20040702-006A, B20040702-007A

Run ID :Run Order: 5971A.I_200414A: 3		SampType: Laboratory Control Sample				Lab ID: LCS041420			Method: SW8260B		
Analysis Date: 04/14/20 14:51		Units: ug/L		Prep Info:			Prep Date:		Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.76	0.50	5	0	95	71	133				
Bromobenzene	4.72	0.50	5	0	94	78	133				
Bromochloromethane	4.43	0.50	5	0	89	68	131				
Bromodichloromethane	4.81	0.50	5	0	96	67	138				
Bromoform	4.45	0.50	5	0	89	64	136				
Bromomethane	5.97	0.50	5	0	119	60	138				
n-Butylbenzene	4.56	0.50	5	0	91	72	135				
sec-Butylbenzene	4.83	0.50	5	0	97	73	135				
tert-Butylbenzene	4.63	0.50	5	0	93	69	137				
Carbon tetrachloride	4.93	0.50	5	0	99	61	144				
Chlorobenzene	4.71	0.50	5	0	94	78	136				
Chlorodibromomethane	4.58	0.50	5	0	92	72	136				
Chloroethane	5.63	0.50	5	0	113	64	136				
Chloroform	4.62	0.50	5	0	92	69	133				
Chloromethane	5.42	0.50	5	0	108	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: **5971A.I_200414A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS041420**

Method: **SW8260B**

Analysis Date: **04/14/20 14:51**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	4.98	1.0	5	0	100	63	125				
1,2-Dibromoethane	4.64	0.50	5	0	93	75	131				
2-Chlorotoluene	4.69	0.50	5	0	94	74	135				
Dibromomethane	4.66	0.50	5	0	93	72	133				
1,2-Dichlorobenzene	4.72	0.50	5	0	94	78	129				
4-Chlorotoluene	4.95	0.50	5	0	99	79	135				
1,3-Dichlorobenzene	4.75	0.50	5	0	95	79	132				
1,4-Dichlorobenzene	4.75	0.50	5	0	95	78	131				
Dichlorodifluoromethane	6.07	0.50	5	0	121	55	141				
1,1-Dichloroethane	4.87	0.50	5	0	97	72	130				
1,2-Dichloroethane	5.20	0.50	5	0	104	57	146				
1,1-Dichloroethene	4.84	0.50	5	0	97	66	142				
cis-1,2-Dichloroethene	4.70	0.50	5	0	94	74	133				
trans-1,2-Dichloroethene	5.04	0.50	5	0	101	76	138				
1,2-Dichloropropane	4.92	0.50	5	0	98	72	135				
1,3-Dichloropropane	4.61	0.50	5	0	92	75	134				
2,2-Dichloropropane	5.43	0.50	5	0	109	42	167				
1,1-Dichloropropene	4.95	0.50	5	0	99	72	140				
cis-1,3-Dichloropropene	4.98	0.50	5	0	100	75	132				
trans-1,3-Dichloropropene	4.95	0.50	5	0	99	77	145				
Ethylbenzene	4.63	0.50	5	0	93	78	131				
Hexachlorobutadiene	5.22	0.50	5	0	104	65	141				
Isopropylbenzene	4.92	0.50	5	0	98	72	135				
p-Isopropyltoluene	4.65	0.50	5	0	93	71	134				
Methyl tert-butyl ether (MTBE)	4.89	0.50	5	0	98	58	151				
Methylene chloride	4.63	0.50	5	0	93	73	126				
Naphthalene	5.37	0.50	5	0	107	55	139				
n-Propylbenzene	4.84	0.50	5	0	97	70	139				
Styrene	4.68	0.50	5	0	94	76	134				
1,1,1,2-Tetrachloroethane	4.71	0.50	5	0	94	75	135				
1,1,2,2-Tetrachloroethane	4.88	0.50	5	0	98	72	132				
Tetrachloroethene	4.66	0.50	5	0	93	78	137				
Toluene	4.71	0.50	5	0	94	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 3		SampType: Laboratory Control Sample				Lab ID: LCS041420			Method: SW8260B		
Analysis Date: 04/14/20 14:51		Units: ug/L		Prep Info:			Prep Date:		Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	4.93	0.50	5	0	99	42	152				
1,2,4-Trichlorobenzene	4.94	0.50	5	0	99	58	142				
1,1,1-Trichloroethane	5.04	0.50	5	0	101	64	141				
1,1,2-Trichloroethane	4.79	0.50	5	0	96	72	133				
Trichloroethene	4.79	0.50	5	0	96	75	138				
Trichlorofluoromethane	5.51	0.50	5	0	110	58	139				
1,2,3-Trichloropropane	4.97	0.50	5	0	99	67	133				
1,2,4-Trimethylbenzene	4.52	0.50	5	0	90	71	129				
1,3,5-Trimethylbenzene	4.68	0.50	5	0	94	68	135				
Vinyl chloride	5.58	0.50	5	0	112	66	140				
m+p-Xylenes	9.46	0.50	10	0	95	78	133				
o-Xylene	4.70	0.50	5	0	94	79	136				
Xylenes, Total	14.2	0.50	15	0	94	78	136				
Surr: 1,2-Dichloroethane-d4	10.6	0.50	10	0	106	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.74	0.50	10	0	97	76	127				
Surr: Toluene-d8	9.89	0.50	10	0	99	79	122				

Associated samples: B20040702-001D, B20040702-002D, B20040702-003B, B20040702-004D, B20040702-005A, B20040702-006A, B20040702-007A

Run ID :Run Order: 5971A.I_200414A: 4		SampType: Method Blank				Lab ID: MBLK041420			Method: SW8260B		
Analysis Date: 04/14/20 15:45		Units: ug/L		Prep Info:			Prep Date:		Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: **5971A.I_200414A: 4**

SampType: **Method Blank**

Lab ID: **MBLK041420**

Method: **SW8260B**

Analysis Date: **04/14/20 15:45**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 4		SampType: Method Blank			Lab ID: MBLK041420				Method: SW8260B		
Analysis Date: 04/14/20 15:45		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	10.6	0.50	10	0	106	70	130				
Surr: Dibromofluoromethane	9.97	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	9.89	0.50	10	0	99	76	127				
Surr: Toluene-d8	9.69	0.50	10	0	97	79	122				

Associated samples: B20040702-001D, B20040702-002D, B20040702-003B, B20040702-004D, B20040702-005A, B20040702-006A, B20040702-007A

Run ID :Run Order: 5971A.I_200414A: 21		SampType: Sample Matrix Spike			Lab ID: B20040689-002AMS				Method: SW8260B		
Analysis Date: 04/15/20 00:35		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	49.5	5.0	50	0	99	71	133				
Bromobenzene	48.8	5.0	50	0	98	78	133				
Bromochloromethane	46.6	5.0	50	0	93	68	131				
Bromodichloromethane	49.3	5.0	50	0	99	67	138				
Bromoform	47.7	5.0	50	0	95	64	136				
Bromomethane	28.4	5.0	50	0	57	60	138				S
n-Butylbenzene	53.3	5.0	50	0	107	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 21	SampType: Sample Matrix Spike				Lab ID: B20040689-002AMS			Method: SW8260B			
Analysis Date: 04/15/20 00:35	Units: ug/L					Prep Info: Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	54.6	5.0	50	0	109	73	135				
tert-Butylbenzene	50.7	5.0	50	0	101	69	137				
Carbon tetrachloride	50.9	5.0	50	0	102	61	144				
Chlorobenzene	46.8	5.0	50	0	94	78	136				
Chlorodibromomethane	47.1	5.0	50	0	94	72	136				
Chloroethane	57.2	5.0	50	0	114	64	136				
Chloroform	48.8	5.0	50	0	98	69	133				
Chloromethane	50.4	5.0	50	0	101	63	149				
1,2-Dibromo-3-chloropropane	51.3	10	50	0	103	63	125				
1,2-Dibromoethane	47.3	5.0	50	0	95	75	131				
2-Chlorotoluene	51.0	5.0	50	0	102	74	135				
Dibromomethane	47.1	5.0	50	0	94	72	133				
1,2-Dichlorobenzene	51.8	5.0	50	0	104	78	129				
4-Chlorotoluene	55.7	5.0	50	0	111	79	135				
1,3-Dichlorobenzene	51.9	5.0	50	0	104	79	132				
1,4-Dichlorobenzene	52.4	5.0	50	0	105	78	131				
Dichlorodifluoromethane	58.9	5.0	50	0	118	55	141				
1,1-Dichloroethane	52.8	5.0	50	0	106	72	130				
1,2-Dichloroethane	55.2	5.0	50	0	110	57	146				
1,1-Dichloroethene	51.3	5.0	50	0	103	66	142				
cis-1,2-Dichloroethene	113	5.0	50	66.32	94	74	133				
trans-1,2-Dichloroethene	52.8	5.0	50	0	106	76	138				
1,2-Dichloropropane	49.0	5.0	50	0	98	72	135				
1,3-Dichloropropane	47.3	5.0	50	0	95	75	134				
2,2-Dichloropropane	51.3	5.0	50	0	103	42	167				
1,1-Dichloropropene	50.9	5.0	50	0	102	72	140				
cis-1,3-Dichloropropene	50.0	5.0	50	0	100	75	132				
trans-1,3-Dichloropropene	48.5	5.0	50	0	97	77	145				
Ethylbenzene	48.6	5.0	50	0	97	78	131				
Hexachlorobutadiene	51.4	5.0	50	0	103	65	141				
Isopropylbenzene	53.4	5.0	50	0	107	72	135				
p-Isopropyltoluene	51.7	5.0	50	0	103	71	134				
Methyl tert-butyl ether (MTBE)	51.7	5.0	50	0	103	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 21		SampType: Sample Matrix Spike			Lab ID: B20040689-002AMS			Method: SW8260B			
Analysis Date: 04/15/20 00:35		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	50.0	5.0	50	0	100	73	126				
Naphthalene	54.5	5.0	50	0	109	55	139				
n-Propylbenzene	51.6	5.0	50	0	103	70	139				
Styrene	47.7	5.0	50	0	95	76	134				
1,1,1,2-Tetrachloroethane	47.6	5.0	50	0	95	75	135				
1,1,2,2-Tetrachloroethane	53.4	5.0	50	0	107	72	132				
Tetrachloroethene	110	5.0	50	65.16	90	78	137				
Toluene	47.3	5.0	50	0	95	78	134				
1,2,3-Trichlorobenzene	48.1	5.0	50	0	96	42	152				
1,2,4-Trichlorobenzene	50.7	5.0	50	0	101	58	142				
1,1,1-Trichloroethane	52.4	5.0	50	0	105	64	141				
1,1,2-Trichloroethane	50.1	5.0	50	0	100	72	133				
Trichloroethene	59.1	5.0	50	8.807	101	75	138				
Trichlorofluoromethane	53.6	5.0	50	0	107	58	139				
1,2,3-Trichloropropane	52.5	5.0	50	0	105	67	133				
1,2,4-Trimethylbenzene	50.9	5.0	50	0	102	71	129				
1,3,5-Trimethylbenzene	53.4	5.0	50	0	107	68	135				
Vinyl chloride	53.2	5.0	50	0	106	66	140				
m+p-Xylenes	95.4	5.0	100	0	95	78	133				
o-Xylene	48.7	5.0	50	0	97	79	136				
Xylenes, Total	144	5.0	150	0	96	78	136				
Surr: 1,2-Dichloroethane-d4	109	5.0	100	0	108	70	130				
Surr: Dibromofluoromethane	101	5.0	100	0	101	77	126				
Surr: p-Bromofluorobenzene	101	5.0	100	0	101	76	127				
Surr: Toluene-d8	96.8	5.0	100	0	97	79	122				

Associated samples: B20040702-001D, B20040702-002D, B20040702-003B, B20040702-004D, B20040702-005A, B20040702-006A, B20040702-007A

Run ID :Run Order: 5971A.I_200414A: 22		SampType: Sample Matrix Spike Duplicate			Lab ID: B20040689-002AMSD			Method: SW8260B			
Analysis Date: 04/15/20 01:02		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	51.3	5.0	50	0	103	71	133	49.49	3.6	20	
Bromobenzene	51.3	5.0	50	0	103	78	133	48.79	5.0	20	
Bromochloromethane	45.6	5.0	50	0	91	68	131	46.6	2.2	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 22	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040689-002AMSD				Method: SW8260B		
Analysis Date: 04/15/20 01:02	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	50.0	5.0	50	0	100	67	138	49.28	1.5	20	
Bromoform	47.5	5.0	50	0	95	64	136	47.74	0.6	20	
Bromomethane	27.2	5.0	50	0	54	60	138	28.43	4.4	20	S
n-Butylbenzene	54.5	5.0	50	0	109	72	135	53.32	2.3	20	
sec-Butylbenzene	55.1	5.0	50	0	110	73	135	54.65	0.8	20	
tert-Butylbenzene	53.9	5.0	50	0	108	69	137	50.71	6.1	20	
Carbon tetrachloride	49.7	5.0	50	0	99	61	144	50.87	2.2	20	
Chlorobenzene	47.1	5.0	50	0	94	78	136	46.78	0.7	20	
Chlorodibromomethane	46.2	5.0	50	0	92	72	136	47.07	1.9	20	
Chloroethane	55.0	5.0	50	0	110	64	136	57.22	4.0	20	
Chloroform	48.6	5.0	50	0	97	69	133	48.85	0.6	20	
Chloromethane	48.3	5.0	50	0	97	63	149	50.39	4.2	20	
1,2-Dibromo-3-chloropropane	54.8	10	50	0	110	63	125	51.27	6.7	20	
1,2-Dibromoethane	46.1	5.0	50	0	92	75	131	47.26	2.5	20	
2-Chlorotoluene	53.4	5.0	50	0	107	74	135	50.99	4.6	20	
Dibromomethane	47.3	5.0	50	0	95	72	133	47.06	0.6	20	
1,2-Dichlorobenzene	53.9	5.0	50	0	108	78	129	51.85	4.0	20	
4-Chlorotoluene	57.4	5.0	50	0	115	79	135	55.67	3.1	20	
1,3-Dichlorobenzene	52.7	5.0	50	0	105	79	132	51.89	1.5	20	
1,4-Dichlorobenzene	50.5	5.0	50	0	101	78	131	52.4	3.6	20	
Dichlorodifluoromethane	58.0	5.0	50	0	116	55	141	58.88	1.4	20	
1,1-Dichloroethane	51.4	5.0	50	0	103	72	130	52.75	2.6	20	
1,2-Dichloroethane	56.2	5.0	50	0	112	57	146	55.16	1.8	20	
1,1-Dichloroethene	51.4	5.0	50	0	103	66	142	51.28	0.3	20	
cis-1,2-Dichloroethene	115	5.0	50	66.32	97	74	133	113.1	1.3	20	
trans-1,2-Dichloroethene	51.9	5.0	50	0	104	76	138	52.76	1.6	20	
1,2-Dichloropropane	49.6	5.0	50	0	99	72	135	48.97	1.2	20	
1,3-Dichloropropane	47.3	5.0	50	0	95	75	134	47.33	0.0	20	
2,2-Dichloropropane	51.4	5.0	50	0	103	42	167	51.34	0.1	20	
1,1-Dichloropropene	49.7	5.0	50	0	99	72	140	50.85	2.2	20	
cis-1,3-Dichloropropene	48.0	5.0	50	0	96	75	132	49.99	4.2	20	
trans-1,3-Dichloropropene	47.9	5.0	50	0	96	77	145	48.51	1.4	20	
Ethylbenzene	48.2	5.0	50	0	96	78	131	48.6	0.8	20	

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340602

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414A: 22	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040689-002AMSD				Method: SW8260B		
Analysis Date: 04/15/20 01:02	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	55.0	5.0	50	0	110	65	141	51.38	6.8	20	
Isopropylbenzene	54.9	5.0	50	0	110	72	135	53.36	2.9	20	
p-Isopropyltoluene	53.6	5.0	50	0	107	71	134	51.73	3.5	20	
Methyl tert-butyl ether (MTBE)	51.2	5.0	50	0	102	58	151	51.66	0.9	20	
Methylene chloride	51.4	5.0	50	0	103	73	126	49.98	2.9	20	
Naphthalene	58.7	5.0	50	0	117	55	139	54.45	7.6	20	
n-Propylbenzene	52.3	5.0	50	0	105	70	139	51.57	1.4	20	
Styrene	47.0	5.0	50	0	94	76	134	47.74	1.5	20	
1,1,1,2-Tetrachloroethane	47.0	5.0	50	0	94	75	135	47.6	1.3	20	
1,1,2,2-Tetrachloroethane	53.8	5.0	50	0	108	72	132	53.36	0.9	20	
Tetrachloroethene	108	5.0	50	65.16	85	78	137	110	2.1	20	
Toluene	47.1	5.0	50	0	94	78	134	47.26	0.3	20	
1,2,3-Trichlorobenzene	56.9	5.0	50	0	114	42	152	48.08	17	20	
1,2,4-Trichlorobenzene	53.8	5.0	50	0	108	58	142	50.71	5.9	20	
1,1,1-Trichloroethane	51.8	5.0	50	0	104	64	141	52.39	1.0	20	
1,1,2-Trichloroethane	48.4	5.0	50	0	97	72	133	50.15	3.5	20	
Trichloroethene	56.9	5.0	50	8.807	96	75	138	59.11	3.8	20	
Trichlorofluoromethane	54.7	5.0	50	0	109	58	139	53.58	2.1	20	
1,2,3-Trichloropropane	51.8	5.0	50	0	104	67	133	52.55	1.4	20	
1,2,4-Trimethylbenzene	53.4	5.0	50	0	107	71	129	50.91	4.8	20	
1,3,5-Trimethylbenzene	54.6	5.0	50	0	109	68	135	53.45	2.1	20	
Vinyl chloride	51.2	5.0	50	0	102	66	140	53.16	3.7	20	
m+p-Xylenes	96.9	5.0	100	0	97	78	133	95.41	1.5	20	
o-Xylene	48.5	5.0	50	0	97	79	136	48.7	0.5	20	
Xylenes, Total	145	5.0	150	0	97	78	136	144.1			
Surr: 1,2-Dichloroethane-d4	108	5.0	100	0	108	70	130	0			
Surr: Dibromofluoromethane	99.0	5.0	100	0	99	77	126	0			
Surr: p-Bromofluorobenzene	103	5.0	100	0	103	76	127	0			
Surr: Toluene-d8	97.0	5.0	100	0	97	79	122	0			

Associated samples: B20040702-001D, B20040702-002D, B20040702-003B, B20040702-004D, B20040702-005A, B20040702-006A, B20040702-007A



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340629

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414B: 1		SampType: MS Tuning File			Lab ID: 14APR29_D_TUNE			Method: SW8260B			
Analysis Date: 04/15/20 02:25		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.8		100	0	20.8	15	40				
75, % of mass 95	41.8		100	0	41.8	30	60				
96, % of mass 95	6.70		100	0	6.7	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	70.3		100	0	70.3	50	99.99				
175, % of mass 174	7.10		100	0	7.1	5	9				
176, % of mass 174	98.2		100	0	98.2	95	101				
177, % of mass 176	7.50		100	0	7.5	5	9				

Associated samples: B20040702-002D, B20040702-004D

Run ID :Run Order: 5971A.I_200414B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041420a			Method: SW8260B			
Analysis Date: 04/15/20 02:52		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.80	0.50	5	0	96	70	130				
Tetrachloroethene	4.29	0.50	5	0	86	70	130				
Trichloroethene	4.46	0.50	5	0	89	70	130				

Associated samples: B20040702-002D, B20040702-004D

Run ID :Run Order: 5971A.I_200414B: 3		SampType: Laboratory Control Sample			Lab ID: LCS041420a			Method: SW8260B			
Analysis Date: 04/15/20 03:20		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.49	0.50	5	0	90	74	133				
Tetrachloroethene	4.20	0.50	5	0	84	78	137				
Trichloroethene	4.54	0.50	5	0	91	75	138				

Associated samples: B20040702-002D, B20040702-004D

Run ID :Run Order: 5971A.I_200414B: 4		SampType: Method Blank			Lab ID: MBLK041420a			Method: SW8260B			
Analysis Date: 04/15/20 04:15		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340629

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200414B: 4	SampType: Method Blank			Lab ID: MBLK041420a				Method: SW8260B			
Analysis Date: 04/15/20 04:15	Units: ug/L			Prep Info: Prep Date:				Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene	ND	0.50									
Trichloroethene	ND	0.50									

Associated samples: **B20040702-002D, B20040702-004D**

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340630

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200415B: 1		SampType: MS Tuning File			Lab ID: 15APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/15/20 10:27		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.8		100	0	20.8	15	40				
75, % of mass 95	41.2		100	0	41.2	30	60				
96, % of mass 95	6.90		100	0	6.9	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	73.0		100	0	73	50	99.99				
175, % of mass 174	7.00		100	0	7	5	9				
176, % of mass 174	97.8		100	0	97.8	95	101				
177, % of mass 176	6.40		100	0	6.4	5	9				

Associated samples: B20040702-001D, B20040702-003B, B20040702-005A, B20040702-006A

Run ID :Run Order: 5971A.I_200415B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041520			Method: SW8260B			
Analysis Date: 04/15/20 11:09		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.82	0.50	5	0	96	70	130				
Tetrachloroethene	4.40	0.50	5	0	88	70	130				

Associated samples: B20040702-001D, B20040702-003B, B20040702-005A, B20040702-006A

Run ID :Run Order: 5971A.I_200415B: 3		SampType: Laboratory Control Sample			Lab ID: LCS041520			Method: SW8260B			
Analysis Date: 04/15/20 11:36		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.96	0.50	5	0	99	74	133				
Tetrachloroethene	4.40	0.50	5	0	88	78	137				

Associated samples: B20040702-001D, B20040702-003B, B20040702-005A, B20040702-006A

Run ID :Run Order: 5971A.I_200415B: 4		SampType: Method Blank			Lab ID: MBLK041520			Method: SW8260B			
Analysis Date: 04/15/20 13:01		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									
Tetrachloroethene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040702

BatchID: R340630

Date: 20-Apr-20

Run ID :Run Order: 5971A.I_200415B: 4	SampType: Method Blank	Lab ID: MBLK041520	Method: SW8260B								
Analysis Date: 04/15/20 13:01	Units: ug/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040702-001D, B20040702-003B, B20040702-005A, B20040702-006A**



Work Order Receipt Checklist

Tasman Geosciences Inc

B20040702

Login completed by: Quincee Jones

Date Received: 4/9/2020

Reviewed by: BL2000\tedwards

Received by: bgs

Reviewed Date: 4/13/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	4.8°C No Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:



Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

Account Information (Billing Information)

Company Name TASMAN GEOSCIENCES
 Contact Laura Heaton
 Phone 406-259-1033
 Mailing Address 917 1st AVENUE N., Suite 3
 City, State, Zip BILLINGS, MT 59101
 Email lheaton@tasman-geo.com
 Receive Invoice Hard Copy Email Receive Report Hard Copy Email
 Purchase Order Quote Bottle Order

Report Information (if different than Account Information)

Company Name
 Contact
 Phone
 Mailing Address
 City, State, Zip
 Email
 Receive Report Hard Copy Email
 Special Report/Formats:
 LEVEL IV NELAC EDD/EDT (contact laboratory) Other

Comments

(Empty comment box)

Project Information

Project Name, PWSID, Permit, etc. L55 Semi Annual GW
 Sampler Name S. KRANSZER Sampler Phone 406-860-5469
 Sample Origin State MT EPA/State Compliance Yes No
 URANIUM MINING CLIENTS MUST indicate sample type.
 NOT Source or Byproduct Material
 Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

- A - Air
- W - Water
- S - Soils/Solids
- V - Vegetation
- B - Biosessay
- O - Other
- DW - Drinking Water

Analysis Requested

Matrix Code	Analysis Requested
82606 VOCs	X
E300.A Sulfate	X
A232.D Alkalinity	X
E6010.20 Metals	X
SW 815.M Headspace	X
A5310C TOC	X

See Attached

All turnaround times are standard unless marked as RUSH.
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Number of Containers	Matrix (See Codes Above)	Analysis Requested											ELI LAB ID (Laboratory Use Only)	
	Date	Time			82606 VOCs	E300.A Sulfate	A232.D Alkalinity	E6010.20 Metals	SW 815.M Headspace	A5310C TOC							
1 MW007GW036-701	9-9-20	0730	8	W	X	X	X	X	X	X							B0040702-001
2 MW007GW036	9-9-20	0938	8	W	X	X	X	X	X	X							002
3 MW456-D	9-9-20	1110	4	W	X						X						-003
4 MW455-D	9-9-20	1207	8	W	X	X	X	X	X	X							-004
5 MW430-I	9-9-20	1346	3	W	X												-005
6 MW430-D	9-9-20	1513	3	W	X												-006
7 TRIP BLANK	9-9-20	-	1	W	X												-007
8 TB 31312000 B-JDB SHP027 (W) 41912020																	+
9																	
10																	

Custody Record MUST be signed

Relinquished by (print) Scott Kranszer Date/Time 9-9-20/1541 Signature [Signature]
 Received by (print) _____ Date/Time _____ Signature _____

Relinquished by (print) _____ Date/Time _____ Signature _____
 Received by Laboratory (print) Deiana Sanchez Date/Time 9/9/2020 1540 Signature [Signature]

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type Cash Check	Amount \$	Receipt Number (cash/check only)
------------	--------------	--------------------------	---------------	--------------------	-------------------	---------------	-------------------------------	--------------	----------------------------------

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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BOTTLE ORDER 140951



SHIPPED TO: Tasman Geosciences Inc

Contact: Laura Heaton

Order Created by: Wynn Pippin

Shipped From: Billings, MT

Ship Date: 3/20/2020

VIA: PickUp

Phone: (406) 259-1033

Project: LSS Groundwater

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
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VOCs (70 Sets)

40 mL Clear Glass VOA	3	SW8260B	8260-Volatile Organic Compounds-Short List		<input checked="" type="checkbox"/> HCL	Zero headspace	1
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Other parameters (6 Sets)

500 mL Plastic	1	E300.0	Chloride Sulfate/Anions by Ion Chromatography				1
		A2320 B	Alkalinity				
250 mL Plastic	1	E6010.20	Metals by ICP/ICPMS, Dissolved		<input checked="" type="checkbox"/> HNO3	Ca, Mg, Na, K, As Filter before preservation	1
40 mL Clear Glass VOA	2	SW8015M	Headspace Gas Analysis		<input type="checkbox"/> H2SO4	Methane, ethene, ethane Zero headspace	1

TOC (37 Sets)

250 mL Amber Glass	1	A5310 C	Carbon, Total Organic		<input type="checkbox"/> H3PO4		1
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Supplies (5 Sets)

Cooler-Large	1	FIELD	Supplies				1
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Trip Blank (5 Sets)

40 mL Clear Glass VOA Trip Blank	1	SW8260B	8260-Volatile Organic Compounds-Short List	<input checked="" type="checkbox"/> HCL		1
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- HNO₃ - Nitric Acid H₂SO₄ - Sulfuric Acid NaOH - Sodium Hydroxide
 ZnAc - Zinc Acetate HCl - Hydrochloric Acid H₃PO₄ - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.



ANALYTICAL SUMMARY REPORT

April 21, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20040782 Quote ID: B2871

Project Name: LSS Semi-Annual GWM

Energy Laboratories Inc Billings MT received the following 8 samples for Tasman Geosciences Inc on 4/10/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20040782-001	MW456-I	04/10/20 9:52	04/10/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20040782-002	MW455-I	04/10/20 10:45	04/10/20	Aqueous	Same As Above
B20040782-003	PT-04GW036	04/10/20 11:43	04/10/20	Aqueous	Same As Above
B20040782-004	MW431-D-701	04/10/20 12:30	04/10/20	Aqueous	Same As Above
B20040782-005	MW431-D	04/10/20 13:09	04/10/20	Aqueous	Same As Above
B20040782-006	MW431-I	04/10/20 13:43	04/10/20	Aqueous	8260-Volatile Organic Compounds- Short List
B20040782-007	MW009GW036	04/10/20 14:32	04/10/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20040782-008	Trip Blank Lot03312020 B-JDB SHP0277	04/10/20 0:00	04/10/20	Trip Blank	8260-Volatile Organic Compounds- Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Tasman Geosciences Inc
Project: LSS Semi-Annual GWM
Work Order: B20040782

Report Date: 04/21/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW456-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-001
Collection Date: 04/10/20 09:52
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	30	mg/L	D	4	1	A5310 C	04/16/20 20:26 / eli-c			SUB-C257429 : 13		C_R257429
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,1-Dichloroethane	0.22	ug/L	J	0.50	0.093	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,1-Dichloroethene	0.25	ug/L	J	0.50	0.15	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
cis-1,2-Dichloroethene	337	ug/L		10	2.5	SW8260B	04/17/20 05:32 / msc			5971A.I_200416C : 10		R340770
trans-1,2-Dichloroethene	4.8	ug/L		0.50	0.13	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix

J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW456-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-001
Collection Date: 04/10/20 09:52
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Tetrachloroethene	12	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Trichloroethene	60	ug/L		10	2.6	SW8260B	04/17/20 05:32 / msc			5971A.I_200416C : 10		R340770
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Vinyl chloride	0.86	ug/L		0.50	0.14	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Surr: 1,2-Dichloroethane-d4	112	%REC		70-130		SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616
Surr: p-Bromofluorobenzene	104	%REC		76-127		SW8260B	04/16/20 19:55 / msc			5971A.I_200416A : 18		R340616

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW455-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-002
Collection Date: 04/10/20 10:45
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	212	mg/L	D	40	10	A5310 C	04/16/20 20:47 / eli-c			SUB-C257429 : 14		C_R257429
VOLATILE ORGANIC COMPOUNDS												
Benzene	0.23	ug/L	J	0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,1-Dichloroethane	0.31	ug/L	J	0.50	0.093	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,1-Dichloroethene	0.33	ug/L	J	0.50	0.15	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
cis-1,2-Dichloroethene	489	ug/L		25	6.4	SW8260B	04/18/20 04:31 / msc			5971A.I_200417B : 5		R340787
trans-1,2-Dichloroethene	6.7	ug/L		0.50	0.13	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix

J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW455-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-002
Collection Date: 04/10/20 10:45
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Tetrachloroethene	0.42	ug/L	J	0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Trichloroethene	5.7	ug/L		0.50	0.13	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Vinyl chloride	10	ug/L		0.50	0.14	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Surr: 1,2-Dichloroethane-d4	111	%REC		70-130		SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616
Surr: p-Bromofluorobenzene	103	%REC		76-127		SW8260B	04/16/20 20:50 / msc			5971A.I_200416A : 20		R340616

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: PT-04GW036
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-003
Collection Date: 04/10/20 11:43
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	7.9	mg/L		0.5	0.1	A5310 C	04/16/20 06:05 / eli-c			SUB-C257415 : 39		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
cis-1,2-Dichloroethene	5.0	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: PT-04GW036
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-003
Collection Date: 04/10/20 11:43
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Tetrachloroethene	1.1	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Trichloroethene	1.1	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Surr: Dibromofluoromethane	97.0	%REC		77-126		SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616
Surr: p-Bromofluorobenzene	106	%REC		76-127		SW8260B	04/16/20 17:10 / msc			5971A.I_200416A : 12		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW431-D-701
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-004
Collection Date: 04/10/20 12:30
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.9	mg/L		0.5	0.1	A5310 C	04/16/20 06:28 / eli-c			SUB-C257415 : 40		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
cis-1,2-Dichloroethene	76	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
trans-1,2-Dichloroethene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW431-D-701
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-004
Collection Date: 04/10/20 12:30
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Tetrachloroethene	634	ug/L		50	11	SW8260B	04/17/20 03:14 / msc			5971A.I_200416C : 5		R340770
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Trichloroethene	68	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Vinyl chloride	ND	ug/L		5.0	1.4	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Surr: 1,2-Dichloroethane-d4	113	%REC		70-130		SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Surr: Toluene-d8	93.0	%REC		79-122		SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770
Surr: p-Bromofluorobenzene	106	%REC		76-127		SW8260B	04/17/20 08:44 / msc			5971A.I_200416C : 16		R340770

- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW431-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-005
Collection Date: 04/10/20 13:09
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.9	mg/L		0.5	0.1	A5310 C	04/16/20 07:19 / eli-c			SUB-C257415 : 42		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
cis-1,2-Dichloroethene	75	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
trans-1,2-Dichloroethene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW431-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-005
Collection Date: 04/10/20 13:09
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Tetrachloroethene	593	ug/L		50	11	SW8260B	04/17/20 03:41 / msc			5971A.I_200416C : 6		R340770
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Trichloroethene	69	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Vinyl chloride	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Surr: Dibromofluoromethane	97.0	%REC		77-126		SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Surr: 1,2-Dichloroethane-d4	111	%REC		70-130		SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770
Surr: p-Bromofluorobenzene	102	%REC		76-127		SW8260B	04/17/20 09:28 / msc			5971A.I_200416C : 17		R340770

- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW431-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-006
Collection Date: 04/10/20 13:43
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
cis-1,2-Dichloroethene	126	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
trans-1,2-Dichloroethene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW431-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-006
Collection Date: 04/10/20 13:43
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Tetrachloroethene	667	ug/L		50	11	SW8260B	04/17/20 04:09 / msc			5971A.I_200416C : 7		R340770
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Trichloroethene	44	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Vinyl chloride	ND	ug/L		5.0	1.4	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Surr: Dibromofluoromethane	97.0	%REC		77-126		SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Surr: 1,2-Dichloroethane-d4	113	%REC		70-130		SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770
Surr: p-Bromofluorobenzene	104	%REC		76-127		SW8260B	04/17/20 09:56 / msc			5971A.I_200416C : 18		R340770

- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW009GW036
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-007
Collection Date: 04/10/20 14:32
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	8.2	mg/L		0.5	0.1	A5310 C	04/16/20 07:40 / eli-c			SUB-C257415 : 43		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,1-Dichloroethane	0.46	ug/L	J	0.50	0.093	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,1-Dichloroethene	0.52	ug/L		0.50	0.15	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
cis-1,2-Dichloroethene	273	ug/L		10	2.5	SW8260B	04/17/20 06:26 / msc			5971A.I_200416C : 11		R340770
trans-1,2-Dichloroethene	2.7	ug/L		0.50	0.13	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW009GW036
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040782-007
Collection Date: 04/10/20 14:32
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Tetrachloroethene	267	ug/L		10	2.2	SW8260B	04/17/20 06:26 / msc			5971A.I_200416C : 11		R340770
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Trichloroethene	59	ug/L		10	2.6	SW8260B	04/17/20 06:26 / msc			5971A.I_200416C : 11		R340770
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Vinyl chloride	0.63	ug/L		0.50	0.14	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/16/20 20:22 / msc			5971A.I_200416A : 19		R340616

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GWM
Matrix: Trip Blank

Lab ID: B20040782-008
Collection Date: 04/10/20
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GWM
Matrix: Trip Blank

Lab ID: B20040782-008
Collection Date: 04/10/20
Date Received: 04/10/20
Report Date: 04/21/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Trichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Surr: 1,2-Dichloroethane-d4	113	%REC		70-130		SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616
Surr: p-Bromofluorobenzene	101	%REC		76-127		SW8260B	04/16/20 21:45 / msc			5971A.I_200416A : 21		R340616

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: C_R257415

Date: 21-Apr-20

Run ID :Run Order: SUB-C257415: 1	SampType: Laboratory Control Sample	Lab ID: LCS-11031	Method: A5310 C								
Analysis Date: 04/15/20 16:04	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.25	0.50	5	0	105	90	109	0			

Associated samples: **B20040782-003A, B20040782-004A, B20040782-005A, B20040782-007A**

Run ID :Run Order: SUB-C257415: 2	SampType: Method Blank	Lab ID: MBLK	Method: A5310 C								
Analysis Date: 04/15/20 16:34	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	0.2	0.2									

Associated samples: **B20040782-003A, B20040782-004A, B20040782-005A, B20040782-007A**

Run ID :Run Order: SUB-C257415: 28	SampType: Continuing Calibration Verification Standard	Lab ID: CCV-11020	Method: A5310 C								
Analysis Date: 04/16/20 01:37	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.95	0.50	5	0	99	90	110	0			

Associated samples: **B20040782-003A, B20040782-004A, B20040782-005A, B20040782-007A**

Run ID :Run Order: SUB-C257415: 41	SampType: Continuing Calibration Verification Standard	Lab ID: CCV-11020	Method: A5310 C								
Analysis Date: 04/16/20 06:49	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.17	0.50	5	0	103	90	110	0			

Associated samples: **B20040782-003A, B20040782-004A, B20040782-005A, B20040782-007A**

Run ID :Run Order: SUB-C257415: 44	SampType: Sample Matrix Spike	Lab ID: C20040514-001AMS	Method: A5310 C								
Analysis Date: 04/16/20 09:32	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	8.64	0.50	5	3.614	100	90	109	0			

Associated samples: **B20040782-003A, B20040782-004A, B20040782-005A, B20040782-007A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: C_R257415

Date: 21-Apr-20

Run ID :Run Order: SUB-C257415: 45	SampType: Sample Matrix Spike Duplicate				Lab ID: C20040514-001AMSD				Method: A5310 C		
Analysis Date: 04/16/20 09:53	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	8.63	0.50	5	3.614	100	90	109	8.638	0.1	20	

Associated samples: **B20040782-003A, B20040782-004A, B20040782-005A, B20040782-007A**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: C_R257429

Date: 21-Apr-20

Run ID :Run Order: SUB-C257429: 1	SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C		
Analysis Date: 04/16/20 16:24	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.26	0.50	5	0	105	90	109	0			

Associated samples: B20040782-001A, B20040782-002A

Run ID :Run Order: SUB-C257429: 2	SampType: Method Blank				Lab ID: MBLK				Method: A5310 C		
Analysis Date: 04/16/20 17:00	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: B20040782-001A, B20040782-002A

Run ID :Run Order: SUB-C257429: 3	SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C		
Analysis Date: 04/16/20 17:19	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.97	0.50	5	0	99	90	110	0			

Associated samples: B20040782-001A, B20040782-002A

Run ID :Run Order: SUB-C257429: 5	SampType: Sample Matrix Spike				Lab ID: C20040486-009EMS				Method: A5310 C		
Analysis Date: 04/16/20 17:54	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.19	0.50	5	0.1969	100	90	109	0			

Associated samples: B20040782-001A, B20040782-002A

Run ID :Run Order: SUB-C257429: 6	SampType: Sample Matrix Spike Duplicate				Lab ID: C20040486-009EMSD				Method: A5310 C		
Analysis Date: 04/16/20 18:13	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.34	0.50	5	0.1969	103	90	109	5.19	2.8	20	

Associated samples: B20040782-001A, B20040782-002A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 1		SampType: MS Tuning File			Lab ID: 16APR03_D_TUNE			Method: SW8260B			
Analysis Date: 04/16/20 12:09		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.0		100	0	20	15	40				
75, % of mass 95	42.5		100	0	42.5	30	60				
96, % of mass 95	6.30		100	0	6.3	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	73.1		100	0	73.1	50	99.99				
175, % of mass 174	7.90		100	0	7.9	5	9				
176, % of mass 174	97.2		100	0	97.2	95	101				
177, % of mass 176	6.60		100	0	6.6	5	9				

Associated samples: B20040782-001B, B20040782-002B, B20040782-003B, B20040782-007B, B20040782-008A

Run ID :Run Order: 5971A.I_200416A: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041620			Method: SW8260B			
Analysis Date: 04/16/20 12:40		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.89	0.50	5	0	98	70	130				
Bromobenzene	4.83	0.50	5	0	97	70	130				
Bromochloromethane	4.71	0.50	5	0	94	70	130				
Bromodichloromethane	4.82	0.50	5	0	96	70	130				
Bromoform	4.33	0.50	5	0	87	70	130				
Bromomethane	5.03	0.50	5	0	100	70	130				
n-Butylbenzene	5.08	0.50	5	0	102	70	130				
sec-Butylbenzene	4.94	0.50	5	0	99	70	130				
tert-Butylbenzene	4.51	0.50	5	0	90	70	130				
Carbon tetrachloride	5.24	0.50	5	0	105	70	130				
Chlorobenzene	4.51	0.50	5	0	90	70	130				
Chlorodibromomethane	4.36	0.50	5	0	87	70	130				
Chloroethane	5.56	0.50	5	0	111	70	130				
Chloroform	5.08	0.50	5	0	102	80	120				
Chloromethane	5.61	0.50	5	0	112	70	130				
1,2-Dibromo-3-chloropropane	4.30	1.0	5	0	86	70	130				
1,2-Dibromoethane	4.47	0.50	5	0	89	70	130				
2-Chlorotoluene	4.79	0.50	5	0	96	70	130				
Dibromomethane	4.73	0.50	5	0	95	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: **5971A.I_200416A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041620**

Method: **SW8260B**

Analysis Date: **04/16/20 12:40**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.71	0.50	5	0	94	70	130				
4-Chlorotoluene	5.13	0.50	5	0	103	70	130				
1,3-Dichlorobenzene	4.67	0.50	5	0	93	70	130				
1,4-Dichlorobenzene	4.67	0.50	5	0	93	70	130				
Dichlorodifluoromethane	5.86	0.50	5	0	117	70	130				
1,1-Dichloroethane	5.22	0.50	5	0	104	70	130				
1,2-Dichloroethane	5.25	0.50	5	0	105	70	130				
1,1-Dichloroethene	5.03	0.50	5	0	101	80	120				
cis-1,2-Dichloroethene	4.89	0.50	5	0	98	70	130				
trans-1,2-Dichloroethene	5.03	0.50	5	0	101	70	130				
1,2-Dichloropropane	4.82	0.50	5	0	96	80	120				
1,3-Dichloropropane	4.56	0.50	5	0	91	70	130				
2,2-Dichloropropane	5.38	0.50	5	0	108	70	130				
1,1-Dichloropropene	5.27	0.50	5	0	105	70	130				
cis-1,3-Dichloropropene	4.69	0.50	5	0	94	70	130				
trans-1,3-Dichloropropene	4.65	0.50	5	0	93	70	130				
Ethylbenzene	4.89	0.50	5	0	98	80	120				
Hexachlorobutadiene	4.52	0.50	5	0	90	70	130				
Isopropylbenzene	5.00	0.50	5	0	100	70	130				
p-Isopropyltoluene	4.61	0.50	5	0	92	70	130				
Methyl tert-butyl ether (MTBE)	5.06	0.50	5	0	101	70	130				
Methylene chloride	5.13	0.50	5	0	103	70	130				
Naphthalene	4.74	0.50	5	0	95	70	130				
n-Propylbenzene	4.84	0.50	5	0	97	70	130				
Styrene	4.60	0.50	5	0	92	70	130				
1,1,1,2-Tetrachloroethane	4.61	0.50	5	0	92	70	130				
1,1,2,2-Tetrachloroethane	4.74	0.50	5	0	95	70	130				
Tetrachloroethene	4.68	0.50	5	0	94	70	130				
Toluene	4.72	0.50	5	0	94	80	120				
1,2,3-Trichlorobenzene	4.35	0.50	5	0	87	70	130				
1,2,4-Trichlorobenzene	4.60	0.50	5	0	92	70	130				
1,1,1-Trichloroethane	5.24	0.50	5	0	105	70	130				
1,1,2-Trichloroethane	4.63	0.50	5	0	93	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: **5971A.I_200416A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041620**

Method: **SW8260B**

Analysis Date: **04/16/20 12:40**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.72	0.50	5	0	94	70	130				
Trichlorofluoromethane	5.54	0.50	5	0	111	70	130				
1,2,3-Trichloropropane	4.79	0.50	5	0	96	70	130				
1,2,4-Trimethylbenzene	4.83	0.50	5	0	97	70	130				
1,3,5-Trimethylbenzene	4.95	0.50	5	0	99	70	130				
Vinyl chloride	5.38	0.50	5	0	108	80	120				
m+p-Xylenes	9.34	0.50	10	0	93	70	130				
o-Xylene	4.61	0.50	5	0	92	70	130				
Xylenes, Total	13.9	0.50	15	0	93	70	130				
Surr: 1,2-Dichloroethane-d4	10.5	0.50	10	0	105	70	130				
Surr: Dibromofluoromethane	9.98	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	10.0	0.50	10	0	101	76	127				
Surr: Toluene-d8	9.63	0.50	10	0	96	79	122				

Associated samples: **B20040782-001B, B20040782-002B, B20040782-003B, B20040782-007B, B20040782-008A**

Run ID :Run Order: **5971A.I_200416A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS041620**

Method: **SW8260B**

Analysis Date: **04/16/20 13:14**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.80	0.50	5	0	96	71	133				
Bromobenzene	4.46	0.50	5	0	89	78	133				
Bromochloromethane	4.34	0.50	5	0	87	68	131				
Bromodichloromethane	4.75	0.50	5	0	95	67	138				
Bromoform	3.94	0.50	5	0	79	64	136				
Bromomethane	4.88	0.50	5	0	98	60	138				
n-Butylbenzene	4.59	0.50	5	0	92	72	135				
sec-Butylbenzene	4.79	0.50	5	0	96	73	135				
tert-Butylbenzene	4.25	0.50	5	0	85	69	137				
Carbon tetrachloride	4.85	0.50	5	0	97	61	144				
Chlorobenzene	4.56	0.50	5	0	91	78	136				
Chlorodibromomethane	4.30	0.50	5	0	86	72	136				
Chloroethane	5.45	0.50	5	0	109	64	136				
Chloroform	4.76	0.50	5	0	95	69	133				
Chloromethane	5.09	0.50	5	0	102	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 3	SampType: Laboratory Control Sample				Lab ID: LCS041620			Method: SW8260B			
Analysis Date: 04/16/20 13:14	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	4.44	1.0	5	0	89	63	125				
1,2-Dibromoethane	4.31	0.50	5	0	86	75	131				
2-Chlorotoluene	4.70	0.50	5	0	94	74	135				
Dibromomethane	4.46	0.50	5	0	89	72	133				
1,2-Dichlorobenzene	4.57	0.50	5	0	91	78	129				
4-Chlorotoluene	4.99	0.50	5	0	100	79	135				
1,3-Dichlorobenzene	4.56	0.50	5	0	91	79	132				
1,4-Dichlorobenzene	4.54	0.50	5	0	91	78	131				
Dichlorodifluoromethane	5.60	0.50	5	0	112	55	141				
1,1-Dichloroethane	5.06	0.50	5	0	101	72	130				
1,2-Dichloroethane	5.20	0.50	5	0	104	57	146				
1,1-Dichloroethene	5.02	0.50	5	0	100	66	142				
cis-1,2-Dichloroethene	4.79	0.50	5	0	96	74	133				
trans-1,2-Dichloroethene	5.03	0.50	5	0	101	76	138				
1,2-Dichloropropane	4.80	0.50	5	0	96	72	135				
1,3-Dichloropropane	4.47	0.50	5	0	89	75	134				
2,2-Dichloropropane	5.21	0.50	5	0	104	42	167				
1,1-Dichloropropene	4.92	0.50	5	0	98	72	140				
cis-1,3-Dichloropropene	4.64	0.50	5	0	93	75	132				
trans-1,3-Dichloropropene	4.71	0.50	5	0	94	77	145				
Ethylbenzene	4.45	0.50	5	0	89	78	131				
Hexachlorobutadiene	4.71	0.50	5	0	94	65	141				
Isopropylbenzene	4.81	0.50	5	0	96	72	135				
p-Isopropyltoluene	4.59	0.50	5	0	92	71	134				
Methyl tert-butyl ether (MTBE)	4.80	0.50	5	0	96	58	151				
Methylene chloride	4.91	0.50	5	0	98	73	126				
Naphthalene	5.03	0.50	5	0	101	55	139				
n-Propylbenzene	4.58	0.50	5	0	92	70	139				
Styrene	4.50	0.50	5	0	90	76	134				
1,1,1,2-Tetrachloroethane	4.36	0.50	5	0	87	75	135				
1,1,2,2-Tetrachloroethane	4.65	0.50	5	0	93	72	132				
Tetrachloroethene	4.43	0.50	5	0	89	78	137				
Toluene	4.53	0.50	5	0	91	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 3		SampType: Laboratory Control Sample			Lab ID: LCS041620			Method: SW8260B			
Analysis Date: 04/16/20 13:14		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	4.72	0.50	5	0	94	42	152				
1,2,4-Trichlorobenzene	4.59	0.50	5	0	92	58	142				
1,1,1-Trichloroethane	5.08	0.50	5	0	101	64	141				
1,1,2-Trichloroethane	4.61	0.50	5	0	92	72	133				
Trichloroethene	4.76	0.50	5	0	95	75	138				
Trichlorofluoromethane	5.09	0.50	5	0	102	58	139				
1,2,3-Trichloropropane	4.54	0.50	5	0	91	67	133				
1,2,4-Trimethylbenzene	4.49	0.50	5	0	90	71	129				
1,3,5-Trimethylbenzene	4.63	0.50	5	0	93	68	135				
Vinyl chloride	5.14	0.50	5	0	103	66	140				
m+p-Xylenes	9.05	0.50	10	0	90	78	133				
o-Xylene	4.55	0.50	5	0	91	79	136				
Xylenes, Total	13.6	0.50	15	0	91	78	136				
Surr: 1,2-Dichloroethane-d4	10.8	0.50	10	0	108	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.48	0.50	10	0	95	76	127				
Surr: Toluene-d8	9.56	0.50	10	0	96	79	122				

Associated samples: B20040782-001B, B20040782-002B, B20040782-003B, B20040782-007B, B20040782-008A

Run ID :Run Order: 5971A.I_200416A: 4		SampType: Method Blank			Lab ID: MBLK041620			Method: SW8260B			
Analysis Date: 04/16/20 14:09		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: **5971A.I_200416A: 4**

SampType: **Method Blank**

Lab ID: **MBLK041620**

Method: **SW8260B**

Analysis Date: **04/16/20 14:09**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 4		SampType: Method Blank			Lab ID: MBLK041620				Method: SW8260B		
Analysis Date: 04/16/20 14:09		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	11.1	0.50	10	0	111	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	10.0	0.50	10	0	100	76	127				
Surr: Toluene-d8	9.05	0.50	10	0	91	79	122				

Associated samples: B20040782-001B, B20040782-002B, B20040782-003B, B20040782-007B, B20040782-008A

Run ID :Run Order: 5971A.I_200416A: 6		SampType: Sample Matrix Spike			Lab ID: B20040843-002BMS				Method: SW8260B		
Analysis Date: 04/16/20 23:07		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	97.6	10	100	0	98	71	133				
Bromobenzene	102	10	100	0	102	78	133				
Bromochloromethane	87.4	10	100	0	87	68	131				
Bromodichloromethane	102	10	100	0	102	67	138				
Bromoform	91.3	10	100	0	91	64	136				
Bromomethane	22.7	10	100	0	23	60	138				S
n-Butylbenzene	109	10	100	0	109	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: **5971A.I_200416A: 6**

SampType: **Sample Matrix Spike**

Lab ID: **B20040843-002BMS**

Method: **SW8260B**

Analysis Date: **04/16/20 23:07**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	116	10	100	0	115	73	135				
tert-Butylbenzene	101	10	100	0	102	69	137				
Carbon tetrachloride	94.6	10	100	0	95	61	144				
Chlorobenzene	92.6	10	100	0	93	78	136				
Chlorodibromomethane	91.9	10	100	0	92	72	136				
Chloroethane	110	10	100	0	110	64	136				
Chloroform	96.1	10	100	0	96	69	133				
Chloromethane	82.9	10	100	0	83	63	149				
1,2-Dibromo-3-chloropropane	109	20	100	0	109	63	125				
1,2-Dibromoethane	95.3	10	100	0	95	75	131				
2-Chlorotoluene	105	10	100	0	105	74	135				
Dibromomethane	96.1	10	100	0	96	72	133				
1,2-Dichlorobenzene	103	10	100	0	103	78	129				
4-Chlorotoluene	112	10	100	0	112	79	135				
1,3-Dichlorobenzene	103	10	100	0	103	79	132				
1,4-Dichlorobenzene	99.6	10	100	0	100	78	131				
Dichlorodifluoromethane	114	10	100	0	114	55	141				
1,1-Dichloroethane	102	10	100	0	102	72	130				
1,2-Dichloroethane	109	10	100	0	109	57	146				
1,1-Dichloroethene	99.0	10	100	0	99	66	142				
cis-1,2-Dichloroethene	252	10	100	155	97	74	133				
trans-1,2-Dichloroethene	104	10	100	0	104	76	138				
1,2-Dichloropropane	97.8	10	100	0	98	72	135				
1,3-Dichloropropane	96.7	10	100	0	97	75	134				
2,2-Dichloropropane	101	10	100	0	101	42	167				
1,1-Dichloropropene	99.2	10	100	0	99	72	140				
cis-1,3-Dichloropropene	96.7	10	100	0	97	75	132				
trans-1,3-Dichloropropene	99.2	10	100	0	99	77	145				
Ethylbenzene	97.3	10	100	0	97	78	131				
Hexachlorobutadiene	99.5	10	100	0	99	65	141				
Isopropylbenzene	113	10	100	0	113	72	135				
p-Isopropyltoluene	106	10	100	0	106	71	134				
Methyl tert-butyl ether (MTBE)	103	10	100	0	103	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 6		SampType: Sample Matrix Spike			Lab ID: B20040843-002BMS			Method: SW8260B			
Analysis Date: 04/16/20 23:07		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	100	10	100	0	100	73	126				
Naphthalene	113	10	100	0	113	55	139				
n-Propylbenzene	107	10	100	0	107	70	139				
Styrene	95.6	10	100	0	96	76	134				
1,1,1,2-Tetrachloroethane	91.3	10	100	0	91	75	135				
1,1,2,2-Tetrachloroethane	113	10	100	0	113	72	132				
Tetrachloroethene	126	10	100	33.54	92	78	137				
Toluene	95.1	10	100	0	95	78	134				
1,2,3-Trichlorobenzene	101	10	100	0	101	42	152				
1,2,4-Trichlorobenzene	99.2	10	100	0	99	58	142				
1,1,1-Trichloroethane	99.8	10	100	0	100	64	141				
1,1,2-Trichloroethane	96.8	10	100	0	97	72	133				
Trichloroethene	114	10	100	17.31	97	75	138				
Trichlorofluoromethane	104	10	100	0	104	58	139				
1,2,3-Trichloropropane	110	10	100	0	110	67	133				
1,2,4-Trimethylbenzene	105	10	100	0	105	71	129				
1,3,5-Trimethylbenzene	106	10	100	0	106	68	135				
Vinyl chloride	101	10	100	0	101	66	140				
m+p-Xylenes	191	10	200	0	95	78	133				
o-Xylene	96.1	10	100	0	96	79	136				
Xylenes, Total	287	10	300	0	96	78	136				
Surr: 1,2-Dichloroethane-d4	220	10	200	0	110	70	130				
Surr: Dibromofluoromethane	196	10	200	0	98	77	126				
Surr: p-Bromofluorobenzene	200	10	200	0	100	76	127				
Surr: Toluene-d8	193	10	200	0	96	79	122				

Associated samples: B20040782-001B, B20040782-002B, B20040782-003B, B20040782-007B, B20040782-008A

Run ID :Run Order: 5971A.I_200416A: 7		SampType: Sample Matrix Spike Duplicate			Lab ID: B20040843-002BMSD			Method: SW8260B			
Analysis Date: 04/16/20 23:35		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	93.4	10	100	0	93	71	133	97.58	4.4	20	
Bromobenzene	98.4	10	100	0	98	78	133	101.9	3.5	20	
Bromochloromethane	92.0	10	100	0	92	68	131	87.36	5.2	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 7	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040843-002BMSD				Method: SW8260B		
Analysis Date: 04/16/20 23:35	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	101	10	100	0	101	67	138	101.8	1.1	20	
Bromoform	90.6	10	100	0	91	64	136	91.25	0.7	20	
Bromomethane	45.3	10	100	0	45	60	138	22.74	66	20	SR
n-Butylbenzene	107	10	100	0	107	72	135	108.5	1.8	20	
sec-Butylbenzene	109	10	100	0	109	73	135	115.5	6.0	20	
tert-Butylbenzene	97.9	10	100	0	98	69	137	101.5	3.7	20	
Carbon tetrachloride	94.6	10	100	0	95	61	144	94.6	0.0	20	
Chlorobenzene	93.9	10	100	0	94	78	136	92.63	1.4	20	
Chlorodibromomethane	92.4	10	100	0	92	72	136	91.91	0.5	20	
Chloroethane	109	10	100	0	109	64	136	109.7	0.5	20	
Chloroform	96.7	10	100	0	97	69	133	96.07	0.7	20	
Chloromethane	94.9	10	100	0	95	63	149	82.93	13	20	
1,2-Dibromo-3-chloropropane	105	20	100	0	105	63	125	109.4	4.0	20	
1,2-Dibromoethane	93.6	10	100	0	94	75	131	95.3	1.8	20	
2-Chlorotoluene	106	10	100	0	106	74	135	105.3	0.3	20	
Dibromomethane	95.3	10	100	0	95	72	133	96.07	0.8	20	
1,2-Dichlorobenzene	101	10	100	0	101	78	129	103.5	2.5	20	
4-Chlorotoluene	110	10	100	0	110	79	135	111.7	1.5	20	
1,3-Dichlorobenzene	101	10	100	0	101	79	132	102.7	1.3	20	
1,4-Dichlorobenzene	100	10	100	0	100	78	131	99.62	0.4	20	
Dichlorodifluoromethane	109	10	100	0	109	55	141	114.4	4.4	20	
1,1-Dichloroethane	99.4	10	100	0	99	72	130	102.2	2.8	20	
1,2-Dichloroethane	107	10	100	0	107	57	146	109.3	1.7	20	
1,1-Dichloroethene	97.4	10	100	0	97	66	142	98.98	1.6	20	
cis-1,2-Dichloroethene	250	10	100	155	95	74	133	252.3	1.1	20	
trans-1,2-Dichloroethene	99.9	10	100	0	100	76	138	104.4	4.3	20	
1,2-Dichloropropane	98.3	10	100	0	98	72	135	97.78	0.6	20	
1,3-Dichloropropane	95.3	10	100	0	95	75	134	96.69	1.4	20	
2,2-Dichloropropane	99.9	10	100	0	100	42	167	101	1.1	20	
1,1-Dichloropropene	95.9	10	100	0	96	72	140	99.22	3.4	20	
cis-1,3-Dichloropropene	95.4	10	100	0	95	75	132	96.74	1.4	20	
trans-1,3-Dichloropropene	96.9	10	100	0	97	77	145	99.16	2.3	20	
Ethylbenzene	97.4	10	100	0	97	78	131	97.3	0.1	20	

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340616

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416A: 7	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040843-002BMSD				Method: SW8260B		
Analysis Date: 04/16/20 23:35	Units: ug/L		Prep Info:			Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	106	10	100	0	106	65	141	99.45	5.9	20	
Isopropylbenzene	106	10	100	0	106	72	135	112.9	6.1	20	
p-Isopropyltoluene	102	10	100	0	102	71	134	105.9	3.5	20	
Methyl tert-butyl ether (MTBE)	99.3	10	100	0	99	58	151	103.3	4.0	20	
Methylene chloride	101	10	100	0	101	73	126	100	1.3	20	
Naphthalene	123	10	100	0	123	55	139	113	8.1	20	
n-Propylbenzene	105	10	100	0	105	70	139	107.3	1.8	20	
Styrene	92.0	10	100	0	92	76	134	95.62	3.9	20	
1,1,1,2-Tetrachloroethane	91.8	10	100	0	92	75	135	91.3	0.6	20	
1,1,2,2-Tetrachloroethane	109	10	100	0	109	72	132	112.8	3.0	20	
Tetrachloroethene	120	10	100	33.54	87	78	137	125.7	4.3	20	
Toluene	92.6	10	100	0	93	78	134	95.07	2.7	20	
1,2,3-Trichlorobenzene	110	10	100	0	110	42	152	100.7	8.8	20	
1,2,4-Trichlorobenzene	108	10	100	0	107	58	142	99.18	8.1	20	
1,1,1-Trichloroethane	101	10	100	0	101	64	141	99.83	1.1	20	
1,1,2-Trichloroethane	98.3	10	100	0	98	72	133	96.83	1.5	20	
Trichloroethene	111	10	100	17.31	94	75	138	114.2	2.9	20	
Trichlorofluoromethane	104	10	100	0	104	58	139	104.3	0.1	20	
1,2,3-Trichloropropane	109	10	100	0	109	67	133	109.6	0.5	20	
1,2,4-Trimethylbenzene	101	10	100	0	101	71	129	105	4.3	20	
1,3,5-Trimethylbenzene	105	10	100	0	105	68	135	106.4	1.4	20	
Vinyl chloride	104	10	100	0	104	66	140	100.6	3.6	20	
m+p-Xylenes	189	10	200	0	95	78	133	190.7	0.7	20	
o-Xylene	94.5	10	100	0	94	79	136	96.11	1.7	20	
Xylenes, Total	284	10	300	0	95	78	136	286.8			
Surr: 1,2-Dichloroethane-d4	215	10	200	0	108	70	130	0			
Surr: Dibromofluoromethane	197	10	200	0	99	77	126	0			
Surr: p-Bromofluorobenzene	193	10	200	0	96	76	127	0			
Surr: Toluene-d8	186	10	200	0	93	79	122	0			

Associated samples: B20040782-001B, B20040782-002B, B20040782-003B, B20040782-007B, B20040782-008A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416C: 1		SampType: MS Tuning File			Lab ID: 16APR30_D_TUNE			Method: SW8260B			
Analysis Date: 04/17/20 00:57		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.3		100	0	20.3	15	40				
75, % of mass 95	42.3		100	0	42.3	30	60				
96, % of mass 95	6.40		100	0	6.4	5	9				
173, % of mass 174	1.00		100	0	1	0	1.99				
174, % of mass 95	69.1		100	0	69.1	50	99.99				
175, % of mass 174	6.80		100	0	6.8	5	9				
176, % of mass 174	95.0		100	0	95	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: B20040782-001B, B20040782-004B, B20040782-005B, B20040782-006A, B20040782-007B

Run ID :Run Order: 5971A.I_200416C: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:24		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.96	0.50	5	0	99	70	130				
Bromobenzene	4.88	0.50	5	0	98	70	130				
Bromochloromethane	4.75	0.50	5	0	95	70	130				
Bromodichloromethane	4.93	0.50	5	0	99	70	130				
Bromoform	4.44	0.50	5	0	89	70	130				
Bromomethane	2.34	0.50	5	0	47	70	130				S
n-Butylbenzene	5.45	0.50	5	0	109	70	130				
sec-Butylbenzene	5.21	0.50	5	0	104	70	130				
tert-Butylbenzene	4.97	0.50	5	0	99	70	130				
Carbon tetrachloride	5.22	0.50	5	0	104	70	130				
Chlorobenzene	4.56	0.50	5	0	91	70	130				
Chlorodibromomethane	4.50	0.50	5	0	90	70	130				
Chloroethane	5.58	0.50	5	0	112	70	130				
Chloroform	5.24	0.50	5	0	105	80	120				
Chloromethane	4.95	0.50	5	0	99	70	130				
1,2-Dibromo-3-chloropropane	5.07	1.0	5	0	101	70	130				
1,2-Dibromoethane	4.66	0.50	5	0	93	70	130				
2-Chlorotoluene	4.91	0.50	5	0	98	70	130				
Dibromomethane	4.88	0.50	5	0	98	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416C: 2

SampType: Continuing Calibration Verification Standar

Lab ID: CCV041620a

Method: SW8260B

Analysis Date: 04/17/20 01:24

Units: ug/L

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.87	0.50	5	0	97	70	130				
4-Chlorotoluene	5.28	0.50	5	0	106	70	130				
1,3-Dichlorobenzene	4.86	0.50	5	0	97	70	130				
1,4-Dichlorobenzene	4.87	0.50	5	0	97	70	130				
Dichlorodifluoromethane	5.50	0.50	5	0	110	70	130				
1,1-Dichloroethane	5.30	0.50	5	0	106	70	130				
1,2-Dichloroethane	5.45	0.50	5	0	109	70	130				
1,1-Dichloroethene	5.06	0.50	5	0	101	80	120				
cis-1,2-Dichloroethene	4.94	0.50	5	0	99	70	130				
trans-1,2-Dichloroethene	4.96	0.50	5	0	99	70	130				
1,2-Dichloropropane	4.87	0.50	5	0	97	80	120				
1,3-Dichloropropane	4.75	0.50	5	0	95	70	130				
2,2-Dichloropropane	4.85	0.50	5	0	97	70	130				
1,1-Dichloropropene	5.30	0.50	5	0	106	70	130				
cis-1,3-Dichloropropene	4.70	0.50	5	0	94	70	130				
trans-1,3-Dichloropropene	4.63	0.50	5	0	93	70	130				
Ethylbenzene	4.72	0.50	5	0	94	80	120				
Hexachlorobutadiene	4.64	0.50	5	0	93	70	130				
Isopropylbenzene	5.39	0.50	5	0	108	70	130				
p-Isopropyltoluene	5.19	0.50	5	0	104	70	130				
Methyl tert-butyl ether (MTBE)	5.17	0.50	5	0	103	70	130				
Methylene chloride	5.42	0.50	5	0	108	70	130				
Naphthalene	5.52	0.50	5	0	110	70	130				
n-Propylbenzene	4.94	0.50	5	0	99	70	130				
Styrene	4.57	0.50	5	0	91	70	130				
1,1,1,2-Tetrachloroethane	4.49	0.50	5	0	90	70	130				
1,1,2,2-Tetrachloroethane	5.02	0.50	5	0	100	70	130				
Tetrachloroethene	4.49	0.50	5	0	90	70	130				
Toluene	4.76	0.50	5	0	95	80	120				
1,2,3-Trichlorobenzene	4.82	0.50	5	0	96	70	130				
1,2,4-Trichlorobenzene	4.67	0.50	5	0	93	70	130				
1,1,1-Trichloroethane	5.31	0.50	5	0	106	70	130				
1,1,2-Trichloroethane	4.86	0.50	5	0	97	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416C: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:24		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.82	0.50	5	0	96	70	130				
Trichlorofluoromethane	5.35	0.50	5	0	107	70	130				
1,2,3-Trichloropropane	4.99	0.50	5	0	100	70	130				
1,2,4-Trimethylbenzene	5.10	0.50	5	0	102	70	130				
1,3,5-Trimethylbenzene	5.04	0.50	5	0	101	70	130				
Vinyl chloride	4.95	0.50	5	0	99	80	120				
m+p-Xylenes	9.34	0.50	10	0	93	70	130				
o-Xylene	4.53	0.50	5	0	91	70	130				
Xylenes, Total	13.9	0.50	15	0	92	70	130				
Surr: 1,2-Dichloroethane-d4	10.8	0.50	10	0	108	70	130				
Surr: Dibromofluoromethane	9.84	0.50	10	0	98	77	126				
Surr: p-Bromofluorobenzene	9.85	0.50	10	0	99	76	127				
Surr: Toluene-d8	9.34	0.50	10	0	93	79	122				

Associated samples: B20040782-001B, B20040782-004B, B20040782-005B, B20040782-006A, B20040782-007B

Run ID :Run Order: 5971A.I_200416C: 3		SampType: Laboratory Control Sample			Lab ID: LCS041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:52		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.65	0.50	5	0	93	71	133				
Bromobenzene	4.92	0.50	5	0	98	78	133				
Bromochloromethane	4.39	0.50	5	0	88	68	131				
Bromodichloromethane	4.88	0.50	5	0	98	67	138				
Bromoform	4.61	0.50	5	0	92	64	136				
Bromomethane	2.45	0.50	5	0	49	60	138				S
n-Butylbenzene	5.37	0.50	5	0	107	72	135				
sec-Butylbenzene	5.55	0.50	5	0	111	73	135				
tert-Butylbenzene	4.96	0.50	5	0	99	69	137				
Carbon tetrachloride	4.68	0.50	5	0	94	61	144				
Chlorobenzene	4.56	0.50	5	0	91	78	136				
Chlorodibromomethane	4.44	0.50	5	0	89	72	136				
Chloroethane	5.43	0.50	5	0	109	64	136				
Chloroform	4.73	0.50	5	0	95	69	133				
Chloromethane	4.53	0.50	5	0	91	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416C: 3	SampType: Laboratory Control Sample				Lab ID: LCS041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:52	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	5.30	1.0	5	0	106	63	125				
1,2-Dibromoethane	4.50	0.50	5	0	90	75	131				
2-Chlorotoluene	5.08	0.50	5	0	102	74	135				
Dibromomethane	4.57	0.50	5	0	91	72	133				
1,2-Dichlorobenzene	5.08	0.50	5	0	102	78	129				
4-Chlorotoluene	5.62	0.50	5	0	112	79	135				
1,3-Dichlorobenzene	5.00	0.50	5	0	100	79	132				
1,4-Dichlorobenzene	4.94	0.50	5	0	99	78	131				
Dichlorodifluoromethane	5.43	0.50	5	0	109	55	141				
1,1-Dichloroethane	4.93	0.50	5	0	99	72	130				
1,2-Dichloroethane	5.22	0.50	5	0	104	57	146				
1,1-Dichloroethene	4.86	0.50	5	0	97	66	142				
cis-1,2-Dichloroethene	4.76	0.50	5	0	95	74	133				
trans-1,2-Dichloroethene	4.76	0.50	5	0	95	76	138				
1,2-Dichloropropane	4.76	0.50	5	0	95	72	135				
1,3-Dichloropropane	4.56	0.50	5	0	91	75	134				
2,2-Dichloropropane	4.68	0.50	5	0	94	42	167				
1,1-Dichloropropene	4.76	0.50	5	0	95	72	140				
cis-1,3-Dichloropropene	4.53	0.50	5	0	91	75	132				
trans-1,3-Dichloropropene	4.58	0.50	5	0	91	77	145				
Ethylbenzene	4.77	0.50	5	0	95	78	131				
Hexachlorobutadiene	5.38	0.50	5	0	108	65	141				
Isopropylbenzene	5.42	0.50	5	0	108	72	135				
p-Isopropyltoluene	5.16	0.50	5	0	103	71	134				
Methyl tert-butyl ether (MTBE)	4.82	0.50	5	0	96	58	151				
Methylene chloride	4.88	0.50	5	0	98	73	126				
Naphthalene	5.74	0.50	5	0	115	55	139				
n-Propylbenzene	4.93	0.50	5	0	99	70	139				
Styrene	4.48	0.50	5	0	90	76	134				
1,1,1,2-Tetrachloroethane	4.46	0.50	5	0	89	75	135				
1,1,2,2-Tetrachloroethane	5.39	0.50	5	0	108	72	132				
Tetrachloroethene	4.34	0.50	5	0	87	78	137				
Toluene	4.42	0.50	5	0	88	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200416C: 3		SampType: Laboratory Control Sample			Lab ID: LCS041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:52		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.41	0.50	5	0	108	42	152				
1,2,4-Trichlorobenzene	5.17	0.50	5	0	104	58	142				
1,1,1-Trichloroethane	5.00	0.50	5	0	100	64	141				
1,1,2-Trichloroethane	4.66	0.50	5	0	93	72	133				
Trichloroethene	4.68	0.50	5	0	94	75	138				
Trichlorofluoromethane	4.98	0.50	5	0	100	58	139				
1,2,3-Trichloropropane	5.30	0.50	5	0	106	67	133				
1,2,4-Trimethylbenzene	5.00	0.50	5	0	100	71	129				
1,3,5-Trimethylbenzene	5.32	0.50	5	0	106	68	135				
Vinyl chloride	4.81	0.50	5	0	96	66	140				
m+p-Xylenes	8.97	0.50	10	0	90	78	133				
o-Xylene	4.49	0.50	5	0	90	79	136				
Xylenes, Total	13.5	0.50	15	0	90	78	136				
Surr: 1,2-Dichloroethane-d4	10.7	0.50	10	0	107	70	130				
Surr: Dibromofluoromethane	9.81	0.50	10	0	98	77	126				
Surr: p-Bromofluorobenzene	9.94	0.50	10	0	99	76	127				
Surr: Toluene-d8	9.40	0.50	10	0	94	79	122				

Associated samples: B20040782-001B, B20040782-004B, B20040782-005B, B20040782-006A, B20040782-007B

Run ID :Run Order: 5971A.I_200416C: 4		SampType: Method Blank			Lab ID: MBLK041620a			Method: SW8260B			
Analysis Date: 04/17/20 02:47		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: **5971A.I_200416C: 4**

SampType: **Method Blank**

Lab ID: **MBLK041620a**

Method: **SW8260B**

Analysis Date: **04/17/20 02:47**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340770

Date: 21-Apr-20

Run ID :Run Order: **5971A.I_200416C: 4**

SampType: **Method Blank**

Lab ID: **MBLK041620a**

Method: **SW8260B**

Analysis Date: **04/17/20 02:47**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	10.7	0.50	10	0	107	70	130				
Surr: Dibromofluoromethane	9.55	0.50	10	0	96	77	126				
Surr: p-Bromofluorobenzene	10.1	0.50	10	0	101	76	127				
Surr: Toluene-d8	9.35	0.50	10	0	94	79	122				

Associated samples: **B20040782-001B, B20040782-004B, B20040782-005B, B20040782-006A, B20040782-007B**

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040782

BatchID: R340787

Date: 21-Apr-20

Run ID :Run Order: 5971A.I_200417B: 1		SampType: MS Tuning File			Lab ID: 17APR04_D_TUNE				Method: SW8260B		
Analysis Date: 04/17/20 14:03		Units: %			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	21.0		100	0	21	15	40				
75, % of mass 95	43.3		100	0	43.3	30	60				
96, % of mass 95	6.70		100	0	6.7	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	69.9		100	0	69.9	50	99.99				
175, % of mass 174	7.30		100	0	7.3	5	9				
176, % of mass 174	95.4		100	0	95.4	95	101				
177, % of mass 176	6.20		100	0	6.2	5	9				

Associated samples: B20040782-002B

Run ID :Run Order: 5971A.I_200417B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041720a				Method: SW8260B		
Analysis Date: 04/18/20 02:41		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.35	0.50	5	0	87	70	130				

Associated samples: B20040782-002B

Run ID :Run Order: 5971A.I_200417B: 3		SampType: Laboratory Control Sample			Lab ID: LCS041720a				Method: SW8260B		
Analysis Date: 04/18/20 03:09		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.82	0.50	5	0	96	74	133				

Associated samples: B20040782-002B

Run ID :Run Order: 5971A.I_200417B: 4		SampType: Method Blank			Lab ID: MBLK041720a				Method: SW8260B		
Analysis Date: 04/18/20 04:04		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									

Associated samples: B20040782-002B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Tasman Geosciences Inc

B20040782

Login completed by: Quincee Jones

Date Received: 4/10/2020

Reviewed by: BL2000\gmccartney

Received by: dec

Reviewed Date: 4/13/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	2.6°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Total Organic Carbon requested on Chain of Custody for sample MW431-I however a container was not received. Total Organic Carbon analysis is not needed for sample MW431-I per phone conversation with Scott Krauszer on 4/10/20.



ANALYTICAL SUMMARY REPORT

April 22, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20040843 Quote ID: B2871

Project Name: Lockwood Solvent Site

Energy Laboratories Inc Billings MT received the following 6 samples for Tasman Geosciences Inc on 4/13/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20040843-001	MW459-D	04/13/20 10:36	04/13/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20040843-002	MW459-I	04/13/20 11:14	04/13/20	Aqueous	Same As Above
B20040843-003	MW453-D	04/13/20 12:20	04/13/20	Aqueous	Same As Above
B20040843-004	MW453-I	04/13/20 12:52	04/13/20	Aqueous	Same As Above
B20040843-005	MW458-D	04/13/20 14:04	04/13/20	Aqueous	Same As Above
B20040843-006	Trip Blank Lot03312020 B-JDB SHP0277	04/13/20 0:00	04/13/20	Trip Blank	8260-Volatile Organic Compounds- Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Tasman Geosciences Inc
Project: Lockwood Solvent Site
Work Order: B20040843

Report Date: 04/22/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW459-D
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-001
Collection Date: 04/13/20 10:36
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	6.9	mg/L		0.5	0.1	A5310 C	04/16/20 08:41 / eli-c			SUB-C257415 : 46		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,1-Dichloroethane	0.67	ug/L		0.50	0.093	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,1-Dichloroethene	0.56	ug/L		0.50	0.15	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
cis-1,2-Dichloroethene	187	ug/L		10	2.5	SW8260B	04/17/20 06:54 / msc			5971A.I_200416C : 12		R340770
trans-1,2-Dichloroethene	2.1	ug/L		0.50	0.13	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW459-D
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-001
Collection Date: 04/13/20 10:36
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Tetrachloroethene	61	ug/L		10	2.2	SW8260B	04/17/20 06:54 / msc			5971A.I_200416C : 12		R340770
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Trichloroethene	90	ug/L		10	2.6	SW8260B	04/17/20 06:54 / msc			5971A.I_200416C : 12		R340770
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Vinyl chloride	1.3	ug/L		0.50	0.14	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Surr: Toluene-d8	98.0	%REC		79-122		SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616
Surr: p-Bromofluorobenzene	101	%REC		76-127		SW8260B	04/16/20 19:27 / msc			5971A.I_200416A : 17		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW459-I
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-002
Collection Date: 04/13/20 11:14
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	14.8	mg/L		0.5	0.1	A5310 C	04/16/20 09:02 / eli-c			SUB-C257415 : 47		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,1-Dichloroethane	0.22	ug/L	J	0.50	0.093	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,1-Dichloroethene	0.33	ug/L	J	0.50	0.15	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
cis-1,2-Dichloroethene	155	ug/L		10	2.5	SW8260B	04/16/20 22:39 / msc			5971A.I_200416A : 23		R340616
trans-1,2-Dichloroethene	2.6	ug/L		0.50	0.13	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW459-I
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-002
Collection Date: 04/13/20 11:14
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Tetrachloroethene	34	ug/L		10	2.2	SW8260B	04/16/20 22:39 / msc			5971A.I_200416A : 23		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Trichloroethene	18	ug/L		0.50	0.13	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Vinyl chloride	1.9	ug/L		0.50	0.14	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Surr: 1,2-Dichloroethane-d4	107	%REC		70-130		SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Surr: Toluene-d8	93.0	%REC		79-122		SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616
Surr: p-Bromofluorobenzene	101	%REC		76-127		SW8260B	04/16/20 19:00 / msc			5971A.I_200416A : 16		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW453-D
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-003
Collection Date: 04/13/20 12:20
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	10.2	mg/L		0.5	0.1	A5310 C	04/16/20 10:14 / eli-c			SUB-C257415 : 48		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,1-Dichloroethane	0.32	ug/L	J	0.50	0.093	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,1-Dichloroethene	0.61	ug/L		0.50	0.15	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
cis-1,2-Dichloroethene	734	ug/L		50	13	SW8260B	04/17/20 05:04 / msc			5971A.I_200416C : 9		R340770
trans-1,2-Dichloroethene	10	ug/L		0.50	0.13	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW453-D
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-003
Collection Date: 04/13/20 12:20
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Tetrachloroethene	50	ug/L		5.0	1.1	SW8260B	04/17/20 08:16 / msc			5971A.I_200416C : 15		R340770
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Trichloroethene	30	ug/L		5.0	1.3	SW8260B	04/17/20 08:16 / msc			5971A.I_200416C : 15		R340770
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Vinyl chloride	0.84	ug/L		0.50	0.14	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616
Surr: p-Bromofluorobenzene	106	%REC		76-127		SW8260B	04/16/20 18:33 / msc			5971A.I_200416A : 15		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW453-I
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-004
Collection Date: 04/13/20 12:52
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	9.3	mg/L		0.5	0.1	A5310 C	04/16/20 10:36 / eli-c			SUB-C257415 : 49		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,1-Dichloroethane	0.29	ug/L	J	0.50	0.093	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,1-Dichloroethene	0.56	ug/L		0.50	0.15	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
cis-1,2-Dichloroethene	719	ug/L		50	13	SW8260B	04/17/20 04:36 / msc			5971A.I_200416C : 8		R340770
trans-1,2-Dichloroethene	8.9	ug/L		0.50	0.13	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW453-I
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-004
Collection Date: 04/13/20 12:52
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Tetrachloroethene	143	ug/L		10	2.2	SW8260B	04/17/20 07:49 / msc			5971A.I_200416C : 14		R340770
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Trichloroethene	49	ug/L		10	2.6	SW8260B	04/17/20 07:49 / msc			5971A.I_200416C : 14		R340770
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Vinyl chloride	0.71	ug/L		0.50	0.14	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Surr: 1,2-Dichloroethane-d4	106	%REC		70-130		SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616
Surr: p-Bromofluorobenzene	101	%REC		76-127		SW8260B	04/16/20 18:05 / msc			5971A.I_200416A : 14		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW458-D
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-005
Collection Date: 04/13/20 14:04
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	9.2	mg/L		0.5	0.1	A5310 C	04/16/20 10:58 / eli-c			SUB-C257415 : 50		C_R257415
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
cis-1,2-Dichloroethene	6.6	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW458-D
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20040843-005
Collection Date: 04/13/20 14:04
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Tetrachloroethene	0.43	ug/L	J	0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Trichloroethene	0.64	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Surr: 1,2-Dichloroethane-d4	108	%REC		70-130		SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Surr: Toluene-d8	93.0	%REC		79-122		SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616
Surr: p-Bromofluorobenzene	103	%REC		76-127		SW8260B	04/16/20 17:38 / msc			5971A.I_200416A : 13		R340616

- The sample was received in the laboratory with a pH > 2. The pH was 6.

Report Definitions: RL - Analyte Reporting Limit
J - Estimated value - analyte was present but less than the Reporting Limit (RL)

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: Lockwood Solvent Site
Matrix: Trip Blank

Lab ID: B20040843-006
Collection Date: 04/13/20
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: Lockwood Solvent Site
Matrix: Trip Blank

Lab ID: B20040843-006
Collection Date: 04/13/20
Date Received: 04/13/20
Report Date: 04/22/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Trichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Surr: Dibromofluoromethane	97.0	%REC		77-126		SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Surr: 1,2-Dichloroethane-d4	107	%REC		70-130		SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616
Surr: p-Bromofluorobenzene	99.0	%REC		76-127		SW8260B	04/16/20 22:12 / msc			5971A.I_200416A : 22		R340616

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: C_R257415

Date: 17-Apr-20

Run ID :Run Order: SUB-C257415: 1		SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C	
Analysis Date: 04/15/20 16:04		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.25	0.50	5	0	105	90	109	0			

Associated samples: **B20040843-001A, B20040843-002A, B20040843-003A, B20040843-004A, B20040843-005A**

Run ID :Run Order: SUB-C257415: 2		SampType: Method Blank				Lab ID: MBLK				Method: A5310 C	
Analysis Date: 04/15/20 16:34		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	0.2	0.2									

Associated samples: **B20040843-001A, B20040843-002A, B20040843-003A, B20040843-004A, B20040843-005A**

Run ID :Run Order: SUB-C257415: 41		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C	
Analysis Date: 04/16/20 06:49		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.17	0.50	5	0	103	90	110	0			

Associated samples: **B20040843-001A, B20040843-002A, B20040843-003A, B20040843-004A, B20040843-005A**

Run ID :Run Order: SUB-C257415: 44		SampType: Sample Matrix Spike				Lab ID: C20040514-001AMS				Method: A5310 C	
Analysis Date: 04/16/20 09:32		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	8.64	0.50	5	3.614	100	90	109	0			

Associated samples: **B20040843-001A, B20040843-002A, B20040843-003A, B20040843-004A, B20040843-005A**

Run ID :Run Order: SUB-C257415: 45		SampType: Sample Matrix Spike Duplicate				Lab ID: C20040514-001AMSD				Method: A5310 C	
Analysis Date: 04/16/20 09:53		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	8.63	0.50	5	3.614	100	90	109	8.638	0.1	20	

Associated samples: **B20040843-001A, B20040843-002A, B20040843-003A, B20040843-004A, B20040843-005A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 1		SampType: MS Tuning File			Lab ID: 16APR03_D_TUNE			Method: SW8260B			
Analysis Date: 04/16/20 12:09		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.0		100	0	20	15	40				
75, % of mass 95	42.5		100	0	42.5	30	60				
96, % of mass 95	6.30		100	0	6.3	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	73.1		100	0	73.1	50	99.99				
175, % of mass 174	7.90		100	0	7.9	5	9				
176, % of mass 174	97.2		100	0	97.2	95	101				
177, % of mass 176	6.60		100	0	6.6	5	9				

Associated samples: B20040843-001B, B20040843-002B, B20040843-003B, B20040843-004B, B20040843-005B, B20040843-006A

Run ID :Run Order: 5971A.I_200416A: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041620			Method: SW8260B			
Analysis Date: 04/16/20 12:40		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.89	0.50	5	0	98	70	130				
Bromobenzene	4.83	0.50	5	0	97	70	130				
Bromochloromethane	4.71	0.50	5	0	94	70	130				
Bromodichloromethane	4.82	0.50	5	0	96	70	130				
Bromoform	4.33	0.50	5	0	87	70	130				
Bromomethane	5.03	0.50	5	0	100	70	130				
n-Butylbenzene	5.08	0.50	5	0	102	70	130				
sec-Butylbenzene	4.94	0.50	5	0	99	70	130				
tert-Butylbenzene	4.51	0.50	5	0	90	70	130				
Carbon tetrachloride	5.24	0.50	5	0	105	70	130				
Chlorobenzene	4.51	0.50	5	0	90	70	130				
Chlorodibromomethane	4.36	0.50	5	0	87	70	130				
Chloroethane	5.56	0.50	5	0	111	70	130				
Chloroform	5.08	0.50	5	0	102	80	120				
Chloromethane	5.61	0.50	5	0	112	70	130				
1,2-Dibromo-3-chloropropane	4.30	1.0	5	0	86	70	130				
1,2-Dibromoethane	4.47	0.50	5	0	89	70	130				
2-Chlorotoluene	4.79	0.50	5	0	96	70	130				
Dibromomethane	4.73	0.50	5	0	95	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: **5971A.I_200416A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041620**

Method: **SW8260B**

Analysis Date: **04/16/20 12:40**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.71	0.50	5	0	94	70	130				
4-Chlorotoluene	5.13	0.50	5	0	103	70	130				
1,3-Dichlorobenzene	4.67	0.50	5	0	93	70	130				
1,4-Dichlorobenzene	4.67	0.50	5	0	93	70	130				
Dichlorodifluoromethane	5.86	0.50	5	0	117	70	130				
1,1-Dichloroethane	5.22	0.50	5	0	104	70	130				
1,2-Dichloroethane	5.25	0.50	5	0	105	70	130				
1,1-Dichloroethene	5.03	0.50	5	0	101	80	120				
cis-1,2-Dichloroethene	4.89	0.50	5	0	98	70	130				
trans-1,2-Dichloroethene	5.03	0.50	5	0	101	70	130				
1,2-Dichloropropane	4.82	0.50	5	0	96	80	120				
1,3-Dichloropropane	4.56	0.50	5	0	91	70	130				
2,2-Dichloropropane	5.38	0.50	5	0	108	70	130				
1,1-Dichloropropene	5.27	0.50	5	0	105	70	130				
cis-1,3-Dichloropropene	4.69	0.50	5	0	94	70	130				
trans-1,3-Dichloropropene	4.65	0.50	5	0	93	70	130				
Ethylbenzene	4.89	0.50	5	0	98	80	120				
Hexachlorobutadiene	4.52	0.50	5	0	90	70	130				
Isopropylbenzene	5.00	0.50	5	0	100	70	130				
p-Isopropyltoluene	4.61	0.50	5	0	92	70	130				
Methyl tert-butyl ether (MTBE)	5.06	0.50	5	0	101	70	130				
Methylene chloride	5.13	0.50	5	0	103	70	130				
Naphthalene	4.74	0.50	5	0	95	70	130				
n-Propylbenzene	4.84	0.50	5	0	97	70	130				
Styrene	4.60	0.50	5	0	92	70	130				
1,1,1,2-Tetrachloroethane	4.61	0.50	5	0	92	70	130				
1,1,2,2-Tetrachloroethane	4.74	0.50	5	0	95	70	130				
Tetrachloroethene	4.68	0.50	5	0	94	70	130				
Toluene	4.72	0.50	5	0	94	80	120				
1,2,3-Trichlorobenzene	4.35	0.50	5	0	87	70	130				
1,2,4-Trichlorobenzene	4.60	0.50	5	0	92	70	130				
1,1,1-Trichloroethane	5.24	0.50	5	0	105	70	130				
1,1,2-Trichloroethane	4.63	0.50	5	0	93	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: **5971A.I_200416A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV041620**

Method: **SW8260B**

Analysis Date: **04/16/20 12:40**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.72	0.50	5	0	94	70	130				
Trichlorofluoromethane	5.54	0.50	5	0	111	70	130				
1,2,3-Trichloropropane	4.79	0.50	5	0	96	70	130				
1,2,4-Trimethylbenzene	4.83	0.50	5	0	97	70	130				
1,3,5-Trimethylbenzene	4.95	0.50	5	0	99	70	130				
Vinyl chloride	5.38	0.50	5	0	108	80	120				
m+p-Xylenes	9.34	0.50	10	0	93	70	130				
o-Xylene	4.61	0.50	5	0	92	70	130				
Xylenes, Total	13.9	0.50	15	0	93	70	130				
Surr: 1,2-Dichloroethane-d4	10.5	0.50	10	0	105	70	130				
Surr: Dibromofluoromethane	9.98	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	10.0	0.50	10	0	101	76	127				
Surr: Toluene-d8	9.63	0.50	10	0	96	79	122				

Associated samples: **B20040843-001B, B20040843-002B, B20040843-003B, B20040843-004B, B20040843-005B, B20040843-006A**

Run ID :Run Order: **5971A.I_200416A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS041620**

Method: **SW8260B**

Analysis Date: **04/16/20 13:14**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.80	0.50	5	0	96	71	133				
Bromobenzene	4.46	0.50	5	0	89	78	133				
Bromochloromethane	4.34	0.50	5	0	87	68	131				
Bromodichloromethane	4.75	0.50	5	0	95	67	138				
Bromoform	3.94	0.50	5	0	79	64	136				
Bromomethane	4.88	0.50	5	0	98	60	138				
n-Butylbenzene	4.59	0.50	5	0	92	72	135				
sec-Butylbenzene	4.79	0.50	5	0	96	73	135				
tert-Butylbenzene	4.25	0.50	5	0	85	69	137				
Carbon tetrachloride	4.85	0.50	5	0	97	61	144				
Chlorobenzene	4.56	0.50	5	0	91	78	136				
Chlorodibromomethane	4.30	0.50	5	0	86	72	136				
Chloroethane	5.45	0.50	5	0	109	64	136				
Chloroform	4.76	0.50	5	0	95	69	133				
Chloromethane	5.09	0.50	5	0	102	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 3	SampType: Laboratory Control Sample				Lab ID: LCS041620			Method: SW8260B			
Analysis Date: 04/16/20 13:14	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	4.44	1.0	5	0	89	63	125				
1,2-Dibromoethane	4.31	0.50	5	0	86	75	131				
2-Chlorotoluene	4.70	0.50	5	0	94	74	135				
Dibromomethane	4.46	0.50	5	0	89	72	133				
1,2-Dichlorobenzene	4.57	0.50	5	0	91	78	129				
4-Chlorotoluene	4.99	0.50	5	0	100	79	135				
1,3-Dichlorobenzene	4.56	0.50	5	0	91	79	132				
1,4-Dichlorobenzene	4.54	0.50	5	0	91	78	131				
Dichlorodifluoromethane	5.60	0.50	5	0	112	55	141				
1,1-Dichloroethane	5.06	0.50	5	0	101	72	130				
1,2-Dichloroethane	5.20	0.50	5	0	104	57	146				
1,1-Dichloroethene	5.02	0.50	5	0	100	66	142				
cis-1,2-Dichloroethene	4.79	0.50	5	0	96	74	133				
trans-1,2-Dichloroethene	5.03	0.50	5	0	101	76	138				
1,2-Dichloropropane	4.80	0.50	5	0	96	72	135				
1,3-Dichloropropane	4.47	0.50	5	0	89	75	134				
2,2-Dichloropropane	5.21	0.50	5	0	104	42	167				
1,1-Dichloropropene	4.92	0.50	5	0	98	72	140				
cis-1,3-Dichloropropene	4.64	0.50	5	0	93	75	132				
trans-1,3-Dichloropropene	4.71	0.50	5	0	94	77	145				
Ethylbenzene	4.45	0.50	5	0	89	78	131				
Hexachlorobutadiene	4.71	0.50	5	0	94	65	141				
Isopropylbenzene	4.81	0.50	5	0	96	72	135				
p-Isopropyltoluene	4.59	0.50	5	0	92	71	134				
Methyl tert-butyl ether (MTBE)	4.80	0.50	5	0	96	58	151				
Methylene chloride	4.91	0.50	5	0	98	73	126				
Naphthalene	5.03	0.50	5	0	101	55	139				
n-Propylbenzene	4.58	0.50	5	0	92	70	139				
Styrene	4.50	0.50	5	0	90	76	134				
1,1,1,2-Tetrachloroethane	4.36	0.50	5	0	87	75	135				
1,1,2,2-Tetrachloroethane	4.65	0.50	5	0	93	72	132				
Tetrachloroethene	4.43	0.50	5	0	89	78	137				
Toluene	4.53	0.50	5	0	91	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 3		SampType: Laboratory Control Sample			Lab ID: LCS041620			Method: SW8260B			
Analysis Date: 04/16/20 13:14		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	4.72	0.50	5	0	94	42	152				
1,2,4-Trichlorobenzene	4.59	0.50	5	0	92	58	142				
1,1,1-Trichloroethane	5.08	0.50	5	0	101	64	141				
1,1,2-Trichloroethane	4.61	0.50	5	0	92	72	133				
Trichloroethene	4.76	0.50	5	0	95	75	138				
Trichlorofluoromethane	5.09	0.50	5	0	102	58	139				
1,2,3-Trichloropropane	4.54	0.50	5	0	91	67	133				
1,2,4-Trimethylbenzene	4.49	0.50	5	0	90	71	129				
1,3,5-Trimethylbenzene	4.63	0.50	5	0	93	68	135				
Vinyl chloride	5.14	0.50	5	0	103	66	140				
m+p-Xylenes	9.05	0.50	10	0	90	78	133				
o-Xylene	4.55	0.50	5	0	91	79	136				
Xylenes, Total	13.6	0.50	15	0	91	78	136				
Surr: 1,2-Dichloroethane-d4	10.8	0.50	10	0	108	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.48	0.50	10	0	95	76	127				
Surr: Toluene-d8	9.56	0.50	10	0	96	79	122				

Associated samples: B20040843-001B, B20040843-002B, B20040843-003B, B20040843-004B, B20040843-005B, B20040843-006A

Run ID :Run Order: 5971A.I_200416A: 4		SampType: Method Blank			Lab ID: MBLK041620			Method: SW8260B			
Analysis Date: 04/16/20 14:09		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: **5971A.I_200416A: 4**

SampType: **Method Blank**

Lab ID: **MBLK041620**

Method: **SW8260B**

Analysis Date: **04/16/20 14:09**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 4		SampType: Method Blank			Lab ID: MBLK041620				Method: SW8260B		
Analysis Date: 04/16/20 14:09		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	11.1	0.50	10	0	111	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	10.0	0.50	10	0	100	76	127				
Surr: Toluene-d8	9.05	0.50	10	0	91	79	122				

Associated samples: B20040843-001B, B20040843-002B, B20040843-003B, B20040843-004B, B20040843-005B, B20040843-006A

Run ID :Run Order: 5971A.I_200416A: 6		SampType: Sample Matrix Spike			Lab ID: B20040843-002BMS				Method: SW8260B		
Analysis Date: 04/16/20 23:07		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	97.6	10	100	0	98	71	133				
Bromobenzene	102	10	100	0	102	78	133				
Bromochloromethane	87.4	10	100	0	87	68	131				
Bromodichloromethane	102	10	100	0	102	67	138				
Bromoform	91.3	10	100	0	91	64	136				
Bromomethane	22.7	10	100	0	23	60	138				S
n-Butylbenzene	109	10	100	0	109	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: **5971A.I_200416A: 6**

SampType: **Sample Matrix Spike**

Lab ID: **B20040843-002BMS**

Method: **SW8260B**

Analysis Date: **04/16/20 23:07**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	116	10	100	0	115	73	135				
tert-Butylbenzene	101	10	100	0	102	69	137				
Carbon tetrachloride	94.6	10	100	0	95	61	144				
Chlorobenzene	92.6	10	100	0	93	78	136				
Chlorodibromomethane	91.9	10	100	0	92	72	136				
Chloroethane	110	10	100	0	110	64	136				
Chloroform	96.1	10	100	0	96	69	133				
Chloromethane	82.9	10	100	0	83	63	149				
1,2-Dibromo-3-chloropropane	109	20	100	0	109	63	125				
1,2-Dibromoethane	95.3	10	100	0	95	75	131				
2-Chlorotoluene	105	10	100	0	105	74	135				
Dibromomethane	96.1	10	100	0	96	72	133				
1,2-Dichlorobenzene	103	10	100	0	103	78	129				
4-Chlorotoluene	112	10	100	0	112	79	135				
1,3-Dichlorobenzene	103	10	100	0	103	79	132				
1,4-Dichlorobenzene	99.6	10	100	0	100	78	131				
Dichlorodifluoromethane	114	10	100	0	114	55	141				
1,1-Dichloroethane	102	10	100	0	102	72	130				
1,2-Dichloroethane	109	10	100	0	109	57	146				
1,1-Dichloroethene	99.0	10	100	0	99	66	142				
cis-1,2-Dichloroethene	252	10	100	155	97	74	133				
trans-1,2-Dichloroethene	104	10	100	0	104	76	138				
1,2-Dichloropropane	97.8	10	100	0	98	72	135				
1,3-Dichloropropane	96.7	10	100	0	97	75	134				
2,2-Dichloropropane	101	10	100	0	101	42	167				
1,1-Dichloropropene	99.2	10	100	0	99	72	140				
cis-1,3-Dichloropropene	96.7	10	100	0	97	75	132				
trans-1,3-Dichloropropene	99.2	10	100	0	99	77	145				
Ethylbenzene	97.3	10	100	0	97	78	131				
Hexachlorobutadiene	99.5	10	100	0	99	65	141				
Isopropylbenzene	113	10	100	0	113	72	135				
p-Isopropyltoluene	106	10	100	0	106	71	134				
Methyl tert-butyl ether (MTBE)	103	10	100	0	103	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 6		SampType: Sample Matrix Spike			Lab ID: B20040843-002BMS			Method: SW8260B			
Analysis Date: 04/16/20 23:07		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	100	10	100	0	100	73	126				
Naphthalene	113	10	100	0	113	55	139				
n-Propylbenzene	107	10	100	0	107	70	139				
Styrene	95.6	10	100	0	96	76	134				
1,1,1,2-Tetrachloroethane	91.3	10	100	0	91	75	135				
1,1,2,2-Tetrachloroethane	113	10	100	0	113	72	132				
Tetrachloroethene	126	10	100	33.54	92	78	137				
Toluene	95.1	10	100	0	95	78	134				
1,2,3-Trichlorobenzene	101	10	100	0	101	42	152				
1,2,4-Trichlorobenzene	99.2	10	100	0	99	58	142				
1,1,1-Trichloroethane	99.8	10	100	0	100	64	141				
1,1,2-Trichloroethane	96.8	10	100	0	97	72	133				
Trichloroethene	114	10	100	17.31	97	75	138				
Trichlorofluoromethane	104	10	100	0	104	58	139				
1,2,3-Trichloropropane	110	10	100	0	110	67	133				
1,2,4-Trimethylbenzene	105	10	100	0	105	71	129				
1,3,5-Trimethylbenzene	106	10	100	0	106	68	135				
Vinyl chloride	101	10	100	0	101	66	140				
m+p-Xylenes	191	10	200	0	95	78	133				
o-Xylene	96.1	10	100	0	96	79	136				
Xylenes, Total	287	10	300	0	96	78	136				
Surr: 1,2-Dichloroethane-d4	220	10	200	0	110	70	130				
Surr: Dibromofluoromethane	196	10	200	0	98	77	126				
Surr: p-Bromofluorobenzene	200	10	200	0	100	76	127				
Surr: Toluene-d8	193	10	200	0	96	79	122				

Associated samples: B20040843-001B, B20040843-002B, B20040843-003B, B20040843-004B, B20040843-005B, B20040843-006A

Run ID :Run Order: 5971A.I_200416A: 7		SampType: Sample Matrix Spike Duplicate			Lab ID: B20040843-002BMSD			Method: SW8260B			
Analysis Date: 04/16/20 23:35		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	93.4	10	100	0	93	71	133	97.58	4.4	20	
Bromobenzene	98.4	10	100	0	98	78	133	101.9	3.5	20	
Bromochloromethane	92.0	10	100	0	92	68	131	87.36	5.2	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 7	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040843-002BMSD				Method: SW8260B		
Analysis Date: 04/16/20 23:35	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	101	10	100	0	101	67	138	101.8	1.1	20	
Bromoform	90.6	10	100	0	91	64	136	91.25	0.7	20	
Bromomethane	45.3	10	100	0	45	60	138	22.74	66	20	SR
n-Butylbenzene	107	10	100	0	107	72	135	108.5	1.8	20	
sec-Butylbenzene	109	10	100	0	109	73	135	115.5	6.0	20	
tert-Butylbenzene	97.9	10	100	0	98	69	137	101.5	3.7	20	
Carbon tetrachloride	94.6	10	100	0	95	61	144	94.6	0.0	20	
Chlorobenzene	93.9	10	100	0	94	78	136	92.63	1.4	20	
Chlorodibromomethane	92.4	10	100	0	92	72	136	91.91	0.5	20	
Chloroethane	109	10	100	0	109	64	136	109.7	0.5	20	
Chloroform	96.7	10	100	0	97	69	133	96.07	0.7	20	
Chloromethane	94.9	10	100	0	95	63	149	82.93	13	20	
1,2-Dibromo-3-chloropropane	105	20	100	0	105	63	125	109.4	4.0	20	
1,2-Dibromoethane	93.6	10	100	0	94	75	131	95.3	1.8	20	
2-Chlorotoluene	106	10	100	0	106	74	135	105.3	0.3	20	
Dibromomethane	95.3	10	100	0	95	72	133	96.07	0.8	20	
1,2-Dichlorobenzene	101	10	100	0	101	78	129	103.5	2.5	20	
4-Chlorotoluene	110	10	100	0	110	79	135	111.7	1.5	20	
1,3-Dichlorobenzene	101	10	100	0	101	79	132	102.7	1.3	20	
1,4-Dichlorobenzene	100	10	100	0	100	78	131	99.62	0.4	20	
Dichlorodifluoromethane	109	10	100	0	109	55	141	114.4	4.4	20	
1,1-Dichloroethane	99.4	10	100	0	99	72	130	102.2	2.8	20	
1,2-Dichloroethane	107	10	100	0	107	57	146	109.3	1.7	20	
1,1-Dichloroethene	97.4	10	100	0	97	66	142	98.98	1.6	20	
cis-1,2-Dichloroethene	250	10	100	155	95	74	133	252.3	1.1	20	
trans-1,2-Dichloroethene	99.9	10	100	0	100	76	138	104.4	4.3	20	
1,2-Dichloropropane	98.3	10	100	0	98	72	135	97.78	0.6	20	
1,3-Dichloropropane	95.3	10	100	0	95	75	134	96.69	1.4	20	
2,2-Dichloropropane	99.9	10	100	0	100	42	167	101	1.1	20	
1,1-Dichloropropene	95.9	10	100	0	96	72	140	99.22	3.4	20	
cis-1,3-Dichloropropene	95.4	10	100	0	95	75	132	96.74	1.4	20	
trans-1,3-Dichloropropene	96.9	10	100	0	97	77	145	99.16	2.3	20	
Ethylbenzene	97.4	10	100	0	97	78	131	97.3	0.1	20	

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340616

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416A: 7	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040843-002BMSD				Method: SW8260B		
Analysis Date: 04/16/20 23:35	Units: ug/L					Prep Info: Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	106	10	100	0	106	65	141	99.45	5.9	20	
Isopropylbenzene	106	10	100	0	106	72	135	112.9	6.1	20	
p-Isopropyltoluene	102	10	100	0	102	71	134	105.9	3.5	20	
Methyl tert-butyl ether (MTBE)	99.3	10	100	0	99	58	151	103.3	4.0	20	
Methylene chloride	101	10	100	0	101	73	126	100	1.3	20	
Naphthalene	123	10	100	0	123	55	139	113	8.1	20	
n-Propylbenzene	105	10	100	0	105	70	139	107.3	1.8	20	
Styrene	92.0	10	100	0	92	76	134	95.62	3.9	20	
1,1,1,2-Tetrachloroethane	91.8	10	100	0	92	75	135	91.3	0.6	20	
1,1,2,2-Tetrachloroethane	109	10	100	0	109	72	132	112.8	3.0	20	
Tetrachloroethene	120	10	100	33.54	87	78	137	125.7	4.3	20	
Toluene	92.6	10	100	0	93	78	134	95.07	2.7	20	
1,2,3-Trichlorobenzene	110	10	100	0	110	42	152	100.7	8.8	20	
1,2,4-Trichlorobenzene	108	10	100	0	107	58	142	99.18	8.1	20	
1,1,1-Trichloroethane	101	10	100	0	101	64	141	99.83	1.1	20	
1,1,2-Trichloroethane	98.3	10	100	0	98	72	133	96.83	1.5	20	
Trichloroethene	111	10	100	17.31	94	75	138	114.2	2.9	20	
Trichlorofluoromethane	104	10	100	0	104	58	139	104.3	0.1	20	
1,2,3-Trichloropropane	109	10	100	0	109	67	133	109.6	0.5	20	
1,2,4-Trimethylbenzene	101	10	100	0	101	71	129	105	4.3	20	
1,3,5-Trimethylbenzene	105	10	100	0	105	68	135	106.4	1.4	20	
Vinyl chloride	104	10	100	0	104	66	140	100.6	3.6	20	
m+p-Xylenes	189	10	200	0	95	78	133	190.7	0.7	20	
o-Xylene	94.5	10	100	0	94	79	136	96.11	1.7	20	
Xylenes, Total	284	10	300	0	95	78	136	286.8			
Surr: 1,2-Dichloroethane-d4	215	10	200	0	108	70	130	0			
Surr: Dibromofluoromethane	197	10	200	0	99	77	126	0			
Surr: p-Bromofluorobenzene	193	10	200	0	96	76	127	0			
Surr: Toluene-d8	186	10	200	0	93	79	122	0			

Associated samples: B20040843-001B, B20040843-002B, B20040843-003B, B20040843-004B, B20040843-005B, B20040843-006A



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340770

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416C: 1		SampType: MS Tuning File			Lab ID: 16APR30_D_TUNE			Method: SW8260B			
Analysis Date: 04/17/20 00:57		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	20.3		100	0	20.3	15	40				
75, % of mass 95	42.3		100	0	42.3	30	60				
96, % of mass 95	6.40		100	0	6.4	5	9				
173, % of mass 174	1.00		100	0	1	0	1.99				
174, % of mass 95	69.1		100	0	69.1	50	99.99				
175, % of mass 174	6.80		100	0	6.8	5	9				
176, % of mass 174	95.0		100	0	95	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: B20040843-001B, B20040843-003B, B20040843-004B

Run ID :Run Order: 5971A.I_200416C: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:24		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.94	0.50	5	0	99	70	130				
Tetrachloroethene	4.49	0.50	5	0	90	70	130				
Trichloroethene	4.82	0.50	5	0	96	70	130				

Associated samples: B20040843-001B, B20040843-003B, B20040843-004B

Run ID :Run Order: 5971A.I_200416C: 3		SampType: Laboratory Control Sample			Lab ID: LCS041620a			Method: SW8260B			
Analysis Date: 04/17/20 01:52		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.76	0.50	5	0	95	74	133				
Tetrachloroethene	4.34	0.50	5	0	87	78	137				
Trichloroethene	4.68	0.50	5	0	94	75	138				

Associated samples: B20040843-001B, B20040843-003B, B20040843-004B

Run ID :Run Order: 5971A.I_200416C: 4		SampType: Method Blank			Lab ID: MBLK041620a			Method: SW8260B			
Analysis Date: 04/17/20 02:47		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040843

BatchID: R340770

Date: 22-Apr-20

Run ID :Run Order: 5971A.I_200416C: 4	SampType: Method Blank			Lab ID: MBLK041620a				Method: SW8260B			
Analysis Date: 04/17/20 02:47	Units: ug/L			Prep Info: Prep Date:				Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene	ND	0.50									
Trichloroethene	ND	0.50									

Associated samples: **B20040843-001B, B20040843-003B, B20040843-004B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Tasman Geosciences Inc

B20040843

Login completed by: Briana G. Sangiuliano

Date Received: 4/13/2020

Reviewed by: BL2000\lcardreau

Received by: jsh

Reviewed Date: 4/13/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	1.4°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None



ANALYTICAL SUMMARY REPORT

April 23, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20040946 Quote ID: B2871

Project Name: LSS Semi-Annual GWM

Energy Laboratories Inc Billings MT received the following 7 samples for Tasman Geosciences Inc on 4/14/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20040946-001	MW458-I	04/14/20 9:49	04/14/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20040946-002	MW457-D	04/14/20 10:54	04/14/20	Aqueous	Same As Above
B20040946-003	MW457-I	04/14/20 11:27	04/14/20	Aqueous	Same As Above
B20040946-004	MW454-D	04/14/20 13:11	04/14/20	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Carbon, Total Organic Headspace Gas Analysis Chloride Sulfate/Anions by Ion Chromatography 8260-Volatile Organic Compounds- Short List
B20040946-005	MW454-I	04/14/20 13:57	04/14/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20040946-006	MW413-D	04/14/20 15:01	04/14/20	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Carbon, Total Organic Headspace Gas Analysis Chloride Sulfate/Anions by Ion Chromatography 8260-Volatile Organic Compounds- Short List
B20040946-007	Trip Blank Lot03312020 B-JDB SHP0277	04/14/20 0:00	04/14/20	Trip Blank	8260-Volatile Organic Compounds- Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Tasman Geosciences Inc
Project: LSS Semi-Annual GWM
Work Order: B20040946

Report Date: 04/23/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW458-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-001
Collection Date: 04/14/20 09:49
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	3.4	mg/L		0.5	0.1	A5310 C	04/17/20 17:42 / eli-c			SUB-C257479 : 20		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,1-Dichloroethane	0.44	ug/L	J	0.50	0.093	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,1-Dichloroethene	0.22	ug/L	J	0.50	0.15	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
cis-1,2-Dichloroethene	70	ug/L		10	2.5	SW8260B	04/21/20 03:04 / msc			5971A.I_200420A : 30		R340861
trans-1,2-Dichloroethene	1.2	ug/L		0.50	0.13	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW458-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-001
Collection Date: 04/14/20 09:49
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Tetrachloroethene	125	ug/L		10	2.2	SW8260B	04/21/20 03:04 / msc			5971A.I_200420A : 30		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Trichloroethene	23	ug/L		10	2.6	SW8260B	04/21/20 03:04 / msc			5971A.I_200420A : 30		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Vinyl chloride	0.61	ug/L		0.50	0.14	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Surr: 1,2-Dichloroethane-d4	117	%REC		70-130		SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861
Surr: p-Bromofluorobenzene	105	%REC		76-127		SW8260B	04/20/20 17:53 / msc			5971A.I_200420A : 13		R340861

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW457-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-002
Collection Date: 04/14/20 10:54
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	30	mg/L	D	2	0.6	A5310 C	04/20/20 15:31 / eli-c			SUB-C257525 : 10		C_R257525
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,1-Dichloroethane	0.20	ug/L	J	0.50	0.093	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,1-Dichloroethene	0.31	ug/L	J	0.50	0.15	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
cis-1,2-Dichloroethene	197	ug/L		10	2.5	SW8260B	04/21/20 14:04 / msc			5971A.I_200421A : 16		R340816
trans-1,2-Dichloroethene	1.3	ug/L		0.50	0.13	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix

J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW457-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-002
Collection Date: 04/14/20 10:54
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Tetrachloroethene	4.3	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Trichloroethene	10	ug/L		0.50	0.13	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Surr: 1,2-Dichloroethane-d4	116	%REC		70-130		SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Surr: Toluene-d8	93.0	%REC		79-122		SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861
Surr: p-Bromofluorobenzene	110	%REC		76-127		SW8260B	04/20/20 17:25 / msc			5971A.I_200420A : 12		R340861

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW457-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-003
Collection Date: 04/14/20 11:27
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	3.2	mg/L		0.5	0.1	A5310 C	04/17/20 18:06 / eli-c			SUB-C257479 : 22		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,1-Dichloroethane	0.28	ug/L	J	0.50	0.093	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
cis-1,2-Dichloroethene	19	ug/L		5.0	1.3	SW8260B	04/21/20 14:58 / msc			5971A.I_200421A : 18		R340816
trans-1,2-Dichloroethene	0.48	ug/L	J	0.50	0.13	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW457-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-003
Collection Date: 04/14/20 11:27
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Tetrachloroethene	10	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Trichloroethene	5.0	ug/L		0.50	0.13	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Vinyl chloride	0.42	ug/L	J	0.50	0.14	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Surr: 1,2-Dichloroethane-d4	116	%REC		70-130		SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Surr: Toluene-d8	94.0	%REC		79-122		SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861
Surr: p-Bromofluorobenzene	105	%REC		76-127		SW8260B	04/20/20 16:57 / msc			5971A.I_200420A : 11		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW454-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-004
Collection Date: 04/14/20 13:11
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS												
Alkalinity, Total as CaCO3	418	mg/L		4	4	A2320 B	04/16/20 15:04 / ean			Metrohm 2_200416A : 71		R340557
Bicarbonate as HCO3	510	mg/L		4	4	A2320 B	04/16/20 15:04 / ean			Metrohm 2_200416A : 71		R340557
Carbonate as CO3	ND	mg/L		4	4	A2320 B	04/16/20 15:04 / ean			Metrohm 2_200416A : 71		R340557
Chloride	52	mg/L	D	2	0.2	E300.0	04/16/20 21:52 / mrc			METROHM 2_200413A : 306		R340428
Sulfate	731	mg/L	D	5	0.8	E300.0	04/16/20 21:52 / mrc			METROHM 2_200413A : 306		R340428
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	3.0	mg/L		0.5	0.1	A5310 C	04/17/20 18:16 / eli-c			SUB-C257479 : 23		C_R257479
METALS, DISSOLVED												
Arsenic	0.004	mg/L	D	0.002	0.002	SW6020	04/17/20 18:31 / pap			ICPMS207-B_200417B : 50		R340658
Calcium	171	mg/L		1	0.2	SW6010B	04/16/20 15:45 / rlh			ICP204-B_200416A : 95		R340559
Magnesium	104	mg/L		1	0.1	SW6010B	04/16/20 15:45 / rlh			ICP204-B_200416A : 95		R340559
Potassium	5	mg/L		1	0.7	SW6010B	04/16/20 15:45 / rlh			ICP204-B_200416A : 95		R340559
Sodium	145	mg/L		1	0.6	SW6010B	04/16/20 15:45 / rlh			ICP204-B_200416A : 95		R340559
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW454-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-004
Collection Date: 04/14/20 13:11
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1-Dichloroethane	0.31	ug/L	J	0.50	0.093	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1-Dichloroethene	0.27	ug/L	J	0.50	0.15	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
cis-1,2-Dichloroethene	98	ug/L		10	2.5	SW8260B	04/21/20 03:31 / msc			5971A.I_200420A : 31		R340861
trans-1,2-Dichloroethene	0.91	ug/L		0.50	0.13	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Tetrachloroethene	307	ug/L		10	2.2	SW8260B	04/21/20 03:31 / msc			5971A.I_200420A : 31		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW454-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-004
Collection Date: 04/14/20 13:11
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Trichloroethene	22	ug/L		10	2.6	SW8260B	04/21/20 03:31 / msc			5971A.I_200420A : 31		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Surr: Dibromofluoromethane	97.0	%REC		77-126		SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Surr: 1,2-Dichloroethane-d4	112	%REC		70-130		SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Surr: Toluene-d8	96.0	%REC		79-122		SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
Surr: p-Bromofluorobenzene	105	%REC		76-127		SW8260B	04/20/20 18:20 / msc			5971A.I_200420A : 14		R340861
ORGANIC CHARACTERISTICS												
Methane	ND	mg/L		0.0010	0.00070	SW8015M	04/15/20 11:39 / jd			)-HEADSPACE_200415A : 13		R340568
Ethane	ND	mg/L		0.0010	0.00031	SW8015M	04/15/20 11:39 / jd			)-HEADSPACE_200415A : 13		R340568
Ethene	ND	mg/L		0.0010	0.00023	SW8015M	04/15/20 11:39 / jd			)-HEADSPACE_200415A : 13		R340568

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW454-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-005
Collection Date: 04/14/20 13:57
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	3.1	mg/L		0.5	0.1	A5310 C	04/17/20 18:27 / eli-c			SUB-C257479 : 24		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,1-Dichloroethane	0.29	ug/L	J	0.50	0.093	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,1-Dichloroethene	0.31	ug/L	J	0.50	0.15	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
cis-1,2-Dichloroethene	97	ug/L		10	2.5	SW8260B	04/21/20 03:59 / msc			5971A.I_200420A : 32		R340861
trans-1,2-Dichloroethene	0.91	ug/L		0.50	0.13	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW454-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-005
Collection Date: 04/14/20 13:57
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Tetrachloroethene	361	ug/L		10	2.2	SW8260B	04/21/20 03:59 / msc			5971A.I_200420A : 32		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Trichloroethene	25	ug/L		10	2.6	SW8260B	04/21/20 03:59 / msc			5971A.I_200420A : 32		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Surr: 1,2-Dichloroethane-d4	114	%REC		70-130		SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Surr: Toluene-d8	89.0	%REC		79-122		SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861
Surr: p-Bromofluorobenzene	102	%REC		76-127		SW8260B	04/20/20 18:48 / msc			5971A.I_200420A : 15		R340861

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW413-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-006
Collection Date: 04/14/20 15:01
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
INORGANICS												
Alkalinity, Total as CaCO3	383	mg/L		4	4	A2320 B	04/16/20 15:13 / ean			Metrohm 2_200416A : 73		R340557
Bicarbonate as HCO3	467	mg/L		4	4	A2320 B	04/16/20 15:13 / ean			Metrohm 2_200416A : 73		R340557
Carbonate as CO3	ND	mg/L		4	4	A2320 B	04/16/20 15:13 / ean			Metrohm 2_200416A : 73		R340557
Chloride	56	mg/L	D	2	0.2	E300.0	04/23/20 07:58 / mrc			C METROHM 2_200422A : 68		R340892
Sulfate	718	mg/L	D	5	0.8	E300.0	04/23/20 07:58 / mrc			C METROHM 2_200422A : 68		R340892
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	3.3	mg/L		0.5	0.1	A5310 C	04/17/20 18:37 / eli-c			SUB-C257479 : 25		C_R257479
METALS, DISSOLVED												
Arsenic	0.008	mg/L	D	0.002	0.002	SW6020	04/17/20 18:35 / pap			ICPMS207-B_200417B : 51		R340658
Calcium	171	mg/L		1	0.2	SW6010B	04/23/20 11:54 / rlh			ICP203-B_200423A : 39		R340882
Magnesium	108	mg/L		1	0.1	SW6010B	04/23/20 11:54 / rlh			ICP203-B_200423A : 39		R340882
Potassium	5	mg/L		1	0.7	SW6010B	04/23/20 11:54 / rlh			ICP203-B_200423A : 39		R340882
Sodium	160	mg/L		1	0.6	SW6010B	04/23/20 11:54 / rlh			ICP203-B_200423A : 39		R340882
VOLATILE ORGANIC COMPOUNDS												
Benzene	0.23	ug/L	J	0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix

J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW413-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-006
Collection Date: 04/14/20 15:01
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1-Dichloroethane	0.50	ug/L	J	0.50	0.093	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1-Dichloroethene	0.56	ug/L		0.50	0.15	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
cis-1,2-Dichloroethene	220	ug/L		25	6.4	SW8260B	04/21/20 04:26 / msc			5971A.I_200420A : 33		R340861
trans-1,2-Dichloroethene	3.0	ug/L		0.50	0.13	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Tetrachloroethene	403	ug/L		25	5.4	SW8260B	04/21/20 04:26 / msc			5971A.I_200420A : 33		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW413-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20040946-006
Collection Date: 04/14/20 15:01
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Trichloroethene	88	ug/L		25	6.4	SW8260B	04/21/20 04:26 / msc			5971A.I_200420A : 33		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Vinyl chloride	0.53	ug/L		0.50	0.14	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Surr: 1,2-Dichloroethane-d4	115	%REC		70-130		SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
Surr: p-Bromofluorobenzene	108	%REC		76-127		SW8260B	04/20/20 19:15 / msc			5971A.I_200420A : 16		R340861
ORGANIC CHARACTERISTICS												
Methane	ND	mg/L		0.0010	0.00070	SW8015M	04/15/20 11:49 / jd			)-HEADSPACE_200415A : 14		R340568
Ethane	ND	mg/L		0.0010	0.00031	SW8015M	04/15/20 11:49 / jd			)-HEADSPACE_200415A : 14		R340568
Ethene	ND	mg/L		0.0010	0.00023	SW8015M	04/15/20 11:49 / jd			)-HEADSPACE_200415A : 14		R340568



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GWM
Matrix: Trip Blank

Lab ID: B20040946-007
Collection Date: 04/14/20
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GWM
Matrix: Trip Blank

Lab ID: B20040946-007
Collection Date: 04/14/20
Date Received: 04/14/20
Report Date: 04/23/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Trichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Surr: 1,2-Dichloroethane-d4	113	%REC		70-130		SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Surr: Toluene-d8	97.0	%REC		79-122		SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861
Surr: p-Bromofluorobenzene	109	%REC		76-127		SW8260B	04/20/20 12:23 / msc			5971A.I_200420A : 6		R340861

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: C_R257479

Date: 23-Apr-20

Run ID :Run Order: SUB-C257479: 1	SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C		
Analysis Date: 04/17/20 12:45	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.41	0.50	5	0	108	90	109	0			

Associated samples: **B20040946-001A, B20040946-003A, B20040946-004C, B20040946-005A, B20040946-006C**

Run ID :Run Order: SUB-C257479: 2	SampType: Method Blank				Lab ID: MBLK				Method: A5310 C		
Analysis Date: 04/17/20 12:53	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: **B20040946-001A, B20040946-003A, B20040946-004C, B20040946-005A, B20040946-006C**

Run ID :Run Order: SUB-C257479: 9	SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C		
Analysis Date: 04/17/20 17:13	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.07	0.50	5	0	101	90	110	0			

Associated samples: **B20040946-001A, B20040946-003A, B20040946-004C, B20040946-005A, B20040946-006C**

Run ID :Run Order: SUB-C257479: 12	SampType: Sample Matrix Spike				Lab ID: C20040610-001AMS				Method: A5310 C		
Analysis Date: 04/17/20 19:29	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	8.88	0.50	5	3.444	109	90	109	0			

Associated samples: **B20040946-001A, B20040946-003A, B20040946-004C, B20040946-005A, B20040946-006C**

Run ID :Run Order: SUB-C257479: 13	SampType: Sample Matrix Spike Duplicate				Lab ID: C20040610-001AMSD				Method: A5310 C		
Analysis Date: 04/17/20 19:40	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	9.05	0.50	5	3.444	112	90	109	8.879	2.0	20	S

Associated samples: **B20040946-001A, B20040946-003A, B20040946-004C, B20040946-005A, B20040946-006C**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: C_R257525

Date: 23-Apr-20

Run ID :Run Order: SUB-C257525: 7	SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C		
Analysis Date: 04/20/20 14:24	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.13	0.50	5	0	103	90	109	0			

Associated samples: **B20040946-002A**

Run ID :Run Order: SUB-C257525: 8	SampType: Method Blank				Lab ID: MBLK				Method: A5310 C		
Analysis Date: 04/20/20 14:59	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: **B20040946-002A**

Run ID :Run Order: SUB-C257525: 9	SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C		
Analysis Date: 04/20/20 15:15	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.75	0.50	5	0	95	90	110	0			

Associated samples: **B20040946-002A**

Run ID :Run Order: SUB-C257525: 11	SampType: Sample Matrix Spike				Lab ID: C20040610-002AMS				Method: A5310 C		
Analysis Date: 04/20/20 15:51	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	50.3	2.0	20	30.24	100	90	109	0			

Associated samples: **B20040946-002A**

Run ID :Run Order: SUB-C257525: 12	SampType: Sample Matrix Spike Duplicate				Lab ID: C20040610-002AMSD				Method: A5310 C		
Analysis Date: 04/20/20 16:12	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	50.3	2.0	20	30.24	100	90	109	50.31	0.1	20	

Associated samples: **B20040946-002A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340428

Date: 23-Apr-20

Run ID :Run Order: IC METROHM 2_200413A: 1	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0			
Analysis Date: 04/13/20 14:58	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.1	1.0	25	0	97	90	110				
Sulfate	97.8	1.0	100	0	98	90	110				

Associated samples: **B20040946-004A**

Run ID :Run Order: IC METROHM 2_200413A: 2	SampType: Method Blank				Lab ID: ICB			Method: E300.0			
Analysis Date: 04/13/20 15:14	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.05									
Sulfate	ND	0.2									

Associated samples: **B20040946-004A**

Run ID :Run Order: IC METROHM 2_200413A: 6	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0			
Analysis Date: 04/13/20 16:16	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25.7	1.0	25	0	103	90	110				
Sulfate	103	1.1	100	0	103	90	110				

Associated samples: **B20040946-004A**

Run ID :Run Order: IC METROHM 2_200413A: 310	SampType: Sample Matrix Spike				Lab ID: B20040953-001AMS			Method: E300.0			
Analysis Date: 04/16/20 22:54	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	269	3.2	250	7.68	104	90	110				
Sulfate	3136	11	1000	2118	102	90	110				

Associated samples: **B20040946-004A**

Run ID :Run Order: IC METROHM 2_200413A: 311	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040953-001AMSD			Method: E300.0			
Analysis Date: 04/16/20 23:10	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	269	3.2	250	7.68	105	90	110	268.7	0.1	20	
Sulfate	3140	11	1000	2118	102	90	110	3136	0.1	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340428

Date: 23-Apr-20

Run ID :Run Order: IC METROHM 2_200413A: 311	SampType: Sample Matrix Spike Duplicate	Lab ID: B20040953-001AMSD	Method: E300.0								
Analysis Date: 04/16/20 23:10	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040946-004A**



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340557

Date: 23-Apr-20

Run ID :Run Order: Metrohm 2_200416A: 61	SampType: Method Blank				Lab ID: MBLK				Method: A2320 B		
Analysis Date: 04/16/20 14:21	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	4									

Associated samples: **B20040946-004A, B20040946-006A**

Run ID :Run Order: Metrohm 2_200416A: 62	SampType: Laboratory Control Sample				Lab ID: LCS				Method: A2320 B		
Analysis Date: 04/16/20 14:27	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	102	4.0	100	0	102	90	110				

Associated samples: **B20040946-004A, B20040946-006A**

Run ID :Run Order: Metrohm 2_200416A: 69	SampType: Sample Matrix Spike				Lab ID: B20040943-017AMS				Method: A2320 B		
Analysis Date: 04/16/20 14:52	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	171	4.0	171	5.711	96	80	120				

Associated samples: **B20040946-004A, B20040946-006A**

Run ID :Run Order: Metrohm 2_200416A: 89	SampType: Sample Duplicate				Lab ID: B20040953-007ADUP				Method: A2320 B		
Analysis Date: 04/16/20 16:21	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	346	4.0		0				346.7	0.2	10	
Bicarbonate as HCO3	422	4.0		0				422.7	0.2	10	
Carbonate as CO3	ND	4.0		0				0		10	

Associated samples: **B20040946-004A, B20040946-006A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340892

Date: 23-Apr-20

Run ID :Run Order: IC METROHM 2_200422A: 1	SampType: Initial Calibration Verification Standard				Lab ID: ICV			Method: E300.0			
Analysis Date: 04/22/20 14:40	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	24.2	1.0	25	0	97	90	110				
Sulfate	98.0	1.0	100	0	98	90	110				

Associated samples: **B20040946-006A**

Run ID :Run Order: IC METROHM 2_200422A: 2	SampType: Method Blank				Lab ID: ICB			Method: E300.0			
Analysis Date: 04/22/20 14:55	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.05									
Sulfate	ND	0.2									

Associated samples: **B20040946-006A**

Run ID :Run Order: IC METROHM 2_200422A: 5	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: E300.0			
Analysis Date: 04/22/20 15:42	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	26.0	1.0	25	0	104	90	110				
Sulfate	104	1.1	100	0	104	90	110				

Associated samples: **B20040946-006A**

Run ID :Run Order: IC METROHM 2_200422A: 69	SampType: Sample Matrix Spike				Lab ID: B20040946-006AMS			Method: E300.0			
Analysis Date: 04/23/20 08:14	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	186	1.6	125	55.77	104	90	110				
Sulfate	1234	5.3	500	717.7	103	90	110				

Associated samples: **B20040946-006A**

Run ID :Run Order: IC METROHM 2_200422A: 70	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040946-006AMSD			Method: E300.0			
Analysis Date: 04/23/20 08:29	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	184	1.6	125	55.77	103	90	110	186.3	1.0	20	
Sulfate	1214	5.3	500	717.7	99	90	110	1234	1.6	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340892

Date: 23-Apr-20

Run ID :Run Order: IC METROHM 2_200422A: 70	SampType: Sample Matrix Spike Duplicate	Lab ID: B20040946-006AMSD	Method: E300.0								
Analysis Date: 04/23/20 08:29	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040946-006A**



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340559

Date: 23-Apr-20

Run ID :Run Order: ICP204-B_200416A: 14	SampType: Method Blank				Lab ID: MB-7400DIS200416A				Method: SW6010B		
Analysis Date: 04/16/20 09:57	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.08									
Magnesium	ND	0.02									
Potassium	ND	0.4									
Sodium	ND	0.06									

Associated samples: **B20040946-004B**

Run ID :Run Order: ICP204-B_200416A: 16	SampType: Laboratory Fortified Blank				Lab ID: LFB-7400DIS200416A				Method: SW6010B		
Analysis Date: 04/16/20 10:06	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	49.6	1.0	50	0	99	80	120				
Magnesium	49.5	1.0	50	0	99	80	120				
Potassium	49.3	1.0	50	0	99	80	120				
Sodium	49.6	1.0	50	0	99	80	120				

Associated samples: **B20040946-004B**

Run ID :Run Order: ICP204-B_200416A: 17	SampType: Initial Calibration Verification Standard				Lab ID: QCS				Method: SW6010B		
Analysis Date: 04/16/20 10:10	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.2	1.0	40	0	101	90	110				
Magnesium	39.6	1.0	40	0	99	90	110				
Potassium	39.5	1.0	40	0	99	90	110				
Sodium	39.6	1.0	40	0	99	90	110				

Associated samples: **B20040946-004B**

Run ID :Run Order: ICP204-B_200416A: 18	SampType: Interference Check Sample A				Lab ID: ICSA				Method: SW6010B		
Analysis Date: 04/16/20 10:14	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	456	1.0	500	0	91	80	120				
Magnesium	484	1.0	500	0	97	80	120				
Potassium	0.0526	1.0		0							
Sodium	0.166	1.0		0							

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340559

Date: 23-Apr-20

Run ID :Run Order: **ICP204-B_200416A: 18** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **SW6010B**
 Analysis Date: **04/16/20 10:14** Units: **mg/L** Prep Info: Prep Date: Prep Method:
 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
 Associated samples: **B20040946-004B**

Run ID :Run Order: **ICP204-B_200416A: 19** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **SW6010B**
 Analysis Date: **04/16/20 10:18** Units: **mg/L** Prep Info: Prep Date: Prep Method:
 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
 Calcium 454 1.0 500 0 91 80 120
 Magnesium 488 1.0 500 0 98 80 120
 Potassium 20.3 1.0 20 0 102 80 120
 Sodium 20.5 1.0 20 0 102 80 120
 Associated samples: **B20040946-004B**

Run ID :Run Order: **ICP204-B_200416A: 98** SampType: **Serial Dilution** Lab ID: **B20040946-004BDIL** Method: **SW6010B**
 Analysis Date: **04/16/20 15:58** Units: **mg/L** Prep Info: Prep Date: Prep Method:
 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
 Calcium 176 1.0 0 0 0 171.5 2.7 10
 Magnesium 106 1.0 0 0 0 104.3 1.8 10
 Potassium 5.71 3.6 0 0 0 5.02 10 N
 Sodium 147 2.9 0 0 0 144.6 1.7 10
 Associated samples: **B20040946-004B**

Run ID :Run Order: **ICP204-B_200416A: 99** SampType: **Sample Matrix Spike** Lab ID: **B20040946-004BMS2** Method: **SW6010B**
 Analysis Date: **04/16/20 16:02** Units: **mg/L** Prep Info: Prep Date: Prep Method:
 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
 Calcium 266 1.0 100 171.5 95 75 125
 Magnesium 205 1.0 100 104.3 100 75 125
 Potassium 101 1.0 100 5.02 96 75 125
 Sodium 237 1.0 100 144.6 92 75 125
 Associated samples: **B20040946-004B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340559

Date: 23-Apr-20

Run ID :Run Order: ICP204-B_200416A: 100	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040946-004BMSD2				Method: SW6010B		
Analysis Date: 04/16/20 16:06	Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	271	1.0	100	171.5	99	75	125	266	1.7	20	
Magnesium	208	1.0	100	104.3	103	75	125	204.6	1.5	20	
Potassium	103	1.0	100	5.02	98	75	125	100.8	1.9	20	
Sodium	242	1.0	100	144.6	97	75	125	236.8	2.1	20	

Associated samples: B20040946-004B



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340658

Date: 23-Apr-20

Run ID :Run Order: ICPMS207-B_200417B: 31		SampType: Interference Check Sample A			Lab ID: ICSA			Method: SW6020			
Analysis Date: 04/17/20 16:41		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0000227	0.0010		0							

Associated samples: **B20040946-004B, B20040946-006B**

Run ID :Run Order: ICPMS207-B_200417B: 32		SampType: Interference Check Sample AB			Lab ID: ICSAB			Method: SW6020			
Analysis Date: 04/17/20 16:45		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0103	0.0010	0.01	0	103	80	120				

Associated samples: **B20040946-004B, B20040946-006B**

Run ID :Run Order: ICPMS207-B_200417B: 46		SampType: Serial Dilution			Lab ID: B20040690-019BDIL			Method: SW6020			
Analysis Date: 04/17/20 18:14		Units: mg/L			Prep Info: Prep Date: 4/10/2020			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0010		0		0	0	0		10	

Associated samples: **B20040946-004B, B20040946-006B**

Run ID :Run Order: ICPMS207-B_200417B: 47		SampType: Sample Matrix Spike			Lab ID: B20040690-019BMS			Method: SW6020			
Analysis Date: 04/17/20 18:18		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.253	0.0010	0.25	0	101	75	125				

Associated samples: **B20040946-004B, B20040946-006B**

Run ID :Run Order: ICPMS207-B_200417B: 48		SampType: Sample Matrix Spike Duplicate			Lab ID: B20040690-019BMSD			Method: SW6020			
Analysis Date: 04/17/20 18:22		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.250	0.0010	0.25	0	100	75	125	0.2533	1.2	20	

Associated samples: **B20040946-004B, B20040946-006B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340658

Date: 23-Apr-20

Run ID :Run Order: ICPMS207-B_200417B: 256	SampType: Initial Calibration Verification Standard				Lab ID: QCS			Method: SW6020			
Analysis Date: 04/17/20 15:47	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0507	0.0010	0.05	0	101	90	110				

Associated samples: **B20040946-004B, B20040946-006B**

Run ID :Run Order: ICPMS207-B_200417B: 257	SampType: Method Blank				Lab ID: LRB			Method: SW6020			
Analysis Date: 04/17/20 16:09	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.0002									

Associated samples: **B20040946-004B, B20040946-006B**

Run ID :Run Order: ICPMS207-B_200417B: 258	SampType: Laboratory Fortified Blank				Lab ID: LFB			Method: SW6020			
Analysis Date: 04/17/20 16:35	Units: mg/L				Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.0504	0.0010	0.05	0	101	85	115				

Associated samples: **B20040946-004B, B20040946-006B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340882

Date: 23-Apr-20

Run ID :Run Order: ICP203-B_200423A: 13		SampType: Method Blank			Lab ID: MB-6500DIS200423A				Method: SW6010B		
Analysis Date: 04/23/20 10:02		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.08									
Magnesium	ND	0.02									
Potassium	ND	0.4									
Sodium	ND	0.06									

Associated samples: **B20040946-006B**

Run ID :Run Order: ICP203-B_200423A: 15		SampType: Laboratory Fortified Blank			Lab ID: LFB-6500DIS200423A				Method: SW6010B		
Analysis Date: 04/23/20 10:10		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	49.0	1.0	50	0	98	80	120				
Magnesium	51.4	1.0	50	0	103	80	120				
Potassium	49.8	1.0	50	0	100	80	120				
Sodium	49.1	1.0	50	0	98	80	120				

Associated samples: **B20040946-006B**

Run ID :Run Order: ICP203-B_200423A: 16		SampType: Initial Calibration Verification Standard			Lab ID: QCS				Method: SW6010B		
Analysis Date: 04/23/20 10:14		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	38.9	1.0	40	0	97	90	110				
Magnesium	40.3	1.0	40	0	101	90	110				
Potassium	39.4	1.0	40	0	99	90	110				
Sodium	38.9	1.0	40	0	97	90	110				

Associated samples: **B20040946-006B**

Run ID :Run Order: ICP203-B_200423A: 17		SampType: Interference Check Sample A			Lab ID: ICSA				Method: SW6010B		
Analysis Date: 04/23/20 10:18		Units: mg/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	447	1.0	500	0	89	80	120				
Magnesium	472	1.0	500	0	94	80	120				
Potassium	-0.00215	1.0		0							
Sodium	0.0212	1.0		0							

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340882

Date: 23-Apr-20

Run ID :Run Order: ICP203-B_200423A: 17	SampType: Interference Check Sample A	Lab ID: ICSA	Method: SW6010B								
Analysis Date: 04/23/20 10:18	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **B20040946-006B**

Run ID :Run Order: ICP203-B_200423A: 18	SampType: Interference Check Sample AB	Lab ID: ICSAB	Method: SW6010B								
Analysis Date: 04/23/20 10:22	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	444	1.0	500	0	89	80	120				
Magnesium	483	1.0	500	0	97	80	120				
Potassium	18.9	1.0	20	0	95	80	120				
Sodium	18.8	1.0	20	0	94	80	120				

Associated samples: **B20040946-006B**

Run ID :Run Order: ICP203-B_200423A: 40	SampType: Serial Dilution	Lab ID: B20040946-006BDIL	Method: SW6010B								
Analysis Date: 04/23/20 11:58	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	174	1.0		0		0	0	171.5	1.5	10	
Magnesium	106	1.0		0		0	0	108.4	2.7	10	
Potassium	5.09	3.6		0		0	0	4.773		10	N
Sodium	162	2.9		0		0	0	160.1	1.2	10	

Associated samples: **B20040946-006B**

Run ID :Run Order: ICP203-B_200423A: 41	SampType: Sample Matrix Spike	Lab ID: B20040946-006BMS2	Method: SW6010B								
Analysis Date: 04/23/20 12:02	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	272	1.0	100	171.5	100	75	125				
Magnesium	214	1.0	100	108.4	106	75	125				
Potassium	106	1.0	100	4.773	101	75	125				
Sodium	264	1.0	100	160.1	104	75	125				

Associated samples: **B20040946-006B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340882

Date: 23-Apr-20

Run ID :Run Order: ICP203-B_200423A: 44	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040946-006BMSD2				Method: SW6010B		
Analysis Date: 04/23/20 12:14	Units: mg/L		Prep Info: Prep Date:			Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	270	1.0	100	171.5	99	75	125	271.5	0.4	20	
Magnesium	212	1.0	100	108.4	104	75	125	214.4	1.1	20	
Potassium	105	1.0	100	4.773	100	75	125	105.7	0.5	20	
Sodium	268	1.0	100	160.1	108	75	125	264.2	1.5	20	

Associated samples: **B20040946-006B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340568

Date: 23-Apr-20

Run ID :Run Order: FID-HEADSPACE_200415A: 3		SampType: Continuing Calibration Verification Standar			Lab ID: CCV			Method: SW8015M			
Analysis Date: 04/15/20 09:02		Units: ppm			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	495	2.0	500	0	99	85	115				
Ethane	477	2.0	500	0	95	85	115				
Ethene	485	2.0	500	0	97	85	115				

Associated samples: **B20040946-004E, B20040946-006E**

Run ID :Run Order: FID-HEADSPACE_200415A: 4		SampType: Laboratory Control Sample			Lab ID: LCS			Method: SW8015M			
Analysis Date: 04/15/20 09:09		Units: ppm			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	104	2.0	100	0	104	85	115				
Ethane	101	2.0	100	0	101	85	115				
Ethene	102	2.0	100	0	102	85	115				

Associated samples: **B20040946-004E, B20040946-006E**

Run ID :Run Order: FID-HEADSPACE_200415A: 5		SampType: Method Blank			Lab ID: MBLK			Method: SW8015M			
Analysis Date: 04/15/20 10:01		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	ND	0.0010									
Ethane	ND	0.0010									
Ethene	ND	0.0010									

Associated samples: **B20040946-004E, B20040946-006E**

Run ID :Run Order: FID-HEADSPACE_200415A: 9		SampType: Sample Duplicate			Lab ID: B20040702-004EDUP			Method: SW8015M			
Analysis Date: 04/15/20 10:57		Units: mg/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.00203	0.0010		0				0.00197	3.2	20	
Ethane	0.00183	0.0010		0				0.001826	0.1	20	
Ethene	ND	0.0010		0				0		20	

Associated samples: **B20040946-004E, B20040946-006E**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340568

Date: 23-Apr-20

Run ID :Run Order: FID-HEADSPACE_200415A: 16	SampType: Continuing Calibration Verification Standar	Lab ID: CCV	Method: SW8015M								
Analysis Date: 04/15/20 12:06	Units: ppm	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	500	2.0	500	0	100	85	115				
Ethane	482	2.0	500	0	96	85	115				
Ethene	490	2.0	500	0	98	85	115				

Associated samples: **B20040946-004E, B20040946-006E**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340816

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200421A: 1		SampType: MS Tuning File			Lab ID: 21APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/21/20 09:15		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	22.7		100	0	22.7	15	40				
75, % of mass 95	46.2		100	0	46.2	30	60				
96, % of mass 95	6.50		100	0	6.5	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	71.2		100	0	71.2	50	99.99				
175, % of mass 174	7.20		100	0	7.2	5	9				
176, % of mass 174	96.2		100	0	96.2	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: **B20040946-002B, B20040946-003B**

Run ID :Run Order: 5971A.I_200421A: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV042120			Method: SW8260B			
Analysis Date: 04/21/20 10:11		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.88	0.50	5	0	98	70	130				

Associated samples: **B20040946-002B, B20040946-003B**

Run ID :Run Order: 5971A.I_200421A: 3		SampType: Laboratory Control Sample			Lab ID: LCS042120			Method: SW8260B			
Analysis Date: 04/21/20 10:41		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.62	0.50	5	0	92	74	133				

Associated samples: **B20040946-002B, B20040946-003B**

Run ID :Run Order: 5971A.I_200421A: 4		SampType: Method Blank			Lab ID: MBLK042120			Method: SW8260B			
Analysis Date: 04/21/20 11:36		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									

Associated samples: **B20040946-002B, B20040946-003B**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340816

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200421A: 6	SampType: Sample Matrix Spike				Lab ID: B20040946-003BMS			Method: SW8260B			
Analysis Date: 04/21/20 20:11	Units: ug/L		Prep Info: Prep Date:			Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	67.0	5.0	50	18.56	97	74	133				

Associated samples: **B20040946-002B, B20040946-003B**

Run ID :Run Order: 5971A.I_200421A: 7	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040946-003BMSD			Method: SW8260B			
Analysis Date: 04/21/20 20:38	Units: ug/L		Prep Info: Prep Date:			Prep Method:					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	70.6	5.0	50	18.56	104	74	133	67.01	5.2	20	

Associated samples: **B20040946-002B, B20040946-003B**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 1		SampType: MS Tuning File			Lab ID: 20APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/20/20 09:16		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	22.1		100	0	22.1	15	40				
75, % of mass 95	45.1		100	0	45.1	30	60				
96, % of mass 95	6.40		100	0	6.4	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	73.5		100	0	73.5	50	99.99				
175, % of mass 174	7.80		100	0	7.8	5	9				
176, % of mass 174	97.4		100	0	97.4	95	101				
177, % of mass 176	6.50		100	0	6.5	5	9				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Run ID :Run Order: 5971A.I_200420A: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV042020			Method: SW8260B			
Analysis Date: 04/20/20 10:05		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.84	0.50	5	0	97	70	130				
Bromobenzene	4.88	0.50	5	0	97	70	130				
Bromochloromethane	4.49	0.50	5	0	90	70	130				
Bromodichloromethane	5.00	0.50	5	0	100	70	130				
Bromoform	4.63	0.50	5	0	93	70	130				
Bromomethane	5.88	0.50	5	0	118	70	130				
n-Butylbenzene	5.13	0.50	5	0	103	70	130				
sec-Butylbenzene	5.04	0.50	5	0	101	70	130				
tert-Butylbenzene	4.72	0.50	5	0	94	70	130				
Carbon tetrachloride	5.21	0.50	5	0	104	70	130				
Chlorobenzene	4.42	0.50	5	0	88	70	130				
Chlorodibromomethane	4.21	0.50	5	0	84	70	130				
Chloroethane	5.66	0.50	5	0	113	70	130				
Chloroform	5.18	0.50	5	0	104	80	120				
Chloromethane	5.78	0.50	5	0	115	70	130				
1,2-Dibromo-3-chloropropane	5.03	1.0	5	0	100	70	130				
1,2-Dibromoethane	4.36	0.50	5	0	87	70	130				
2-Chlorotoluene	4.92	0.50	5	0	98	70	130				
Dibromomethane	4.74	0.50	5	0	95	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 2

SampType: Continuing Calibration Verification Standar

Lab ID: CCV042020

Method: SW8260B

Analysis Date: 04/20/20 10:05

Units: ug/L

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.57	0.50	5	0	91	70	130				
4-Chlorotoluene	5.33	0.50	5	0	107	70	130				
1,3-Dichlorobenzene	4.79	0.50	5	0	96	70	130				
1,4-Dichlorobenzene	4.86	0.50	5	0	97	70	130				
Dichlorodifluoromethane	6.01	0.50	5	0	120	70	130				
1,1-Dichloroethane	5.17	0.50	5	0	103	70	130				
1,2-Dichloroethane	5.51	0.50	5	0	110	70	130				
1,1-Dichloroethene	4.80	0.50	5	0	96	80	120				
cis-1,2-Dichloroethene	4.75	0.50	5	0	95	70	130				
trans-1,2-Dichloroethene	4.92	0.50	5	0	98	70	130				
1,2-Dichloropropane	4.72	0.50	5	0	94	80	120				
1,3-Dichloropropane	4.57	0.50	5	0	91	70	130				
2,2-Dichloropropane	5.85	0.50	5	0	117	70	130				
1,1-Dichloropropene	5.25	0.50	5	0	105	70	130				
cis-1,3-Dichloropropene	4.72	0.50	5	0	94	70	130				
trans-1,3-Dichloropropene	4.70	0.50	5	0	94	70	130				
Ethylbenzene	4.71	0.50	5	0	94	80	120				
Hexachlorobutadiene	4.74	0.50	5	0	95	70	130				
Isopropylbenzene	5.26	0.50	5	0	105	70	130				
p-Isopropyltoluene	4.88	0.50	5	0	98	70	130				
Methyl tert-butyl ether (MTBE)	4.90	0.50	5	0	98	70	130				
Methylene chloride	5.13	0.50	5	0	103	70	130				
Naphthalene	5.06	0.50	5	0	101	70	130				
n-Propylbenzene	4.92	0.50	5	0	98	70	130				
Styrene	4.47	0.50	5	0	89	70	130				
1,1,1,2-Tetrachloroethane	4.46	0.50	5	0	89	70	130				
1,1,2,2-Tetrachloroethane	5.02	0.50	5	0	100	70	130				
Tetrachloroethene	4.42	0.50	5	0	88	70	130				
Toluene	4.75	0.50	5	0	95	80	120				
1,2,3-Trichlorobenzene	4.87	0.50	5	0	97	70	130				
1,2,4-Trichlorobenzene	4.71	0.50	5	0	94	70	130				
1,1,1-Trichloroethane	5.51	0.50	5	0	110	70	130				
1,1,2-Trichloroethane	4.50	0.50	5	0	90	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042020**

Method: **SW8260B**

Analysis Date: **04/20/20 10:05**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.74	0.50	5	0	95	70	130				
Trichlorofluoromethane	5.61	0.50	5	0	112	70	130				
1,2,3-Trichloropropane	5.03	0.50	5	0	101	70	130				
1,2,4-Trimethylbenzene	4.99	0.50	5	0	100	70	130				
1,3,5-Trimethylbenzene	5.11	0.50	5	0	102	70	130				
Vinyl chloride	5.37	0.50	5	0	107	80	120				
m+p-Xylenes	9.02	0.50	10	0	90	70	130				
o-Xylene	4.39	0.50	5	0	88	70	130				
Xylenes, Total	13.4	0.50	15	0	89	70	130				
Surr: 1,2-Dichloroethane-d4	11.3	0.50	10	0	113	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.79	0.50	10	0	98	76	127				
Surr: Toluene-d8	9.53	0.50	10	0	95	79	122				

Associated samples: **B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A**

Run ID :Run Order: **5971A.I_200420A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042020**

Method: **SW8260B**

Analysis Date: **04/20/20 10:33**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.86	0.50	5	0	97	71	133				
Bromobenzene	4.84	0.50	5	0	97	78	133				
Bromochloromethane	4.38	0.50	5	0	88	68	131				
Bromodichloromethane	5.09	0.50	5	0	102	67	138				
Bromoform	4.61	0.50	5	0	92	64	136				
Bromomethane	6.67	0.50	5	0	133	60	138				
n-Butylbenzene	5.32	0.50	5	0	106	72	135				
sec-Butylbenzene	5.68	0.50	5	0	114	73	135				
tert-Butylbenzene	5.01	0.50	5	0	100	69	137				
Carbon tetrachloride	5.08	0.50	5	0	102	61	144				
Chlorobenzene	4.61	0.50	5	0	92	78	136				
Chlorodibromomethane	4.53	0.50	5	0	91	72	136				
Chloroethane	6.03	0.50	5	0	121	64	136				
Chloroform	4.93	0.50	5	0	99	69	133				
Chloromethane	5.82	0.50	5	0	116	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042020**

Method: **SW8260B**

Analysis Date: **04/20/20 10:33**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	5.60	1.0	5	0	112	63	125				
1,2-Dibromoethane	4.60	0.50	5	0	92	75	131				
2-Chlorotoluene	5.03	0.50	5	0	101	74	135				
Dibromomethane	4.69	0.50	5	0	94	72	133				
1,2-Dichlorobenzene	4.96	0.50	5	0	99	78	129				
4-Chlorotoluene	5.68	0.50	5	0	114	79	135				
1,3-Dichlorobenzene	5.06	0.50	5	0	101	79	132				
1,4-Dichlorobenzene	4.87	0.50	5	0	97	78	131				
Dichlorodifluoromethane	6.45	0.50	5	0	129	55	141				
1,1-Dichloroethane	5.24	0.50	5	0	105	72	130				
1,2-Dichloroethane	5.66	0.50	5	0	113	57	146				
1,1-Dichloroethene	4.97	0.50	5	0	99	66	142				
cis-1,2-Dichloroethene	4.76	0.50	5	0	95	74	133				
trans-1,2-Dichloroethene	4.84	0.50	5	0	97	76	138				
1,2-Dichloropropane	4.92	0.50	5	0	98	72	135				
1,3-Dichloropropane	4.79	0.50	5	0	96	75	134				
2,2-Dichloropropane	5.77	0.50	5	0	115	42	167				
1,1-Dichloropropene	5.04	0.50	5	0	101	72	140				
cis-1,3-Dichloropropene	4.80	0.50	5	0	96	75	132				
trans-1,3-Dichloropropene	5.12	0.50	5	0	102	77	145				
Ethylbenzene	4.82	0.50	5	0	96	78	131				
Hexachlorobutadiene	5.02	0.50	5	0	100	65	141				
Isopropylbenzene	5.58	0.50	5	0	112	72	135				
p-Isopropyltoluene	5.32	0.50	5	0	106	71	134				
Methyl tert-butyl ether (MTBE)	4.76	0.50	5	0	95	58	151				
Methylene chloride	5.24	0.50	5	0	105	73	126				
Naphthalene	6.00	0.50	5	0	120	55	139				
n-Propylbenzene	5.05	0.50	5	0	101	70	139				
Styrene	4.77	0.50	5	0	95	76	134				
1,1,1,2-Tetrachloroethane	4.64	0.50	5	0	93	75	135				
1,1,2,2-Tetrachloroethane	5.28	0.50	5	0	106	72	132				
Tetrachloroethene	4.43	0.50	5	0	89	78	137				
Toluene	4.66	0.50	5	0	93	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 3		SampType: Laboratory Control Sample			Lab ID: LCS042020			Method: SW8260B			
Analysis Date: 04/20/20 10:33		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.47	0.50	5	0	110	42	152				
1,2,4-Trichlorobenzene	5.27	0.50	5	0	105	58	142				
1,1,1-Trichloroethane	5.32	0.50	5	0	106	64	141				
1,1,2-Trichloroethane	4.83	0.50	5	0	97	72	133				
Trichloroethene	4.78	0.50	5	0	96	75	138				
Trichlorofluoromethane	5.67	0.50	5	0	113	58	139				
1,2,3-Trichloropropane	5.19	0.50	5	0	104	67	133				
1,2,4-Trimethylbenzene	5.07	0.50	5	0	101	71	129				
1,3,5-Trimethylbenzene	5.28	0.50	5	0	106	68	135				
Vinyl chloride	5.78	0.50	5	0	116	66	140				
m+p-Xylenes	9.77	0.50	10	0	98	78	133				
o-Xylene	4.90	0.50	5	0	98	79	136				
Xylenes, Total	14.7	0.50	15	0	98	78	136				
Surr: 1,2-Dichloroethane-d4	11.0	0.50	10	0	110	70	130				
Surr: Dibromofluoromethane	9.95	0.50	10	0	99	77	126				
Surr: p-Bromofluorobenzene	10.0	0.50	10	0	101	76	127				
Surr: Toluene-d8	9.57	0.50	10	0	96	79	122				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Run ID :Run Order: 5971A.I_200420A: 4		SampType: Method Blank			Lab ID: MBLK042020			Method: SW8260B			
Analysis Date: 04/20/20 11:28		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 4**

SampType: **Method Blank**

Lab ID: **MBLK042020**

Method: **SW8260B**

Analysis Date: **04/20/20 11:28**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 4		SampType: Method Blank			Lab ID: MBLK042020				Method: SW8260B		
Analysis Date: 04/20/20 11:28		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	11.3	0.50	10	0	113	70	130				
Surr: Dibromofluoromethane	9.84	0.50	10	0	98	77	126				
Surr: p-Bromofluorobenzene	10.4	0.50	10	0	104	76	127				
Surr: Toluene-d8	9.49	0.50	10	0	95	79	122				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Run ID :Run Order: 5971A.I_200420A: 19		SampType: Sample Matrix Spike			Lab ID: B20040945-001AMS				Method: SW8260B		
Analysis Date: 04/20/20 20:37		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.3	5.0	50	0	97	71	133				
Bromobenzene	48.6	5.0	50	0	97	78	133				
Bromochloromethane	42.6	5.0	50	0	85	68	131				
Bromodichloromethane	48.4	5.0	50	0	97	67	138				
Bromoform	44.5	5.0	50	0	89	64	136				
Bromomethane	42.8	5.0	50	0	86	60	138				
n-Butylbenzene	54.9	5.0	50	0	110	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 19	SampType: Sample Matrix Spike				Lab ID: B20040945-001AMS			Method: SW8260B			
Analysis Date: 04/20/20 20:37	Units: ug/L					Prep Info: Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	55.3	5.0	50	0	111	73	135				
tert-Butylbenzene	51.2	5.0	50	0	102	69	137				
Carbon tetrachloride	51.0	5.0	50	0	102	61	144				
Chlorobenzene	44.9	5.0	50	0	90	78	136				
Chlorodibromomethane	42.3	5.0	50	0	85	72	136				
Chloroethane	61.7	5.0	50	0	123	64	136				
Chloroform	49.7	5.0	50	0	99	69	133				
Chloromethane	56.1	5.0	50	0	112	63	149				
1,2-Dibromo-3-chloropropane	52.6	10	50	0	105	63	125				
1,2-Dibromoethane	43.8	5.0	50	0	88	75	131				
2-Chlorotoluene	52.6	5.0	50	0	105	74	135				
Dibromomethane	45.4	5.0	50	0	91	72	133				
1,2-Dichlorobenzene	50.0	5.0	50	0	100	78	129				
4-Chlorotoluene	56.1	5.0	50	0	112	79	135				
1,3-Dichlorobenzene	48.9	5.0	50	0	98	79	132				
1,4-Dichlorobenzene	50.2	5.0	50	0	100	78	131				
Dichlorodifluoromethane	65.3	5.0	50	0	131	55	141				
1,1-Dichloroethane	50.9	5.0	50	0	102	72	130				
1,2-Dichloroethane	58.2	5.0	50	0	116	57	146				
1,1-Dichloroethene	48.8	5.0	50	0	98	66	142				
cis-1,2-Dichloroethene	127	5.0	50	79.78	95	74	133				
trans-1,2-Dichloroethene	49.6	5.0	50	0	99	76	138				
1,2-Dichloropropane	45.6	5.0	50	0	91	72	135				
1,3-Dichloropropane	45.3	5.0	50	0	91	75	134				
2,2-Dichloropropane	50.4	5.0	50	0	101	42	167				
1,1-Dichloropropene	51.2	5.0	50	0	102	72	140				
cis-1,3-Dichloropropene	45.0	5.0	50	0	90	75	132				
trans-1,3-Dichloropropene	45.9	5.0	50	0	92	77	145				
Ethylbenzene	47.3	5.0	50	0	95	78	131				
Hexachlorobutadiene	45.0	5.0	50	0	90	65	141				
Isopropylbenzene	56.1	5.0	50	0	112	72	135				
p-Isopropyltoluene	50.7	5.0	50	0	101	71	134				
Methyl tert-butyl ether (MTBE)	48.5	5.0	50	0	97	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 19	SampType: Sample Matrix Spike				Lab ID: B20040945-001AMS				Method: SW8260B		
Analysis Date: 04/20/20 20:37	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	53.1	5.0	50	0	106	73	126				
Naphthalene	54.4	5.0	50	0	109	55	139				
n-Propylbenzene	52.5	5.0	50	0	105	70	139				
Styrene	45.1	5.0	50	0	90	76	134				
1,1,1,2-Tetrachloroethane	43.9	5.0	50	0	88	75	135				
1,1,2,2-Tetrachloroethane	53.6	5.0	50	0	107	72	132				
Tetrachloroethene	53.9	5.0	50	11.86	84	78	137				
Toluene	44.6	5.0	50	0	89	78	134				
1,2,3-Trichlorobenzene	47.5	5.0	50	0	95	42	152				
1,2,4-Trichlorobenzene	48.8	5.0	50	0	98	58	142				
1,1,1-Trichloroethane	52.6	5.0	50	0	105	64	141				
1,1,2-Trichloroethane	47.5	5.0	50	0	95	72	133				
Trichloroethene	59.9	5.0	50	14.38	91	75	138				
Trichlorofluoromethane	59.0	5.0	50	0	118	58	139				
1,2,3-Trichloropropane	50.0	5.0	50	0	100	67	133				
1,2,4-Trimethylbenzene	50.8	5.0	50	0	102	71	129				
1,3,5-Trimethylbenzene	52.3	5.0	50	0	105	68	135				
Vinyl chloride	57.5	5.0	50	2.532	110	66	140				
m+p-Xylenes	90.6	5.0	100	0	91	78	133				
o-Xylene	45.8	5.0	50	0	92	79	136				
Xylenes, Total	136	5.0	150	0	91	78	136				
Surr: 1,2-Dichloroethane-d4	115	5.0	100	0	114	70	130				
Surr: Dibromofluoromethane	98.9	5.0	100	0	99	77	126				
Surr: p-Bromofluorobenzene	99.7	5.0	100	0	100	76	127				
Surr: Toluene-d8	91.7	5.0	100	0	92	79	122				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Run ID :Run Order: 5971A.I_200420A: 20	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040945-001AMSD				Method: SW8260B		
Analysis Date: 04/20/20 21:05	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	48.1	5.0	50	0	96	71	133	48.33	0.5	20	
Bromobenzene	49.8	5.0	50	0	99	78	133	48.59	2.4	20	
Bromochloromethane	44.6	5.0	50	0	89	68	131	42.56	4.7	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 20	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040945-001AMSD				Method: SW8260B		
Analysis Date: 04/20/20 21:05	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	49.8	5.0	50	0	100	67	138	48.44	2.8	20	
Bromoform	46.0	5.0	50	0	92	64	136	44.48	3.4	20	
Bromomethane	56.4	5.0	50	0	113	60	138	42.75	28	20	R
n-Butylbenzene	56.1	5.0	50	0	112	72	135	54.93	2.1	20	
sec-Butylbenzene	57.2	5.0	50	0	114	73	135	55.32	3.4	20	
tert-Butylbenzene	53.2	5.0	50	0	106	69	137	51.2	3.8	20	
Carbon tetrachloride	52.2	5.0	50	0	104	61	144	50.99	2.3	20	
Chlorobenzene	45.4	5.0	50	0	91	78	136	44.88	1.0	20	
Chlorodibromomethane	44.0	5.0	50	0	88	72	136	42.27	4.0	20	
Chloroethane	64.8	5.0	50	0	130	64	136	61.66	5.0	20	
Chloroform	52.1	5.0	50	0	104	69	133	49.73	4.7	20	
Chloromethane	61.2	5.0	50	0	122	63	149	56.11	8.6	20	
1,2-Dibromo-3-chloropropane	57.8	10	50	0	116	63	125	52.58	9.4	20	
1,2-Dibromoethane	44.3	5.0	50	0	89	75	131	43.84	1.1	20	
2-Chlorotoluene	52.5	5.0	50	0	105	74	135	52.6	0.3	20	
Dibromomethane	45.3	5.0	50	0	91	72	133	45.38	0.1	20	
1,2-Dichlorobenzene	51.8	5.0	50	0	104	78	129	50.04	3.4	20	
4-Chlorotoluene	60.2	5.0	50	0	120	79	135	56.11	7.0	20	
1,3-Dichlorobenzene	52.1	5.0	50	0	104	79	132	48.94	6.2	20	
1,4-Dichlorobenzene	51.9	5.0	50	0	104	78	131	50.23	3.3	20	
Dichlorodifluoromethane	68.1	5.0	50	0	136	55	141	65.3	4.2	20	
1,1-Dichloroethane	53.0	5.0	50	0	106	72	130	50.87	4.0	20	
1,2-Dichloroethane	58.7	5.0	50	0	117	57	146	58.2	0.9	20	
1,1-Dichloroethene	50.0	5.0	50	0	100	66	142	48.75	2.5	20	
cis-1,2-Dichloroethene	130	5.0	50	79.78	100	74	133	127.5	1.8	20	
trans-1,2-Dichloroethene	50.8	5.0	50	0	102	76	138	49.58	2.5	20	
1,2-Dichloropropane	48.0	5.0	50	0	96	72	135	45.56	5.1	20	
1,3-Dichloropropane	45.9	5.0	50	0	92	75	134	45.29	1.3	20	
2,2-Dichloropropane	52.1	5.0	50	0	104	42	167	50.43	3.2	20	
1,1-Dichloropropene	52.0	5.0	50	0	104	72	140	51.16	1.7	20	
cis-1,3-Dichloropropene	46.3	5.0	50	0	93	75	132	45.02	2.9	20	
trans-1,3-Dichloropropene	47.1	5.0	50	0	94	77	145	45.94	2.5	20	
Ethylbenzene	48.7	5.0	50	0	97	78	131	47.33	2.9	20	

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 20	SampType: Sample Matrix Spike Duplicate				Lab ID: B20040945-001AMSD				Method: SW8260B		
Analysis Date: 04/20/20 21:05	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	53.3	5.0	50	0	107	65	141	45.04	17	20	
Isopropylbenzene	56.8	5.0	50	0	114	72	135	56.08	1.3	20	
p-Isopropyltoluene	53.6	5.0	50	0	107	71	134	50.74	5.6	20	
Methyl tert-butyl ether (MTBE)	50.5	5.0	50	0	101	58	151	48.48	4.1	20	
Methylene chloride	53.1	5.0	50	0	106	73	126	53.08	0.1	20	
Naphthalene	60.2	5.0	50	0	120	55	139	54.36	10	20	
n-Propylbenzene	52.8	5.0	50	0	106	70	139	52.47	0.6	20	
Styrene	46.7	5.0	50	0	93	76	134	45.11	3.4	20	
1,1,1,2-Tetrachloroethane	44.9	5.0	50	0	90	75	135	43.92	2.3	20	
1,1,2,2-Tetrachloroethane	56.3	5.0	50	0	113	72	132	53.57	5.0	20	
Tetrachloroethene	54.3	5.0	50	11.86	85	78	137	53.86	0.9	20	
Toluene	44.9	5.0	50	0	90	78	134	44.62	0.6	20	
1,2,3-Trichlorobenzene	57.3	5.0	50	0	115	42	152	47.49	19	20	
1,2,4-Trichlorobenzene	51.6	5.0	50	0	103	58	142	48.75	5.7	20	
1,1,1-Trichloroethane	55.3	5.0	50	0	111	64	141	52.6	5.0	20	
1,1,2-Trichloroethane	48.6	5.0	50	0	97	72	133	47.51	2.2	20	
Trichloroethene	60.6	5.0	50	14.38	92	75	138	59.94	1.1	20	
Trichlorofluoromethane	59.8	5.0	50	0	120	58	139	58.97	1.4	20	
1,2,3-Trichloropropane	53.3	5.0	50	0	107	67	133	50.01	6.4	20	
1,2,4-Trimethylbenzene	51.9	5.0	50	0	104	71	129	50.81	2.1	20	
1,3,5-Trimethylbenzene	56.4	5.0	50	0	113	68	135	52.3	7.6	20	
Vinyl chloride	63.1	5.0	50	2.532	121	66	140	57.53	9.3	20	
m+p-Xylenes	93.8	5.0	100	0	94	78	133	90.6	3.5	20	
o-Xylene	47.8	5.0	50	0	96	79	136	45.79	4.4	20	
Xylenes, Total	142	5.0	150	0	94	78	136	136.4			
Surr: 1,2-Dichloroethane-d4	117	5.0	100	0	117	70	130	0			
Surr: Dibromofluoromethane	101	5.0	100	0	101	77	126	0			
Surr: p-Bromofluorobenzene	102	5.0	100	0	102	76	127	0			
Surr: Toluene-d8	91.4	5.0	100	0	91	79	122	0			

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 21		SampType: MS Tuning File			Lab ID: 20APR30_D_TUNE			Method: SW8260B			
Analysis Date: 04/20/20 22:28		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	23.0		100	0	23	15	40				
75, % of mass 95	45.4		100	0	45.4	30	60				
96, % of mass 95	6.80		100	0	6.8	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	68.7		100	0	68.7	50	99.99				
175, % of mass 174	7.80		100	0	7.8	5	9				
176, % of mass 174	96.0		100	0	96	95	101				
177, % of mass 176	6.20		100	0	6.2	5	9				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Run ID :Run Order: 5971A.I_200420A: 22		SampType: Continuing Calibration Verification Standar			Lab ID: CCV042020a			Method: SW8260B			
Analysis Date: 04/20/20 22:55		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.68	0.50	5	0	94	70	130				
Bromobenzene	4.60	0.50	5	0	92	70	130				
Bromochloromethane	4.34	0.50	5	0	87	70	130				
Bromodichloromethane	4.69	0.50	5	0	94	70	130				
Bromoform	4.36	0.50	5	0	87	70	130				
Bromomethane	4.94	0.50	5	0	99	70	130				
n-Butylbenzene	5.30	0.50	5	0	106	70	130				
sec-Butylbenzene	5.02	0.50	5	0	100	70	130				
tert-Butylbenzene	4.54	0.50	5	0	91	70	130				
Carbon tetrachloride	5.15	0.50	5	0	103	70	130				
Chlorobenzene	4.23	0.50	5	0	85	70	130				
Chlorodibromomethane	4.02	0.50	5	0	80	70	130				
Chloroethane	5.59	0.50	5	0	112	70	130				
Chloroform	5.13	0.50	5	0	103	80	120				
Chloromethane	5.37	0.50	5	0	107	70	130				
1,2-Dibromo-3-chloropropane	4.88	1.0	5	0	98	70	130				
1,2-Dibromoethane	4.19	0.50	5	0	84	70	130				
2-Chlorotoluene	4.72	0.50	5	0	94	70	130				
Dibromomethane	4.46	0.50	5	0	89	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 22**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042020a**

Method: **SW8260B**

Analysis Date: **04/20/20 22:55**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.58	0.50	5	0	92	70	130				
4-Chlorotoluene	5.54	0.50	5	0	111	70	130				
1,3-Dichlorobenzene	4.73	0.50	5	0	95	70	130				
1,4-Dichlorobenzene	4.68	0.50	5	0	94	70	130				
Dichlorodifluoromethane	5.90	0.50	5	0	118	70	130				
1,1-Dichloroethane	5.03	0.50	5	0	101	70	130				
1,2-Dichloroethane	5.67	0.50	5	0	113	70	130				
1,1-Dichloroethene	4.59	0.50	5	0	92	80	120				
cis-1,2-Dichloroethene	4.58	0.50	5	0	92	70	130				
trans-1,2-Dichloroethene	4.63	0.50	5	0	93	70	130				
1,2-Dichloropropane	4.44	0.50	5	0	89	80	120				
1,3-Dichloropropane	4.52	0.50	5	0	90	70	130				
2,2-Dichloropropane	4.71	0.50	5	0	94	70	130				
1,1-Dichloropropene	5.16	0.50	5	0	103	70	130				
cis-1,3-Dichloropropene	4.36	0.50	5	0	87	70	130				
trans-1,3-Dichloropropene	4.42	0.50	5	0	88	70	130				
Ethylbenzene	4.61	0.50	5	0	92	80	120				
Hexachlorobutadiene	4.21	0.50	5	0	84	70	130				
Isopropylbenzene	5.14	0.50	5	0	103	70	130				
p-Isopropyltoluene	4.92	0.50	5	0	98	70	130				
Methyl tert-butyl ether (MTBE)	4.79	0.50	5	0	96	70	130				
Methylene chloride	5.23	0.50	5	0	105	70	130				
Naphthalene	5.24	0.50	5	0	105	70	130				
n-Propylbenzene	4.89	0.50	5	0	98	70	130				
Styrene	4.49	0.50	5	0	90	70	130				
1,1,1,2-Tetrachloroethane	4.14	0.50	5	0	83	70	130				
1,1,2,2-Tetrachloroethane	5.10	0.50	5	0	102	70	130				
Tetrachloroethene	4.11	0.50	5	0	82	70	130				
Toluene	4.30	0.50	5	0	86	80	120				
1,2,3-Trichlorobenzene	4.72	0.50	5	0	94	70	130				
1,2,4-Trichlorobenzene	4.71	0.50	5	0	94	70	130				
1,1,1-Trichloroethane	5.18	0.50	5	0	104	70	130				
1,1,2-Trichloroethane	4.44	0.50	5	0	89	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 22**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042020a**

Method: **SW8260B**

Analysis Date: **04/20/20 22:55**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.45	0.50	5	0	89	70	130				
Trichlorofluoromethane	5.55	0.50	5	0	111	70	130				
1,2,3-Trichloropropane	5.13	0.50	5	0	103	70	130				
1,2,4-Trimethylbenzene	5.12	0.50	5	0	102	70	130				
1,3,5-Trimethylbenzene	5.33	0.50	5	0	106	70	130				
Vinyl chloride	4.89	0.50	5	0	98	80	120				
m+p-Xylenes	8.48	0.50	10	0	85	70	130				
o-Xylene	4.33	0.50	5	0	87	70	130				
Xylenes, Total	12.8	0.50	15	0	85	70	130				
Surr: 1,2-Dichloroethane-d4	11.5	0.50	10	0	115	70	130				
Surr: Dibromofluoromethane	9.87	0.50	10	0	99	77	126				
Surr: p-Bromofluorobenzene	9.99	0.50	10	0	100	76	127				
Surr: Toluene-d8	9.17	0.50	10	0	92	79	122				

Associated samples: **B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A**

Run ID :Run Order: **5971A.I_200420A: 23**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042020a**

Method: **SW8260B**

Analysis Date: **04/20/20 23:23**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.74	0.50	5	0	95	71	133				
Bromobenzene	4.78	0.50	5	0	96	78	133				
Bromochloromethane	4.18	0.50	5	0	84	68	131				
Bromodichloromethane	4.76	0.50	5	0	95	67	138				
Bromoform	4.42	0.50	5	0	88	64	136				
Bromomethane	5.83	0.50	5	0	117	60	138				
n-Butylbenzene	5.12	0.50	5	0	102	72	135				
sec-Butylbenzene	5.46	0.50	5	0	109	73	135				
tert-Butylbenzene	4.80	0.50	5	0	96	69	137				
Carbon tetrachloride	5.03	0.50	5	0	101	61	144				
Chlorobenzene	4.36	0.50	5	0	87	78	136				
Chlorodibromomethane	4.22	0.50	5	0	84	72	136				
Chloroethane	6.10	0.50	5	0	122	64	136				
Chloroform	4.96	0.50	5	0	99	69	133				
Chloromethane	5.80	0.50	5	0	116	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 23**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042020a**

Method: **SW8260B**

Analysis Date: **04/20/20 23:23**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	4.82	1.0	5	0	96	63	125				
1,2-Dibromoethane	4.30	0.50	5	0	86	75	131				
2-Chlorotoluene	4.96	0.50	5	0	99	74	135				
Dibromomethane	4.38	0.50	5	0	88	72	133				
1,2-Dichlorobenzene	4.69	0.50	5	0	94	78	129				
4-Chlorotoluene	5.56	0.50	5	0	111	79	135				
1,3-Dichlorobenzene	4.91	0.50	5	0	98	79	132				
1,4-Dichlorobenzene	4.89	0.50	5	0	98	78	131				
Dichlorodifluoromethane	6.57	0.50	5	0	131	55	141				
1,1-Dichloroethane	5.04	0.50	5	0	101	72	130				
1,2-Dichloroethane	5.65	0.50	5	0	113	57	146				
1,1-Dichloroethene	4.83	0.50	5	0	97	66	142				
cis-1,2-Dichloroethene	4.55	0.50	5	0	91	74	133				
trans-1,2-Dichloroethene	4.86	0.50	5	0	97	76	138				
1,2-Dichloropropane	4.47	0.50	5	0	89	72	135				
1,3-Dichloropropane	4.43	0.50	5	0	89	75	134				
2,2-Dichloropropane	4.54	0.50	5	0	91	42	167				
1,1-Dichloropropene	4.95	0.50	5	0	99	72	140				
cis-1,3-Dichloropropene	4.14	0.50	5	0	83	75	132				
trans-1,3-Dichloropropene	4.55	0.50	5	0	91	77	145				
Ethylbenzene	4.61	0.50	5	0	92	78	131				
Hexachlorobutadiene	5.02	0.50	5	0	100	65	141				
Isopropylbenzene	5.23	0.50	5	0	105	72	135				
p-Isopropyltoluene	5.14	0.50	5	0	103	71	134				
Methyl tert-butyl ether (MTBE)	4.84	0.50	5	0	97	58	151				
Methylene chloride	5.23	0.50	5	0	105	73	126				
Naphthalene	5.79	0.50	5	0	116	55	139				
n-Propylbenzene	5.02	0.50	5	0	100	70	139				
Styrene	4.30	0.50	5	0	86	76	134				
1,1,1,2-Tetrachloroethane	4.14	0.50	5	0	83	75	135				
1,1,2,2-Tetrachloroethane	5.34	0.50	5	0	107	72	132				
Tetrachloroethene	4.04	0.50	5	0	81	78	137				
Toluene	4.19	0.50	5	0	84	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 23		SampType: Laboratory Control Sample			Lab ID: LCS042020a			Method: SW8260B			
Analysis Date: 04/20/20 23:23		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.30	0.50	5	0	106	42	152				
1,2,4-Trichlorobenzene	5.06	0.50	5	0	101	58	142				
1,1,1-Trichloroethane	5.29	0.50	5	0	106	64	141				
1,1,2-Trichloroethane	4.57	0.50	5	0	91	72	133				
Trichloroethene	4.44	0.50	5	0	89	75	138				
Trichlorofluoromethane	5.80	0.50	5	0	116	58	139				
1,2,3-Trichloropropane	4.97	0.50	5	0	99	67	133				
1,2,4-Trimethylbenzene	5.02	0.50	5	0	100	71	129				
1,3,5-Trimethylbenzene	5.15	0.50	5	0	103	68	135				
Vinyl chloride	5.65	0.50	5	0	113	66	140				
m+p-Xylenes	8.96	0.50	10	0	90	78	133				
o-Xylene	4.42	0.50	5	0	88	79	136				
Xylenes, Total	13.4	0.50	15	0	89	78	136				
Surr: 1,2-Dichloroethane-d4	11.8	0.50	10	0	118	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	10.2	0.50	10	0	102	76	127				
Surr: Toluene-d8	9.12	0.50	10	0	91	79	122				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Run ID :Run Order: 5971A.I_200420A: 24		SampType: Method Blank			Lab ID: MBLK042020a			Method: SW8260B			
Analysis Date: 04/21/20 00:18		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: **5971A.I_200420A: 24**

SampType: **Method Blank**

Lab ID: **MBLK042020a**

Method: **SW8260B**

Analysis Date: **04/21/20 00:18**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20040946

BatchID: R340861

Date: 23-Apr-20

Run ID :Run Order: 5971A.I_200420A: 24	SampType: Method Blank				Lab ID: MBLK042020a				Method: SW8260B		
Analysis Date: 04/21/20 00:18	Units: ug/L					Prep Info: Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	11.6	0.50	10	0	116	70	130				
Surr: Dibromofluoromethane	9.95	0.50	10	0	99	77	126				
Surr: p-Bromofluorobenzene	10.4	0.50	10	0	104	76	127				
Surr: Toluene-d8	8.84	0.50	10	0	88	79	122				

Associated samples: B20040946-001B, B20040946-002B, B20040946-003B, B20040946-004D, B20040946-005B, B20040946-006D, B20040946-007A

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Tasman Geosciences Inc

B20040946

Login completed by: Quincee Jones

Date Received: 4/14/2020

Reviewed by: BL2000\tedwards

Received by: dec

Reviewed Date: 4/15/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.8°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None



Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 1 of 1

Account Information (Billing Information)

Company/Name **TASMAN GEOSCIENCES**
 Contact **Laura Heaton**
 Phone **406-259-1033**
 Mailing Address **917 1st Ave. N, Suite 3**
 City, State, Zip **Billings, MT 59101**
 Email **LHeaton@TASMAN-geo.com**
 Receive Invoice Hard Copy Email Receive Report Hard Copy Email
 Purchase Order Quote Bottle Order

Report Information (if different than Account Information)

Company/Name
 Contact
 Phone
 Mailing Address
 City, State, Zip
 Email
 Receive Report Hard Copy Email
 Special Report/Formats:
 LEVEL IV NELAC EDD/EDT (contact laboratory) Other

Comments

(Empty comment box)

Project Information

Project Name, PWSID, Permit, etc. **LSS Semi Annual GWM**
 Sampler Name **S. Krauszer** Sampler Phone **406-860-5469**
 Sample Origin State **MT** EPA/State Compliance Yes No
 URANIUM MINING CLIENTS MUST indicate sample type.
 NOT Source or Byproduct Material
 Source/Processed Ore (Ground or Refined) **CALL BEFORE SENDING
 11e.(2) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

- A - Air
- W - Water
- S - Soils/ Solids
- V - Vegetation
- B - Bioassay
- O - Other
- DW - Drinking Water

Analysis Requested

Matrix Code	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested		
8210B	VOCs	A5310C	TOC	E300	Chloride	A2320B	Alkalinity	E6010.20	Metals	SW8015M	Head Spins

See Attached

All turnaround times are standard unless marked as RUSH.
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample Identification (Name, Location, Interval, etc.)	Collection		Number of Containers	Matrix (See Codes Above)	Analysis Requested											RUSH TAT			
	Date	Time			8210B	A5310C	E300	A2320B	E6010.20	SW8015M	Head	Spins							
1 MW458-I	4-11-20	0949	4	W	X	X													
2 MW457-D	4-14-20	1054	4	W	X	X													
3 MW457-I	4-14-20	1127	4	W	X	X													
4 MW459-D	4-14-20	1311	8	W	X	X	X	X	X	X	X								
5 MW454-I	4-14-20	1357	4	W	X	X													
6 MW413-D	4-14-20	1501	8	W	X	X	X	X	X	X	X								
7 TRIP BLANK	4-14-20	-	1	W	X														
8 TB 313112020 B-JDB SHP0077 (W)	4/14/2020																		
9																			
10																			

Custody Record MUST be signed by **Scott Krauszer** Date/Time **4-14-20/1544** Signature *[Signature]*
 Received by (print) **[Signature]** Date/Time **4/14/2020** Signature *[Signature]*
 Shipped By Cooler ID(s) Custody Seals Y N C B Intact Y N Receipt Temp °C Temp Blank Y N On Ice Y N Payment Type CC Cash Check Amount \$ Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Page 57 of 59



BOTTLE ORDER 140951



SHIPPED TO: Tasman Geosciences Inc

Contact: Laura Heaton

Order Created by: Wynn Pippin

Shipped From: Billings, MT

Ship Date: 3/20/2020

VIA: PickUp

Phone: (406) 259-1033

Project: LSS Groundwater

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
------------------	------------------	--------	-------	--------------------	--------------	-------	-------------

VOCs (70 Sets)

40 mL Clear Glass VOA	3	SW8260B	8260-Volatile Organic Compounds-Short List		<input checked="" type="checkbox"/> HCL	Zero headspace	1
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Other parameters (6 Sets)

500 mL Plastic	1	E300.0	Chloride Sulfate/Anions by Ion Chromatography				1
		A2320 B	Alkalinity				
250 mL Plastic	1	E6010.20	Metals by ICP/ICPMS, Dissolved		<input checked="" type="checkbox"/> HNO3	Ca, Mg, Na, K, As Filter before preservation	1
40 mL Clear Glass VOA	2	SW8015M	Headspace Gas Analysis		<input type="checkbox"/> H2SO4	Methane, ethene, ethane Zero headspace	1

TOC (37 Sets)

250 mL Amber Glass	1	A5310 C	Carbon, Total Organic		<input type="checkbox"/> H3PO4		1
--------------------	---	---------	-----------------------	--	--------------------------------	--	---

Supplies (5 Sets)

Cooler-Large	1	FIELD	Supplies				1
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Trip Blank (5 Sets)

40 mL Clear Glass VOA Trip Blank	1	SW8260B	8260-Volatile Organic Compounds-Short List	<input checked="" type="checkbox"/> HCL	1
----------------------------------	---	---------	--------------------------------------------	-----------------------------------------	---

- HNO3 - Nitric Acid H2SO4 - Sulfuric Acid NaOH - Sodium Hydroxide
 ZnAc - Zinc Acetate HCl - Hydrochloric Acid H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.



ANALYTICAL SUMMARY REPORT

April 24, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20041033 Quote ID: B2871

Project Name: LSS Semi-Annual GWM

Energy Laboratories Inc Billings MT received the following 6 samples for Tasman Geosciences Inc on 4/15/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20041033-001	MW 413-I	04/15/20 9:52	04/15/20	Aqueous	Carbon, Total Organic 8260-Volatile Organic Compounds- Short List
B20041033-002	MW 451-D	04/15/20 10:44	04/15/20	Aqueous	Same As Above
B20041033-003	MW 451-I	04/15/20 11:21	04/15/20	Aqueous	Same As Above
B20041033-004	MW 452-D	04/15/20 12:29	04/15/20	Aqueous	Same As Above
B20041033-005	MW 452-I	04/15/20 13:16	04/15/20	Aqueous	Same As Above
B20041033-006	Trip Blank Lot03312020 B-JDB SHP0277	04/15/20 0:00	04/15/20	Trip Blank	8260-Volatile Organic Compounds- Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Tasman Geosciences Inc
Project: LSS Semi-Annual GWM
Work Order: B20041033

Report Date: 04/24/20

CASE NARRATIVE

Tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002.



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 413-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-001
Collection Date: 04/15/20 09:52
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	86	mg/L	D	4	1	A5310 C	04/20/20 16:55 / eli-c			SUB-C257525 : 14		C_R257525
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Bromobenzene	ND	ug/L		5.0	1.5	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Bromochloromethane	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Bromodichloromethane	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Bromoform	ND	ug/L		5.0	3.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Bromomethane	ND	ug/L		5.0	1.7	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
n-Butylbenzene	ND	ug/L		5.0	2.0	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
sec-Butylbenzene	ND	ug/L		5.0	1.5	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
tert-Butylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Carbon tetrachloride	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Chlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Chlorodibromomethane	ND	ug/L		5.0	1.7	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Chloroethane	ND	ug/L		5.0	1.6	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Chloroform	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Chloromethane	ND	ug/L		5.0	1.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2-Dibromoethane	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
2-Chlorotoluene	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
4-Chlorotoluene	ND	ug/L		5.0	1.0	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2-Dibromo-3-chloropropane	ND	ug/L		10	4.7	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Dibromomethane	ND	ug/L		5.0	1.4	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,3-Dichlorobenzene	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,4-Dichlorobenzene	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Dichlorodifluoromethane	ND	ug/L		5.0	1.7	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,1-Dichloroethane	ND	ug/L		5.0	0.93	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2-Dichloroethane	ND	ug/L		5.0	0.98	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,1-Dichloroethene	ND	ug/L		5.0	1.5	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
cis-1,2-Dichloroethene	441	ug/L		50	13	SW8260B	04/23/20 05:45 / msc			5971A.I_200422C : 7		R340967
trans-1,2-Dichloroethene	7.2	ug/L		5.0	1.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2-Dichloropropane	ND	ug/L		5.0	0.98	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,3-Dichloropropane	ND	ug/L		5.0	0.94	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
2,2-Dichloropropane	ND	ug/L		5.0	2.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: D - Reporting Limit (RL) increased due to sample matrix



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 413-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-001
Collection Date: 04/15/20 09:52
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
cis-1,3-Dichloropropene	ND	ug/L		5.0	1.6	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
trans-1,3-Dichloropropene	ND	ug/L		5.0	1.9	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Ethylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Hexachlorobutadiene	ND	ug/L		5.0	3.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Isopropylbenzene	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
p-Isopropyltoluene	ND	ug/L		5.0	1.8	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Methyl tert-butyl ether (MTBE)	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Methylene chloride	ND	ug/L		5.0	2.0	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Naphthalene	ND	ug/L		5.0	1.7	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
n-Propylbenzene	ND	ug/L		5.0	1.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Styrene	ND	ug/L		5.0	1.4	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,1,1,2-Tetrachloroethane	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,1,2,2-Tetrachloroethane	ND	ug/L		5.0	1.5	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Tetrachloroethene	13	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Toluene	ND	ug/L		5.0	1.4	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2,3-Trichlorobenzene	ND	ug/L		5.0	2.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2,4-Trichlorobenzene	ND	ug/L		5.0	2.0	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2,4-Trimethylbenzene	ND	ug/L		5.0	1.4	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,3,5-Trimethylbenzene	ND	ug/L		5.0	1.1	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,1,1-Trichloroethane	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,1,2-Trichloroethane	ND	ug/L		5.0	1.5	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Trichloroethene	8.7	ug/L		5.0	1.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Trichlorofluoromethane	ND	ug/L		5.0	1.3	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
1,2,3-Trichloropropane	ND	ug/L		5.0	1.8	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Vinyl chloride	28	ug/L		5.0	1.4	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
m+p-Xylenes	ND	ug/L		5.0	2.7	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
o-Xylene	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Xylenes, Total	ND	ug/L		5.0	1.2	SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Surr: Dibromofluoromethane	98.0	%REC		77-126		SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Surr: 1,2-Dichloroethane-d4	118	%REC		70-130		SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Surr: Toluene-d8	93.0	%REC		79-122		SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939
Surr: p-Bromofluorobenzene	105	%REC		76-127		SW8260B	04/23/20 22:29 / msc			5971A.I_200423A : 18		R340939

- The reporting limit reflects a 10 times dilution. The sample was diluted due to sample matrix interference.

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 451-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-002
Collection Date: 04/15/20 10:44
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	2.8	mg/L		0.5	0.1	A5310 C	04/17/20 21:03 / eli-c			SUB-C257479 : 28		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,1-Dichloroethane	0.30	ug/L	J	0.50	0.093	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,1-Dichloroethene	0.44	ug/L	J	0.50	0.15	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
cis-1,2-Dichloroethene	102	ug/L		10	2.5	SW8260B	04/23/20 19:16 / msc			5971A.I_200423A : 11		R340939
trans-1,2-Dichloroethene	0.80	ug/L		0.50	0.13	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 451-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-002
Collection Date: 04/15/20 10:44
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Tetrachloroethene	68	ug/L		10	2.2	SW8260B	04/23/20 19:16 / msc			5971A.I_200423A : 11		R340939
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Trichloroethene	9.7	ug/L		0.50	0.13	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Vinyl chloride	1.3	ug/L		0.50	0.14	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Surr: 1,2-Dichloroethane-d4	107	%REC		70-130		SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Surr: Toluene-d8	101	%REC		79-122		SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932
Surr: p-Bromofluorobenzene	102	%REC		76-127		SW8260B	04/22/20 17:47 / msc			5971A.I_200422B : 13		R340932

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 451-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-003
Collection Date: 04/15/20 11:21
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	2.8	mg/L		0.5	0.1	A5310 C	04/17/20 21:13 / eli-c			SUB-C257479 : 29		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,1-Dichloroethane	0.28	ug/L	J	0.50	0.093	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,1-Dichloroethene	0.41	ug/L	J	0.50	0.15	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
cis-1,2-Dichloroethene	90	ug/L		5.0	1.3	SW8260B	04/23/20 19:44 / msc			5971A.I_200423A : 12		R340939
trans-1,2-Dichloroethene	0.71	ug/L		0.50	0.13	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 451-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-003
Collection Date: 04/15/20 11:21
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Tetrachloroethene	38	ug/L		5.0	1.1	SW8260B	04/23/20 19:44 / msc			5971A.I_200423A : 12		R340939
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Trichloroethene	7.4	ug/L		0.50	0.13	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Vinyl chloride	1.3	ug/L		0.50	0.14	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Surr: 1,2-Dichloroethane-d4	112	%REC		70-130		SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932
Surr: p-Bromofluorobenzene	96.0	%REC		76-127		SW8260B	04/22/20 17:20 / msc			5971A.I_200422B : 12		R340932

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 452-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-004
Collection Date: 04/15/20 12:29
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	2.5	mg/L		0.5	0.1	A5310 C	04/17/20 21:23 / eli-c			SUB-C257479 : 30		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
cis-1,2-Dichloroethene	16	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 452-D
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-004
Collection Date: 04/15/20 12:29
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Tetrachloroethene	7.3	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Trichloroethene	3.5	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Vinyl chloride	0.48	ug/L	J	0.50	0.14	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Surr: Dibromofluoromethane	101	%REC		77-126		SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Surr: 1,2-Dichloroethane-d4	110	%REC		70-130		SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Surr: Toluene-d8	94.0	%REC		79-122		SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932
Surr: p-Bromofluorobenzene	99.0	%REC		76-127		SW8260B	04/22/20 16:52 / msc			5971A.I_200422B : 11		R340932

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 452-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-005
Collection Date: 04/15/20 13:16
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
AGGREGATE ORGANICS												
Organic Carbon, Total (TOC)	2.5	mg/L		0.5	0.1	A5310 C	04/17/20 21:33 / eli-c			SUB-C257479 : 31		C_R257479
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
cis-1,2-Dichloroethene	14	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: MW 452-I
Project: LSS Semi-Annual GWM
Matrix: Aqueous

Lab ID: B20041033-005
Collection Date: 04/15/20 13:16
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Tetrachloroethene	5.8	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Trichloroethene	3.3	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Vinyl chloride	0.25	ug/L	J	0.50	0.14	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Surr: Dibromofluoromethane	96.0	%REC		77-126		SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Surr: 1,2-Dichloroethane-d4	105	%REC		70-130		SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Surr: Toluene-d8	94.0	%REC		79-122		SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932
Surr: p-Bromofluorobenzene	100	%REC		76-127		SW8260B	04/22/20 16:25 / msc			5971A.I_200422B : 10		R340932

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Definitions: J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GWM
Matrix: Trip Blank

Lab ID: B20041033-006
Collection Date: 04/15/20
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Bromobenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Bromochloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Bromodichloromethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Bromoform	ND	ug/L		0.50	0.33	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Bromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
n-Butylbenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Carbon tetrachloride	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Chlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Chlorodibromomethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Chloroethane	ND	ug/L		0.50	0.16	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Chloroform	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Chloromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2-Dibromoethane	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
2-Chlorotoluene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
4-Chlorotoluene	ND	ug/L		0.50	0.10	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.47	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Dibromomethane	ND	ug/L		0.50	0.14	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,3-Dichlorobenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,4-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Dichlorodifluoromethane	ND	ug/L		0.50	0.17	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1-Dichloroethane	ND	ug/L		0.50	0.093	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2-Dichloroethane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1-Dichloroethene	ND	ug/L		0.50	0.15	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2-Dichloropropane	ND	ug/L		0.50	0.098	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,3-Dichloropropane	ND	ug/L		0.50	0.094	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
2,2-Dichloropropane	ND	ug/L		0.50	0.22	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.16	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.19	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot03312020 B-JDB SHP0277
Project: LSS Semi-Annual GWM
Matrix: Trip Blank

Lab ID: B20041033-006
Collection Date: 04/15/20
Date Received: 04/15/20
Report Date: 04/24/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Ethylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Hexachlorobutadiene	ND	ug/L		0.50	0.33	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Isopropylbenzene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
p-Isopropyltoluene	ND	ug/L		0.50	0.18	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Methylene chloride	ND	ug/L		0.50	0.20	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Naphthalene	ND	ug/L		0.50	0.17	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
n-Propylbenzene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Styrene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Toluene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.21	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.20	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.11	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1,1-Trichloroethane	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,1,2-Trichloroethane	ND	ug/L		0.50	0.15	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Trichloroethene	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Trichlorofluoromethane	ND	ug/L		0.50	0.13	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
1,2,3-Trichloropropane	ND	ug/L		0.50	0.18	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Vinyl chloride	ND	ug/L		0.50	0.14	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
m+p-Xylenes	ND	ug/L		0.50	0.27	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
o-Xylene	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Xylenes, Total	ND	ug/L		0.50	0.12	SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Surr: Dibromofluoromethane	97.0	%REC		77-126		SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Surr: 1,2-Dichloroethane-d4	108	%REC		70-130		SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Surr: Toluene-d8	98.0	%REC		79-122		SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932
Surr: p-Bromofluorobenzene	99.0	%REC		76-127		SW8260B	04/22/20 13:40 / msc			5971A.I_200422B : 5		R340932

Report RL - Analyte Reporting Limit
Definitions:

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: C_R257479

Date: 23-Apr-20

Run ID :Run Order: SUB-C257479: 1	SampType: Laboratory Control Sample	Lab ID: LCS-11031	Method: A5310 C								
Analysis Date: 04/17/20 12:45	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.41	0.50	5	0	108	90	109	0			

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Run ID :Run Order: SUB-C257479: 2	SampType: Method Blank	Lab ID: MBLK	Method: A5310 C								
Analysis Date: 04/17/20 12:53	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Run ID :Run Order: SUB-C257479: 5	SampType: Sample Matrix Spike	Lab ID: C20040549-001AMS	Method: A5310 C								
Analysis Date: 04/17/20 14:54	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	6.54	0.50	5	1.178	107	90	109	0			

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Run ID :Run Order: SUB-C257479: 6	SampType: Sample Matrix Spike Duplicate	Lab ID: C20040549-001AMSD	Method: A5310 C								
Analysis Date: 04/17/20 15:05	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	6.79	0.50	5	1.178	112	90	109	6.543	3.6	20	S

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Run ID :Run Order: SUB-C257479: 12	SampType: Sample Matrix Spike	Lab ID: C20040610-001AMS	Method: A5310 C								
Analysis Date: 04/17/20 19:29	Units: mg/L	Prep Info: Prep Date:	Prep Method:								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	8.88	0.50	5	3.444	109	90	109	0			

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: C_R257479

Date: 23-Apr-20

Run ID :Run Order: SUB-C257479: 13	SampType: Sample Matrix Spike Duplicate				Lab ID: C20040610-001AMSD				Method: A5310 C		
Analysis Date: 04/17/20 19:40	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	9.05	0.50	5	3.444	112	90	109	8.879	2.0	20	S

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Run ID :Run Order: SUB-C257479: 16	SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C		
Analysis Date: 04/17/20 19:50	Units: mg/L				Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.09	0.50	5	0	102	90	110	0			

Associated samples: **B20041033-002A, B20041033-003A, B20041033-004A, B20041033-005A**

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: C_R257525

Date: 23-Apr-20

Run ID :Run Order: SUB-C257525: 7		SampType: Laboratory Control Sample				Lab ID: LCS-11031				Method: A5310 C	
Analysis Date: 04/20/20 14:24		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	5.13	0.50	5	0	103	90	109	0			

Associated samples: **B20041033-001A**

Run ID :Run Order: SUB-C257525: 8		SampType: Method Blank				Lab ID: MBLK				Method: A5310 C	
Analysis Date: 04/20/20 14:59		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	ND	0.2									

Associated samples: **B20041033-001A**

Run ID :Run Order: SUB-C257525: 9		SampType: Continuing Calibration Verification Standard				Lab ID: CCV-11020				Method: A5310 C	
Analysis Date: 04/20/20 15:15		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	4.75	0.50	5	0	95	90	110	0			

Associated samples: **B20041033-001A**

Run ID :Run Order: SUB-C257525: 11		SampType: Sample Matrix Spike				Lab ID: C20040610-002AMS				Method: A5310 C	
Analysis Date: 04/20/20 15:51		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	50.3	2.0	20	30.24	100	90	109	0			

Associated samples: **B20041033-001A**

Run ID :Run Order: SUB-C257525: 12		SampType: Sample Matrix Spike Duplicate				Lab ID: C20040610-002AMSD				Method: A5310 C	
Analysis Date: 04/20/20 16:12		Units: mg/L				Prep Info: Prep Date:				Prep Method:	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total (TOC)	50.3	2.0	20	30.24	100	90	109	50.31	0.1	20	

Associated samples: **B20041033-001A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200422B: 1**

SampType: **MS Tuning File**

Lab ID: **22APR02_D_TUNE**

Method: **SW8260B**

Analysis Date: **04/22/20 09:33**

Units: **%**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	21.2		100	0	21.2	15	40				
75, % of mass 95	43.2		100	0	43.2	30	60				
96, % of mass 95	6.60		100	0	6.6	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	71.3		100	0	71.3	50	99.99				
175, % of mass 174	7.90		100	0	7.9	5	9				
176, % of mass 174	99.6		100	0	99.6	95	101				
177, % of mass 176	6.30		100	0	6.3	5	9				

Associated samples: **B20041033-002B, B20041033-003B, B20041033-004B, B20041033-005B, B20041033-006A**

Run ID :Run Order: **5971A.I_200422B: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042220**

Method: **SW8260B**

Analysis Date: **04/22/20 10:20**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.81	0.50	5	0	96	70	130				
Bromobenzene	4.80	0.50	5	0	96	70	130				
Bromochloromethane	4.92	0.50	5	0	98	70	130				
Bromodichloromethane	4.66	0.50	5	0	93	70	130				
Bromoform	4.47	0.50	5	0	89	70	130				
Bromomethane	6.26	0.50	5	0	125	70	130				
n-Butylbenzene	5.05	0.50	5	0	101	70	130				
sec-Butylbenzene	4.89	0.50	5	0	98	70	130				
tert-Butylbenzene	4.64	0.50	5	0	93	70	130				
Carbon tetrachloride	5.07	0.50	5	0	101	70	130				
Chlorobenzene	4.62	0.50	5	0	92	70	130				
Chlorodibromomethane	4.42	0.50	5	0	88	70	130				
Chloroethane	5.51	0.50	5	0	110	70	130				
Chloroform	5.10	0.50	5	0	102	80	120				
Chloromethane	5.76	0.50	5	0	115	70	130				
1,2-Dibromo-3-chloropropane	4.30	1.0	5	0	86	70	130				
1,2-Dibromoethane	4.54	0.50	5	0	91	70	130				
2-Chlorotoluene	4.67	0.50	5	0	93	70	130				
Dibromomethane	4.88	0.50	5	0	98	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422B: 2

SampType: Continuing Calibration Verification Standar

Lab ID: CCV042220

Method: SW8260B

Analysis Date: 04/22/20 10:20

Units: ug/L

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.70	0.50	5	0	94	70	130				
4-Chlorotoluene	5.20	0.50	5	0	104	70	130				
1,3-Dichlorobenzene	4.80	0.50	5	0	96	70	130				
1,4-Dichlorobenzene	4.82	0.50	5	0	96	70	130				
Dichlorodifluoromethane	5.94	0.50	5	0	119	70	130				
1,1-Dichloroethane	5.02	0.50	5	0	100	70	130				
1,2-Dichloroethane	5.23	0.50	5	0	105	70	130				
1,1-Dichloroethene	4.95	0.50	5	0	99	80	120				
cis-1,2-Dichloroethene	4.85	0.50	5	0	97	70	130				
trans-1,2-Dichloroethene	4.95	0.50	5	0	99	70	130				
1,2-Dichloropropane	4.80	0.50	5	0	96	80	120				
1,3-Dichloropropane	4.78	0.50	5	0	96	70	130				
2,2-Dichloropropane	5.23	0.50	5	0	105	70	130				
1,1-Dichloropropene	5.20	0.50	5	0	104	70	130				
cis-1,3-Dichloropropene	4.70	0.50	5	0	94	70	130				
trans-1,3-Dichloropropene	4.56	0.50	5	0	91	70	130				
Ethylbenzene	4.88	0.50	5	0	98	80	120				
Hexachlorobutadiene	4.65	0.50	5	0	93	70	130				
Isopropylbenzene	5.15	0.50	5	0	103	70	130				
p-Isopropyltoluene	4.79	0.50	5	0	96	70	130				
Methyl tert-butyl ether (MTBE)	4.90	0.50	5	0	98	70	130				
Methylene chloride	5.07	0.50	5	0	101	70	130				
Naphthalene	5.01	0.50	5	0	100	70	130				
n-Propylbenzene	4.76	0.50	5	0	95	70	130				
Styrene	4.78	0.50	5	0	96	70	130				
1,1,1,2-Tetrachloroethane	4.49	0.50	5	0	90	70	130				
1,1,2,2-Tetrachloroethane	4.95	0.50	5	0	99	70	130				
Tetrachloroethene	4.84	0.50	5	0	97	70	130				
Toluene	4.71	0.50	5	0	94	80	120				
1,2,3-Trichlorobenzene	4.58	0.50	5	0	92	70	130				
1,2,4-Trichlorobenzene	4.77	0.50	5	0	95	70	130				
1,1,1-Trichloroethane	5.11	0.50	5	0	102	70	130				
1,1,2-Trichloroethane	4.76	0.50	5	0	95	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200422B: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042220**

Method: **SW8260B**

Analysis Date: **04/22/20 10:20**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.86	0.50	5	0	97	70	130				
Trichlorofluoromethane	5.42	0.50	5	0	108	70	130				
1,2,3-Trichloropropane	4.89	0.50	5	0	98	70	130				
1,2,4-Trimethylbenzene	4.86	0.50	5	0	97	70	130				
1,3,5-Trimethylbenzene	5.04	0.50	5	0	101	70	130				
Vinyl chloride	5.53	0.50	5	0	111	80	120				
m+p-Xylenes	9.74	0.50	10	0	97	70	130				
o-Xylene	4.70	0.50	5	0	94	70	130				
Xylenes, Total	14.5	0.50	15	0	96	70	130				
Surr: 1,2-Dichloroethane-d4	10.6	0.50	10	0	106	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.72	0.50	10	0	97	76	127				
Surr: Toluene-d8	9.86	0.50	10	0	99	79	122				

Associated samples: **B20041033-002B, B20041033-003B, B20041033-004B, B20041033-005B, B20041033-006A**

Run ID :Run Order: **5971A.I_200422B: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042220**

Method: **SW8260B**

Analysis Date: **04/22/20 11:15**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.03	0.50	5	0	101	71	133				
Bromobenzene	5.21	0.50	5	0	104	78	133				
Bromochloromethane	5.00	0.50	5	0	100	68	131				
Bromodichloromethane	5.01	0.50	5	0	100	67	138				
Bromoform	4.83	0.50	5	0	97	64	136				
Bromomethane	6.58	0.50	5	0	132	60	138				
n-Butylbenzene	5.40	0.50	5	0	108	72	135				
sec-Butylbenzene	5.62	0.50	5	0	112	73	135				
tert-Butylbenzene	5.40	0.50	5	0	108	69	137				
Carbon tetrachloride	5.15	0.50	5	0	103	61	144				
Chlorobenzene	5.00	0.50	5	0	100	78	136				
Chlorodibromomethane	4.72	0.50	5	0	94	72	136				
Chloroethane	6.03	0.50	5	0	121	64	136				
Chloroform	5.04	0.50	5	0	101	69	133				
Chloromethane	5.70	0.50	5	0	114	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200422B: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042220**

Method: **SW8260B**

Analysis Date: **04/22/20 11:15**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	5.18	1.0	5	0	104	63	125				
1,2-Dibromoethane	4.70	0.50	5	0	94	75	131				
2-Chlorotoluene	5.39	0.50	5	0	108	74	135				
Dibromomethane	4.89	0.50	5	0	98	72	133				
1,2-Dichlorobenzene	5.19	0.50	5	0	104	78	129				
4-Chlorotoluene	5.81	0.50	5	0	116	79	135				
1,3-Dichlorobenzene	5.38	0.50	5	0	108	79	132				
1,4-Dichlorobenzene	5.30	0.50	5	0	106	78	131				
Dichlorodifluoromethane	6.32	0.50	5	0	126	55	141				
1,1-Dichloroethane	5.30	0.50	5	0	106	72	130				
1,2-Dichloroethane	5.59	0.50	5	0	112	57	146				
1,1-Dichloroethene	5.34	0.50	5	0	107	66	142				
cis-1,2-Dichloroethene	5.29	0.50	5	0	106	74	133				
trans-1,2-Dichloroethene	5.38	0.50	5	0	108	76	138				
1,2-Dichloropropane	4.98	0.50	5	0	100	72	135				
1,3-Dichloropropane	4.89	0.50	5	0	98	75	134				
2,2-Dichloropropane	5.44	0.50	5	0	109	42	167				
1,1-Dichloropropene	5.33	0.50	5	0	107	72	140				
cis-1,3-Dichloropropene	4.94	0.50	5	0	99	75	132				
trans-1,3-Dichloropropene	4.87	0.50	5	0	97	77	145				
Ethylbenzene	5.00	0.50	5	0	100	78	131				
Hexachlorobutadiene	5.19	0.50	5	0	104	65	141				
Isopropylbenzene	5.78	0.50	5	0	116	72	135				
p-Isopropyltoluene	5.37	0.50	5	0	107	71	134				
Methyl tert-butyl ether (MTBE)	4.67	0.50	5	0	93	58	151				
Methylene chloride	5.41	0.50	5	0	108	73	126				
Naphthalene	5.64	0.50	5	0	113	55	139				
n-Propylbenzene	5.54	0.50	5	0	111	70	139				
Styrene	4.93	0.50	5	0	99	76	134				
1,1,1,2-Tetrachloroethane	4.84	0.50	5	0	97	75	135				
1,1,2,2-Tetrachloroethane	5.66	0.50	5	0	113	72	132				
Tetrachloroethene	4.83	0.50	5	0	97	78	137				
Toluene	4.77	0.50	5	0	95	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422B: 3		SampType: Laboratory Control Sample			Lab ID: LCS042220			Method: SW8260B			
Analysis Date: 04/22/20 11:15		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.40	0.50	5	0	108	42	152				
1,2,4-Trichlorobenzene	5.31	0.50	5	0	106	58	142				
1,1,1-Trichloroethane	5.41	0.50	5	0	108	64	141				
1,1,2-Trichloroethane	4.94	0.50	5	0	99	72	133				
Trichloroethene	4.85	0.50	5	0	97	75	138				
Trichlorofluoromethane	5.42	0.50	5	0	108	58	139				
1,2,3-Trichloropropane	5.75	0.50	5	0	115	67	133				
1,2,4-Trimethylbenzene	5.27	0.50	5	0	105	71	129				
1,3,5-Trimethylbenzene	5.62	0.50	5	0	112	68	135				
Vinyl chloride	5.60	0.50	5	0	112	66	140				
m+p-Xylenes	9.78	0.50	10	0	98	78	133				
o-Xylene	5.04	0.50	5	0	101	79	136				
Xylenes, Total	14.8	0.50	15	0	99	78	136				
Surr: 1,2-Dichloroethane-d4	10.9	0.50	10	0	109	70	130				
Surr: Dibromofluoromethane	10.2	0.50	10	0	102	77	126				
Surr: p-Bromofluorobenzene	10.2	0.50	10	0	102	76	127				
Surr: Toluene-d8	9.63	0.50	10	0	96	79	122				

Associated samples: B20041033-002B, B20041033-003B, B20041033-004B, B20041033-005B, B20041033-006A

Run ID :Run Order: 5971A.I_200422B: 4		SampType: Method Blank			Lab ID: MBLK042220			Method: SW8260B			
Analysis Date: 04/22/20 12:38		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200422B: 4**

SampType: **Method Blank**

Lab ID: **MBLK042220**

Method: **SW8260B**

Analysis Date: **04/22/20 12:38**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422B: 4		SampType: Method Blank			Lab ID: MBLK042220				Method: SW8260B		
Analysis Date: 04/22/20 12:38		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	10.7	0.50	10	0	107	70	130				
Surr: Dibromofluoromethane	9.68	0.50	10	0	97	77	126				
Surr: p-Bromofluorobenzene	9.96	0.50	10	0	100	76	127				
Surr: Toluene-d8	9.60	0.50	10	0	96	79	122				

Associated samples: **B20041033-002B, B20041033-003B, B20041033-004B, B20041033-005B, B20041033-006A**

Run ID :Run Order: 5971A.I_200422B: 19		SampType: Sample Matrix Spike			Lab ID: B20041033-003BMS				Method: SW8260B		
Analysis Date: 04/22/20 21:00		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	49.7	5.0	50	0	99	71	133				
Bromobenzene	49.9	5.0	50	0	100	78	133				
Bromochloromethane	45.3	5.0	50	0	91	68	131				
Bromodichloromethane	48.8	5.0	50	0	98	67	138				
Bromoform	44.9	5.0	50	0	90	64	136				
Bromomethane	70.8	5.0	50	0	142	60	138				S
n-Butylbenzene	54.5	5.0	50	0	109	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200422B: 19**

SampType: **Sample Matrix Spike**

Lab ID: **B20041033-003BMS**

Method: **SW8260B**

Analysis Date: **04/22/20 21:00**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	54.4	5.0	50	0	109	73	135				
tert-Butylbenzene	50.7	5.0	50	0	101	69	137				
Carbon tetrachloride	50.7	5.0	50	0	101	61	144				
Chlorobenzene	45.7	5.0	50	0	91	78	136				
Chlorodibromomethane	44.4	5.0	50	0	89	72	136				
Chloroethane	60.6	5.0	50	0	121	64	136				
Chloroform	51.2	5.0	50	0	102	69	133				
Chloromethane	60.3	5.0	50	0	121	63	149				
1,2-Dibromo-3-chloropropane	48.5	10	50	0	97	63	125				
1,2-Dibromoethane	45.5	5.0	50	0	91	75	131				
2-Chlorotoluene	50.4	5.0	50	0	101	74	135				
Dibromomethane	46.6	5.0	50	0	93	72	133				
1,2-Dichlorobenzene	49.7	5.0	50	0	99	78	129				
4-Chlorotoluene	55.4	5.0	50	0	111	79	135				
1,3-Dichlorobenzene	50.3	5.0	50	0	101	79	132				
1,4-Dichlorobenzene	50.0	5.0	50	0	100	78	131				
Dichlorodifluoromethane	64.9	5.0	50	0	130	55	141				
1,1-Dichloroethane	53.0	5.0	50	0	106	72	130				
1,2-Dichloroethane	57.0	5.0	50	0	114	57	146				
1,1-Dichloroethene	51.0	5.0	50	0	102	66	142				
cis-1,2-Dichloroethene	150	5.0	50	89.8	121	74	133				
trans-1,2-Dichloroethene	52.1	5.0	50	0	104	76	138				
1,2-Dichloropropane	47.7	5.0	50	0	95	72	135				
1,3-Dichloropropane	47.2	5.0	50	0	94	75	134				
2,2-Dichloropropane	53.0	5.0	50	0	106	42	167				
1,1-Dichloropropene	51.3	5.0	50	0	103	72	140				
cis-1,3-Dichloropropene	45.7	5.0	50	0	91	75	132				
trans-1,3-Dichloropropene	46.4	5.0	50	0	93	77	145				
Ethylbenzene	47.1	5.0	50	0	94	78	131				
Hexachlorobutadiene	43.4	5.0	50	0	87	65	141				
Isopropylbenzene	54.8	5.0	50	0	110	72	135				
p-Isopropyltoluene	52.0	5.0	50	0	104	71	134				
Methyl tert-butyl ether (MTBE)	49.2	5.0	50	0	98	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422B: 19		SampType: Sample Matrix Spike			Lab ID: B20041033-003BMS			Method: SW8260B			
Analysis Date: 04/22/20 21:00		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	55.8	5.0	50	0	112	73	126				
Naphthalene	54.4	5.0	50	0	109	55	139				
n-Propylbenzene	51.8	5.0	50	0	104	70	139				
Styrene	44.8	5.0	50	0	90	76	134				
1,1,1,2-Tetrachloroethane	43.8	5.0	50	0	88	75	135				
1,1,2,2-Tetrachloroethane	54.7	5.0	50	0	109	72	132				
Tetrachloroethene	86.6	5.0	50	38.5	96	78	137				
Toluene	45.5	5.0	50	0	91	78	134				
1,2,3-Trichlorobenzene	47.9	5.0	50	0	96	42	152				
1,2,4-Trichlorobenzene	48.4	5.0	50	0	97	58	142				
1,1,1-Trichloroethane	52.5	5.0	50	0	105	64	141				
1,1,2-Trichloroethane	48.4	5.0	50	0	97	72	133				
Trichloroethene	53.9	5.0	50	5.906	96	75	138				
Trichlorofluoromethane	56.5	5.0	50	0	113	58	139				
1,2,3-Trichloropropane	50.9	5.0	50	0	102	67	133				
1,2,4-Trimethylbenzene	51.5	5.0	50	0	103	71	129				
1,3,5-Trimethylbenzene	52.0	5.0	50	0	104	68	135				
Vinyl chloride	57.8	5.0	50	0	116	66	140				
m+p-Xylenes	91.2	5.0	100	0	91	78	133				
o-Xylene	46.5	5.0	50	0	93	79	136				
Xylenes, Total	138	5.0	150	0	92	78	136				
Surr: 1,2-Dichloroethane-d4	113	5.0	100	0	113	70	130				
Surr: Dibromofluoromethane	100	5.0	100	0	100	77	126				
Surr: p-Bromofluorobenzene	98.7	5.0	100	0	99	76	127				
Surr: Toluene-d8	94.2	5.0	100	0	94	79	122				

Associated samples: B20041033-002B, B20041033-003B, B20041033-004B, B20041033-005B, B20041033-006A

Run ID :Run Order: 5971A.I_200422B: 20		SampType: Sample Matrix Spike Duplicate			Lab ID: B20041033-003BMSD			Method: SW8260B			
Analysis Date: 04/22/20 21:28		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	50.9	5.0	50	0	102	71	133	49.73	2.4	20	
Bromobenzene	48.2	5.0	50	0	96	78	133	49.87	3.5	20	
Bromochloromethane	45.4	5.0	50	0	91	68	131	45.29	0.2	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422B: 20	SampType: Sample Matrix Spike Duplicate				Lab ID: B20041033-003BMSD				Method: SW8260B		
Analysis Date: 04/22/20 21:28	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	50.7	5.0	50	0	101	67	138	48.8	3.9	20	
Bromoform	44.5	5.0	50	0	89	64	136	44.86	0.9	20	
Bromomethane	59.9	5.0	50	0	120	60	138	70.75	17	20	
n-Butylbenzene	53.6	5.0	50	0	107	72	135	54.51	1.8	20	
sec-Butylbenzene	54.5	5.0	50	0	109	73	135	54.36	0.2	20	
tert-Butylbenzene	50.0	5.0	50	0	100	69	137	50.69	1.3	20	
Carbon tetrachloride	50.8	5.0	50	0	102	61	144	50.67	0.3	20	
Chlorobenzene	45.9	5.0	50	0	92	78	136	45.67	0.4	20	
Chlorodibromomethane	45.2	5.0	50	0	90	72	136	44.39	1.8	20	
Chloroethane	60.4	5.0	50	0	121	64	136	60.62	0.4	20	
Chloroform	52.4	5.0	50	0	105	69	133	51.21	2.3	20	
Chloromethane	60.1	5.0	50	0	120	63	149	60.34	0.3	20	
1,2-Dibromo-3-chloropropane	53.1	10	50	0	106	63	125	48.47	9.1	20	
1,2-Dibromoethane	46.3	5.0	50	0	93	75	131	45.55	1.6	20	
2-Chlorotoluene	50.4	5.0	50	0	101	74	135	50.42	0.0	20	
Dibromomethane	46.1	5.0	50	0	92	72	133	46.57	1.0	20	
1,2-Dichlorobenzene	49.6	5.0	50	0	99	78	129	49.72	0.3	20	
4-Chlorotoluene	57.6	5.0	50	0	115	79	135	55.41	3.9	20	
1,3-Dichlorobenzene	51.0	5.0	50	0	102	79	132	50.32	1.4	20	
1,4-Dichlorobenzene	50.8	5.0	50	0	102	78	131	49.96	1.7	20	
Dichlorodifluoromethane	66.5	5.0	50	0	133	55	141	64.87	2.5	20	
1,1-Dichloroethane	55.2	5.0	50	0	110	72	130	52.96	4.2	20	
1,2-Dichloroethane	58.8	5.0	50	0	118	57	146	56.94	3.2	20	
1,1-Dichloroethene	52.8	5.0	50	0	106	66	142	51.02	3.5	20	
cis-1,2-Dichloroethene	154	5.0	50	89.8	127	74	133	150.1	2.2	20	
trans-1,2-Dichloroethene	52.5	5.0	50	0	105	76	138	52.09	0.8	20	
1,2-Dichloropropane	49.1	5.0	50	0	98	72	135	47.72	2.8	20	
1,3-Dichloropropane	47.9	5.0	50	0	96	75	134	47.18	1.4	20	
2,2-Dichloropropane	53.2	5.0	50	0	106	42	167	52.96	0.4	20	
1,1-Dichloropropene	52.0	5.0	50	0	104	72	140	51.31	1.3	20	
cis-1,3-Dichloropropene	47.1	5.0	50	0	94	75	132	45.65	3.1	20	
trans-1,3-Dichloropropene	48.0	5.0	50	0	96	77	145	46.39	3.3	20	
Ethylbenzene	47.6	5.0	50	0	95	78	131	47.11	1.0	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340932

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422B: 20	SampType: Sample Matrix Spike Duplicate				Lab ID: B20041033-003BMSD				Method: SW8260B		
Analysis Date: 04/22/20 21:28	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	50.7	5.0	50	0	101	65	141	43.39	16	20	
Isopropylbenzene	55.6	5.0	50	0	111	72	135	54.82	1.4	20	
p-Isopropyltoluene	51.2	5.0	50	0	102	71	134	52.04	1.7	20	
Methyl tert-butyl ether (MTBE)	50.3	5.0	50	0	101	58	151	49.21	2.2	20	
Methylene chloride	57.4	5.0	50	0	115	73	126	55.83	2.8	20	
Naphthalene	54.5	5.0	50	0	109	55	139	54.42	0.2	20	
n-Propylbenzene	50.4	5.0	50	0	101	70	139	51.76	2.6	20	
Styrene	47.4	5.0	50	0	95	76	134	44.79	5.7	20	
1,1,1,2-Tetrachloroethane	45.3	5.0	50	0	91	75	135	43.75	3.5	20	
1,1,2,2-Tetrachloroethane	55.2	5.0	50	0	110	72	132	54.68	0.9	20	
Tetrachloroethene	90.0	5.0	50	38.5	103	78	137	86.56	3.9	20	
Toluene	46.3	5.0	50	0	93	78	134	45.52	1.8	20	
1,2,3-Trichlorobenzene	53.9	5.0	50	0	108	42	152	47.88	12	20	
1,2,4-Trichlorobenzene	52.1	5.0	50	0	104	58	142	48.41	7.4	20	
1,1,1-Trichloroethane	54.1	5.0	50	0	108	64	141	52.47	3.1	20	
1,1,2-Trichloroethane	48.9	5.0	50	0	98	72	133	48.4	1.0	20	
Trichloroethene	54.0	5.0	50	5.906	96	75	138	53.88	0.2	20	
Trichlorofluoromethane	57.7	5.0	50	0	115	58	139	56.5	2.1	20	
1,2,3-Trichloropropane	52.3	5.0	50	0	105	67	133	50.85	2.8	20	
1,2,4-Trimethylbenzene	51.4	5.0	50	0	103	71	129	51.53	0.2	20	
1,3,5-Trimethylbenzene	53.4	5.0	50	0	107	68	135	52.02	2.6	20	
Vinyl chloride	59.5	5.0	50	0	119	66	140	57.82	2.8	20	
m+p-Xylenes	92.7	5.0	100	0	93	78	133	91.24	1.6	20	
o-Xylene	48.3	5.0	50	0	97	79	136	46.52	3.8	20	
Xylenes, Total	141	5.0	150	0	94	78	136	137.8			
Surr: 1,2-Dichloroethane-d4	116	5.0	100	0	116	70	130	0			
Surr: Dibromofluoromethane	103	5.0	100	0	103	77	126	0			
Surr: p-Bromofluorobenzene	98.7	5.0	100	0	99	76	127	0			
Surr: Toluene-d8	90.1	5.0	100	0	90	79	122	0			

Associated samples: B20041033-002B, B20041033-003B, B20041033-004B, B20041033-005B, B20041033-006A



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 1		SampType: MS Tuning File			Lab ID: 23APR02_D_TUNE			Method: SW8260B			
Analysis Date: 04/23/20 12:39		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	22.3		100	0	22.3	15	40				
75, % of mass 95	47.9		100	0	47.9	30	60				
96, % of mass 95	6.80		100	0	6.8	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	67.0		100	0	67	50	99.99				
175, % of mass 174	7.50		100	0	7.5	5	9				
176, % of mass 174	97.5		100	0	97.5	95	101				
177, % of mass 176	6.00		100	0	6	5	9				

Associated samples: B20041033-001B, B20041033-002B, B20041033-003B

Run ID :Run Order: 5971A.I_200423A: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV042320			Method: SW8260B			
Analysis Date: 04/23/20 13:11		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.81	0.50	5	0	96	70	130				
Bromobenzene	4.89	0.50	5	0	98	70	130				
Bromochloromethane	4.24	0.50	5	0	85	70	130				
Bromodichloromethane	4.75	0.50	5	0	95	70	130				
Bromoform	4.41	0.50	5	0	88	70	130				
Bromomethane	4.89	0.50	5	0	98	70	130				
n-Butylbenzene	5.41	0.50	5	0	108	70	130				
sec-Butylbenzene	4.82	0.50	5	0	96	70	130				
tert-Butylbenzene	4.33	0.50	5	0	87	70	130				
Carbon tetrachloride	5.32	0.50	5	0	106	70	130				
Chlorobenzene	4.26	0.50	5	0	85	70	130				
Chlorodibromomethane	4.22	0.50	5	0	84	70	130				
Chloroethane	5.41	0.50	5	0	108	70	130				
Chloroform	5.32	0.50	5	0	106	80	120				
Chloromethane	5.26	0.50	5	0	105	70	130				
1,2-Dibromo-3-chloropropane	5.22	1.0	5	0	104	70	130				
1,2-Dibromoethane	4.33	0.50	5	0	87	70	130				
2-Chlorotoluene	4.66	0.50	5	0	93	70	130				
Dibromomethane	4.63	0.50	5	0	93	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200423A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042320**

Method: **SW8260B**

Analysis Date: **04/23/20 13:11**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.78	0.50	5	0	96	70	130				
4-Chlorotoluene	5.37	0.50	5	0	107	70	130				
1,3-Dichlorobenzene	4.79	0.50	5	0	96	70	130				
1,4-Dichlorobenzene	4.93	0.50	5	0	99	70	130				
Dichlorodifluoromethane	5.96	0.50	5	0	119	70	130				
1,1-Dichloroethane	5.05	0.50	5	0	101	70	130				
1,2-Dichloroethane	5.98	0.50	5	0	120	70	130				
1,1-Dichloroethene	4.82	0.50	5	0	96	80	120				
cis-1,2-Dichloroethene	4.69	0.50	5	0	94	70	130				
trans-1,2-Dichloroethene	4.82	0.50	5	0	96	70	130				
1,2-Dichloropropane	4.42	0.50	5	0	88	80	120				
1,3-Dichloropropane	4.58	0.50	5	0	92	70	130				
2,2-Dichloropropane	5.87	0.50	5	0	117	70	130				
1,1-Dichloropropene	5.33	0.50	5	0	107	70	130				
cis-1,3-Dichloropropene	4.43	0.50	5	0	89	70	130				
trans-1,3-Dichloropropene	4.65	0.50	5	0	93	70	130				
Ethylbenzene	4.76	0.50	5	0	95	80	120				
Hexachlorobutadiene	4.38	0.50	5	0	88	70	130				
Isopropylbenzene	5.18	0.50	5	0	104	70	130				
p-Isopropyltoluene	4.75	0.50	5	0	95	70	130				
Methyl tert-butyl ether (MTBE)	4.71	0.50	5	0	94	70	130				
Methylene chloride	5.24	0.50	5	0	105	70	130				
Naphthalene	5.09	0.50	5	0	102	70	130				
n-Propylbenzene	4.79	0.50	5	0	96	70	130				
Styrene	4.50	0.50	5	0	90	70	130				
1,1,1,2-Tetrachloroethane	4.21	0.50	5	0	84	70	130				
1,1,2,2-Tetrachloroethane	5.36	0.50	5	0	107	70	130				
Tetrachloroethene	4.17	0.50	5	0	83	70	130				
Toluene	4.49	0.50	5	0	90	80	120				
1,2,3-Trichlorobenzene	4.64	0.50	5	0	93	70	130				
1,2,4-Trichlorobenzene	4.83	0.50	5	0	97	70	130				
1,1,1-Trichloroethane	5.69	0.50	5	0	114	70	130				
1,1,2-Trichloroethane	4.68	0.50	5	0	94	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200423A: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV042320**

Method: **SW8260B**

Analysis Date: **04/23/20 13:11**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.56	0.50	5	0	91	70	130				
Trichlorofluoromethane	5.61	0.50	5	0	112	70	130				
1,2,3-Trichloropropane	5.17	0.50	5	0	103	70	130				
1,2,4-Trimethylbenzene	4.94	0.50	5	0	99	70	130				
1,3,5-Trimethylbenzene	5.09	0.50	5	0	102	70	130				
Vinyl chloride	4.80	0.50	5	0	96	80	120				
m+p-Xylenes	8.97	0.50	10	0	90	70	130				
o-Xylene	4.51	0.50	5	0	90	70	130				
Xylenes, Total	13.5	0.50	15	0	90	70	130				
Surr: 1,2-Dichloroethane-d4	11.9	0.50	10	0	119	70	130				
Surr: Dibromofluoromethane	10.4	0.50	10	0	104	77	126				
Surr: p-Bromofluorobenzene	10.3	0.50	10	0	103	76	127				
Surr: Toluene-d8	9.22	0.50	10	0	92	79	122				

Associated samples: **B20041033-001B, B20041033-002B, B20041033-003B**

Run ID :Run Order: **5971A.I_200423A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042320**

Method: **SW8260B**

Analysis Date: **04/23/20 13:48**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.56	0.50	5	0	91	71	133				
Bromobenzene	4.70	0.50	5	0	94	78	133				
Bromochloromethane	3.93	0.50	5	0	79	68	131				
Bromodichloromethane	4.76	0.50	5	0	95	67	138				
Bromoform	4.21	0.50	5	0	84	64	136				
Bromomethane	6.62	0.50	5	0	132	60	138				
n-Butylbenzene	5.18	0.50	5	0	104	72	135				
sec-Butylbenzene	5.20	0.50	5	0	104	73	135				
tert-Butylbenzene	4.81	0.50	5	0	96	69	137				
Carbon tetrachloride	5.08	0.50	5	0	102	61	144				
Chlorobenzene	4.20	0.50	5	0	84	78	136				
Chlorodibromomethane	4.26	0.50	5	0	85	72	136				
Chloroethane	6.50	0.50	5	0	130	64	136				
Chloroform	4.91	0.50	5	0	98	69	133				
Chloromethane	6.28	0.50	5	0	126	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200423A: 3**

SampType: **Laboratory Control Sample**

Lab ID: **LCS042320**

Method: **SW8260B**

Analysis Date: **04/23/20 13:48**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	4.71	1.0	5	0	94	63	125				
1,2-Dibromoethane	4.37	0.50	5	0	87	75	131				
2-Chlorotoluene	4.63	0.50	5	0	93	74	135				
Dibromomethane	4.34	0.50	5	0	87	72	133				
1,2-Dichlorobenzene	4.75	0.50	5	0	95	78	129				
4-Chlorotoluene	5.31	0.50	5	0	106	79	135				
1,3-Dichlorobenzene	4.85	0.50	5	0	97	79	132				
1,4-Dichlorobenzene	4.89	0.50	5	0	98	78	131				
Dichlorodifluoromethane	7.17	0.50	5	0	143	55	141				S
1,1-Dichloroethane	4.87	0.50	5	0	97	72	130				
1,2-Dichloroethane	5.83	0.50	5	0	117	57	146				
1,1-Dichloroethene	4.72	0.50	5	0	94	66	142				
cis-1,2-Dichloroethene	4.36	0.50	5	0	87	74	133				
trans-1,2-Dichloroethene	4.67	0.50	5	0	93	76	138				
1,2-Dichloropropane	4.34	0.50	5	0	87	72	135				
1,3-Dichloropropane	4.47	0.50	5	0	89	75	134				
2,2-Dichloropropane	5.42	0.50	5	0	108	42	167				
1,1-Dichloropropene	5.02	0.50	5	0	100	72	140				
cis-1,3-Dichloropropene	4.32	0.50	5	0	86	75	132				
trans-1,3-Dichloropropene	4.72	0.50	5	0	94	77	145				
Ethylbenzene	4.53	0.50	5	0	91	78	131				
Hexachlorobutadiene	4.99	0.50	5	0	100	65	141				
Isopropylbenzene	5.31	0.50	5	0	106	72	135				
p-Isopropyltoluene	4.92	0.50	5	0	98	71	134				
Methyl tert-butyl ether (MTBE)	4.39	0.50	5	0	88	58	151				
Methylene chloride	5.02	0.50	5	0	100	73	126				
Naphthalene	5.52	0.50	5	0	110	55	139				
n-Propylbenzene	4.86	0.50	5	0	97	70	139				
Styrene	4.46	0.50	5	0	89	76	134				
1,1,1,2-Tetrachloroethane	4.19	0.50	5	0	84	75	135				
1,1,2,2-Tetrachloroethane	5.25	0.50	5	0	105	72	132				
Tetrachloroethene	4.11	0.50	5	0	82	78	137				
Toluene	4.20	0.50	5	0	84	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 3		SampType: Laboratory Control Sample			Lab ID: LCS042320			Method: SW8260B			
Analysis Date: 04/23/20 13:48		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.25	0.50	5	0	105	42	152				
1,2,4-Trichlorobenzene	5.06	0.50	5	0	101	58	142				
1,1,1-Trichloroethane	5.29	0.50	5	0	106	64	141				
1,1,2-Trichloroethane	4.49	0.50	5	0	90	72	133				
Trichloroethene	4.49	0.50	5	0	90	75	138				
Trichlorofluoromethane	6.47	0.50	5	0	129	58	139				
1,2,3-Trichloropropane	5.00	0.50	5	0	100	67	133				
1,2,4-Trimethylbenzene	4.80	0.50	5	0	96	71	129				
1,3,5-Trimethylbenzene	4.96	0.50	5	0	99	68	135				
Vinyl chloride	6.01	0.50	5	0	120	66	140				
m+p-Xylenes	8.94	0.50	10	0	89	78	133				
o-Xylene	4.53	0.50	5	0	91	79	136				
Xylenes, Total	13.5	0.50	15	0	90	78	136				
Surr: 1,2-Dichloroethane-d4	11.7	0.50	10	0	117	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	10.0	0.50	10	0	101	76	127				
Surr: Toluene-d8	9.06	0.50	10	0	91	79	122				

Associated samples: B20041033-001B, B20041033-002B, B20041033-003B

Run ID :Run Order: 5971A.I_200423A: 4		SampType: Method Blank			Lab ID: MBLK042320			Method: SW8260B			
Analysis Date: 04/23/20 14:43		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: **5971A.I_200423A: 4**

SampType: **Method Blank**

Lab ID: **MBLK042320**

Method: **SW8260B**

Analysis Date: **04/23/20 14:43**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 4		SampType: Method Blank			Lab ID: MBLK042320				Method: SW8260B		
Analysis Date: 04/23/20 14:43		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	11.8	0.50	10	0	118	70	130				
Surr: Dibromofluoromethane	10.0	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	10.4	0.50	10	0	104	76	127				
Surr: Toluene-d8	9.16	0.50	10	0	92	79	122				

Associated samples: B20041033-001B, B20041033-002B, B20041033-003B

Run ID :Run Order: 5971A.I_200423A: 21		SampType: Sample Matrix Spike			Lab ID: B20041191-005IMS				Method: SW8260B		
Analysis Date: 04/23/20 23:24		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.72	0.50	5	0	94	71	133				
Bromobenzene	4.58	0.50	5	0	92	78	133				
Bromochloromethane	3.88	0.50	5	0	78	68	131				
Bromodichloromethane	4.75	0.50	5	0	95	67	138				
Bromoform	4.17	0.50	5	0	83	64	136				
Bromomethane	6.11	0.50	5	0	122	60	138				
n-Butylbenzene	5.32	0.50	5	0	106	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 21	SampType: Sample Matrix Spike				Lab ID: B20041191-005IMS			Method: SW8260B			
Analysis Date: 04/23/20 23:24	Units: ug/L					Prep Info: Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	5.41	0.50	5	0	108	73	135				
tert-Butylbenzene	4.54	0.50	5	0	91	69	137				
Carbon tetrachloride	5.05	0.50	5	0	101	61	144				
Chlorobenzene	4.18	0.50	5	0	84	78	136				
Chlorodibromomethane	4.28	0.50	5	0	86	72	136				
Chloroethane	6.36	0.50	5	0	127	64	136				
Chloroform	4.99	0.50	5	0	100	69	133				
Chloromethane	5.87	0.50	5	0	117	63	149				
1,2-Dibromo-3-chloropropane	4.87	1.0	5	0	97	63	125				
1,2-Dibromoethane	4.26	0.50	5	0	85	75	131				
2-Chlorotoluene	4.66	0.50	5	0	93	74	135				
Dibromomethane	4.39	0.50	5	0	88	72	133				
1,2-Dichlorobenzene	4.82	0.50	5	0	96	78	129				
4-Chlorotoluene	5.51	0.50	5	0	110	79	135				
1,3-Dichlorobenzene	4.76	0.50	5	0	95	79	132				
1,4-Dichlorobenzene	4.91	0.50	5	0	98	78	131				
Dichlorodifluoromethane	6.53	0.50	5	0	130	55	141				
1,1-Dichloroethane	4.89	0.50	5	0	98	72	130				
1,2-Dichloroethane	6.06	0.50	5	0	121	57	146				
1,1-Dichloroethene	4.59	0.50	5	0	92	66	142				
cis-1,2-Dichloroethene	4.47	0.50	5	0	89	74	133				
trans-1,2-Dichloroethene	4.66	0.50	5	0	93	76	138				
1,2-Dichloropropane	4.27	0.50	5	0	85	72	135				
1,3-Dichloropropane	4.49	0.50	5	0	90	75	134				
2,2-Dichloropropane	5.04	0.50	5	0	101	42	167				
1,1-Dichloropropene	4.87	0.50	5	0	97	72	140				
cis-1,3-Dichloropropene	4.19	0.50	5	0	84	75	132				
trans-1,3-Dichloropropene	4.47	0.50	5	0	89	77	145				
Ethylbenzene	4.71	0.50	5	0	94	78	131				
Hexachlorobutadiene	4.36	0.50	5	0	87	65	141				
Isopropylbenzene	5.14	0.50	5	0	103	72	135				
p-Isopropyltoluene	4.96	0.50	5	0	99	71	134				
Methyl tert-butyl ether (MTBE)	4.48	0.50	5	0	90	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 21		SampType: Sample Matrix Spike			Lab ID: B20041191-005IMS			Method: SW8260B			
Analysis Date: 04/23/20 23:24		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	5.10	0.50	5	0	102	73	126				
Naphthalene	5.00	0.50	5	0	100	55	139				
n-Propylbenzene	4.81	0.50	5	0	96	70	139				
Styrene	4.36	0.50	5	0	87	76	134				
1,1,1,2-Tetrachloroethane	4.31	0.50	5	0	86	75	135				
1,1,2,2-Tetrachloroethane	5.37	0.50	5	0	107	72	132				
Tetrachloroethene	4.10	0.50	5	0	82	78	137				
Toluene	4.32	0.50	5	0	86	78	134				
1,2,3-Trichlorobenzene	4.44	0.50	5	0	89	42	152				
1,2,4-Trichlorobenzene	4.57	0.50	5	0	91	58	142				
1,1,1-Trichloroethane	5.49	0.50	5	0	110	64	141				
1,1,2-Trichloroethane	4.47	0.50	5	0	90	72	133				
Trichloroethene	4.44	0.50	5	0	89	75	138				
Trichlorofluoromethane	6.24	0.50	5	0	125	58	139				
1,2,3-Trichloropropane	5.08	0.50	5	0	102	67	133				
1,2,4-Trimethylbenzene	5.04	0.50	5	0	101	71	129				
1,3,5-Trimethylbenzene	5.22	0.50	5	0	104	68	135				
Vinyl chloride	5.64	0.50	5	0	113	66	140				
m+p-Xylenes	8.71	0.50	10	0	87	78	133				
o-Xylene	4.42	0.50	5	0	88	79	136				
Xylenes, Total	13.1	0.50	15	0	88	78	136				
Surr: 1,2-Dichloroethane-d4	11.8	0.50	10	0	118	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.86	0.50	10	0	99	76	127				
Surr: Toluene-d8	9.41	0.50	10	0	94	79	122				

Associated samples: B20041033-001B, B20041033-002B, B20041033-003B

Run ID :Run Order: 5971A.I_200423A: 22		SampType: Sample Matrix Spike Duplicate			Lab ID: B20041191-005IMSD			Method: SW8260B			
Analysis Date: 04/23/20 23:52		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.87	0.50	5	0	97	71	133	4.724	3.1	20	
Bromobenzene	4.97	0.50	5	0	100	78	133	4.576	8.4	20	
Bromochloromethane	4.30	0.50	5	0	86	68	131	3.876	10	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 22	SampType: Sample Matrix Spike Duplicate				Lab ID: B20041191-005IMSD				Method: SW8260B		
Analysis Date: 04/23/20 23:52	Units: ug/L					Prep Info: Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	5.21	0.50	5	0	104	67	138	4.754	9.1	20	
Bromoform	4.53	0.50	5	0	91	64	136	4.168	8.4	20	
Bromomethane	6.95	0.50	5	0	139	60	138	6.11	13	20	S
n-Butylbenzene	5.48	0.50	5	0	110	72	135	5.316	3.0	20	
sec-Butylbenzene	5.69	0.50	5	0	114	73	135	5.41	5.0	20	
tert-Butylbenzene	5.13	0.50	5	0	103	69	137	4.538	12	20	
Carbon tetrachloride	5.25	0.50	5	0	105	61	144	5.046	4.0	20	
Chlorobenzene	4.60	0.50	5	0	92	78	136	4.18	9.6	20	
Chlorodibromomethane	4.50	0.50	5	0	90	72	136	4.281	5.1	20	
Chloroethane	6.67	0.50	5	0	133	64	136	6.357	4.9	20	
Chloroform	5.18	0.50	5	0	104	69	133	4.988	3.7	20	
Chloromethane	6.47	0.50	5	0	129	63	149	5.865	9.8	20	
1,2-Dibromo-3-chloropropane	5.18	1.0	5	0	104	63	125	4.869	6.2	20	
1,2-Dibromoethane	4.64	0.50	5	0	93	75	131	4.263	8.5	20	
2-Chlorotoluene	5.26	0.50	5	0	105	74	135	4.662	12	20	
Dibromomethane	4.87	0.50	5	0	97	72	133	4.388	10	20	
1,2-Dichlorobenzene	5.08	0.50	5	0	102	78	129	4.823	5.2	20	
4-Chlorotoluene	6.05	0.50	5	0	121	79	135	5.506	9.5	20	
1,3-Dichlorobenzene	5.22	0.50	5	0	104	79	132	4.765	9.1	20	
1,4-Dichlorobenzene	5.04	0.50	5	0	101	78	131	4.906	2.7	20	
Dichlorodifluoromethane	7.45	0.50	5	0	149	55	141	6.525	13	20	S
1,1-Dichloroethane	5.27	0.50	5	0	105	72	130	4.894	7.4	20	
1,2-Dichloroethane	6.21	0.50	5	0	124	57	146	6.058	2.4	20	
1,1-Dichloroethene	4.98	0.50	5	0	100	66	142	4.593	8.1	20	
cis-1,2-Dichloroethene	4.57	0.50	5	0	91	74	133	4.469	2.1	20	
trans-1,2-Dichloroethene	4.94	0.50	5	0	99	76	138	4.664	5.7	20	
1,2-Dichloropropane	4.78	0.50	5	0	96	72	135	4.272	11	20	
1,3-Dichloropropane	4.90	0.50	5	0	98	75	134	4.491	8.7	20	
2,2-Dichloropropane	5.11	0.50	5	0	102	42	167	5.039	1.4	20	
1,1-Dichloropropene	5.20	0.50	5	0	104	72	140	4.873	6.5	20	
cis-1,3-Dichloropropene	4.77	0.50	5	0	95	75	132	4.186	13	20	
trans-1,3-Dichloropropene	4.97	0.50	5	0	99	77	145	4.467	11	20	
Ethylbenzene	4.98	0.50	5	0	100	78	131	4.71	5.5	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340939

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200423A: 22	SampType: Sample Matrix Spike Duplicate				Lab ID: B20041191-005IMSD				Method: SW8260B		
Analysis Date: 04/23/20 23:52	Units: ug/L		Prep Info: Prep Date:				Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	5.22	0.50	5	0	104	65	141	4.359	18	20	
Isopropylbenzene	5.72	0.50	5	0	114	72	135	5.136	11	20	
p-Isopropyltoluene	5.32	0.50	5	0	106	71	134	4.959	6.9	20	
Methyl tert-butyl ether (MTBE)	4.97	0.50	5	0	99	58	151	4.479	10	20	
Methylene chloride	5.29	0.50	5	0	106	73	126	5.102	3.6	20	
Naphthalene	5.88	0.50	5	0	118	55	139	4.998	16	20	
n-Propylbenzene	5.12	0.50	5	0	102	70	139	4.806	6.4	20	
Styrene	4.72	0.50	5	0	94	76	134	4.357	8.0	20	
1,1,1,2-Tetrachloroethane	4.62	0.50	5	0	92	75	135	4.311	7.0	20	
1,1,2,2-Tetrachloroethane	5.75	0.50	5	0	115	72	132	5.37	6.8	20	
Tetrachloroethene	4.34	0.50	5	0	87	78	137	4.101	5.7	20	
Toluene	4.59	0.50	5	0	92	78	134	4.319	6.2	20	
1,2,3-Trichlorobenzene	5.47	0.50	5	0	109	42	152	4.441	21	20	R
1,2,4-Trichlorobenzene	5.23	0.50	5	0	105	58	142	4.574	13	20	
1,1,1-Trichloroethane	5.60	0.50	5	0	112	64	141	5.488	2.0	20	
1,1,2-Trichloroethane	4.99	0.50	5	0	100	72	133	4.475	11	20	
Trichloroethene	4.69	0.50	5	0	94	75	138	4.437	5.5	20	
Trichlorofluoromethane	6.64	0.50	5	0	133	58	139	6.236	6.3	20	
1,2,3-Trichloropropane	5.71	0.50	5	0	114	67	133	5.079	12	20	
1,2,4-Trimethylbenzene	5.26	0.50	5	0	105	71	129	5.044	4.1	20	
1,3,5-Trimethylbenzene	5.56	0.50	5	0	111	68	135	5.221	6.3	20	
Vinyl chloride	6.32	0.50	5	0	126	66	140	5.638	11	20	
m+p-Xylenes	9.63	0.50	10	0	96	78	133	8.714	9.9	20	
o-Xylene	4.72	0.50	5	0	94	79	136	4.423	6.5	20	
Xylenes, Total	14.3	0.50	15	0	96	78	136	13.14			
Surr: 1,2-Dichloroethane-d4	11.9	0.50	10	0	119	70	130	0			
Surr: Dibromofluoromethane	10.1	0.50	10	0	102	77	126	0			
Surr: p-Bromofluorobenzene	10.1	0.50	10	0	101	76	127	0			
Surr: Toluene-d8	9.54	0.50	10	0	95	79	122	0			

Associated samples: B20041033-001B, B20041033-002B, B20041033-003B



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20041033

BatchID: R340967

Date: 24-Apr-20

Run ID :Run Order: 5971A.I_200422C: 1		SampType: MS Tuning File			Lab ID: 22APR33_D_TUNE			Method: SW8260B			
Analysis Date: 04/23/20 00:14		Units: %			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	21.8		100	0	21.8	15	40				
75, % of mass 95	42.7		100	0	42.7	30	60				
96, % of mass 95	6.60		100	0	6.6	5	9				
173, % of mass 174	0.500		100	0	0.5	0	1.99				
174, % of mass 95	70.6		100	0	70.6	50	99.99				
175, % of mass 174	7.50		100	0	7.5	5	9				
176, % of mass 174	95.9		100	0	95.9	95	101				
177, % of mass 176	6.90		100	0	6.9	5	9				

Associated samples: B20041033-001B

Run ID :Run Order: 5971A.I_200422C: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV042220a			Method: SW8260B			
Analysis Date: 04/23/20 00:41		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.36	0.50	5	0	87	70	130				

Associated samples: B20041033-001B

Run ID :Run Order: 5971A.I_200422C: 3		SampType: Laboratory Control Sample			Lab ID: LCS042220a			Method: SW8260B			
Analysis Date: 04/23/20 01:09		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	4.41	0.50	5	0	88	74	133				

Associated samples: B20041033-001B

Run ID :Run Order: 5971A.I_200422C: 4		SampType: Method Blank			Lab ID: MBLK042220a			Method: SW8260B			
Analysis Date: 04/23/20 02:04		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.50									

Associated samples: B20041033-001B

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Tasman Geosciences Inc

B20041033

Login completed by: Leslie S. Cadreau

Date Received: 4/15/2020

Reviewed by: BL2000\gmccartney

Received by: rbb

Reviewed Date: 4/16/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	1.3°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Appendix B

April 2020 Groundwater Data Validation Report

DATA VALIDATION REPORT

Project Name	Lockwood Solvent Groundwater Plume Site
Task	April 2020 Semi-Annual, OS/VR and EB Groundwater Monitoring
QAPP	<i>Groundwater Monitoring Quality Assurance Project Plan, Operable Unit 2 Lockwood Solvent Groundwater Plume Site, Billings, Montana, Revision 1, ATC Associates Inc., Revised December 14, 2012</i>
Laboratory	Energy Laboratories, Inc.
Sample Delivery Group(s)	B20040570, B20040571, B20040689, B20040702, B20040782, B20040843, B20040945, B20040946, B20041045, B20041033
Matrix	Groundwater
Sampling Date(s)	4/08/20, 4/09/20, 4/10/20, 4/13/20, 4/14/20, 4/15/20
Analytes	VOCs and Total Organic Carbon, Dissolved metals, Chloride Sulfate, Headspace gas analysis
Laboratory Method	EPA Method 8260B, A5310C, A2320B, E300.0, E6010.20, SW8015M
Analysis Date(s)	4/11/20, 4/13/20, 4/14/20, 4/15/20, 4/16/20, 4/17/20, 4/20/20, 4/21/20, 4/22/20, 4/23/20, 4/25/20
Validator	Leilani Carlson
Report Date	June 28, 2020

Case Narrative

Sixty-five (65) groundwater samples were collected from sixty-one (61) wells by Tasman Geosciences (Tasman) at the Lockwood Solvent Groundwater Plume Site (LSGPS) between April 8, 2020 and April 15, 2020. Samples were collected in 40 mL VOA vials for volatile organic compounds (VOCs), 250 mL ambers for total organic carbon (TOC), 500 mL plastic bottles for Chloride Sulfate/Anions and Alkalinity, 250 mL plastic container for Dissolved Metals, and 40 mL VOA vials for Methane. Samples were hand delivered each sampling day by Tasman to Energy Laboratories, Incorporated (Energy) in Billings, Montana. Samples were analyzed for LSGPS contaminants of concern (COCs): PCE, TCE, *cis*-1,2-DCE, and VC by EPA Method 8260B. TOC analysis was subcontracted to Energy in Casper, Wyoming; thirty-three (33) samples were analyzed for TOC analysis by EPA Method A5310C. Five (5) samples were analyzed for Chloride Sulfate/Anions by E300.0, Alkalinity by A2320B, Dissolved Metals by ICP/ICPMS, and Methane by SW8015M.

Field duplicate samples were collected at a rate of five percent (5%). Sixty-one (61) samples were natural samples and four (4) were duplicates according to the following identification:

MW126GW036-701,	duplicate of MW126GW036
MW007GW036-701,	duplicate of MW007GW036
MW431-D-701,	duplicate of MW431-D
MW501-D-701	duplicate of MW501-D

One trip blank was included with each sample shipment for a total of ten (10) trip blanks. All trip blanks were analyzed for VOCs by EPA Method 8260B.

Data Validation Criteria

Data validation criteria used for this validation were specified in the Groundwater Monitoring Work Plan (GWMWP) and associated Groundwater Monitoring Quality Assurance Project Plan (MQAPP, [ATC, 2012]) and follow as applicable US Environmental Protection Agency Stage 2B guidelines for Superfund Use (EPA, 2009), and Montana Department of Environmental Quality data validation guidelines (MDEQ, 2010). Laboratory precision and accuracy criteria for liquid samples by EPA Method 8260B are summarized in Section 1.4.2.4 of the MQAPP (Tables 1-2 and 1-3).

Data Acceptability and Usability

This was a combined semi-annual and OS/VR sampling event. Of the 61 wells identified for monitoring, 65 samples were collected, resulting in 100% completeness, which is above the acceptance criterion specified in the MQAPP (ATC, 2012). Table 1 is an inventory of the samples collected and analyzed.

Data Qualifiers

Tables 2 and 3 are data verification and validation checklists, and Table 4 lists any qualified data. All data met all verification and validation acceptance criteria with one exception: See Table 4.

Matrix Spike and Matrix Spike Duplicate Source Samples

Matrix spikes and matrix spike duplicate requirements were met in accordance with Section 1.4.2.2.2 of the MQAPP.

Table 1
Sample Inventory

Sample ID	Laboratory ID	Sample ID	Laboratory ID
MW117RGW036	B20040570-001	MW455-D	B20040702-004
MW006GW036	B20040570-002	MW430-I	B20040702-005
MW409-D	B20040570-003	MW430-D	B20040702-006
MW409-I	B20040570-004	Trip Blank Lot03312020 B-JDB SHP0277	B20040702-007
MW408-D	B20040570-005	MW456-I	B20040782-001
MW408-I	B20040570-006	MW455-I	B20040782-002
PT-07GW036	B20040570-007	PT-04GW036	B20040782-003
Trip Blank Lot03312020 B-JDB SHP0277	B20040570-008	MW431-D-701	B20040782-004
MW126GW036-701	B20040571-001	MW431-D	B20040782-005
MW126GW036	B20040571-002	ME431-I	B20040782-006
MW008GW036	B20040571-003	MW009GW036	B20040782-007
MW121GW036	B20040571-004	Trip Blank Lot03312020B-JDB SHP0277	B20040782-008
MW004GW036	B20040571-005	MW459-D	B20040843-001
MW122GW036	B20040571-006	MW459-I	B20040843-002
Trip Blank Lot03312020 B-JDB SHP0277	B20040571-007	MW453-D	B20040843-003
MW005GW036	B20040689-001	MW453-I	B20040843-004
MW116GW036	B20040689-002	MW458-D	B20040843-005
MW128GW036	B20040689-003	Trip Blank Lot03312020 B-JDB SHP0277	B20040843-006
MW110GW036	B20040689-004	MW501-D-701	B20040945-001
MW100GW036	B20040689-005	MW501-D	B20040945-002
Trip Blank Lot03312020 B-JDB SHP0277	B20040689-006	MW501-I	B20040945-003
MW007GW036	B20040702-001	MW503-D	B20040945-004
MW007GW036	B20040702-002	MW503-I	B20040945-005
MW456-D	B20040702-003	MW500-D	B20040945-006

MW500-I	B20040945-007	MW502-D	B20041045-001
MW505-D	B20040945-008	MW502-I	B20041045-002
MW505-I	B20040945-009	MW504-D	B20041045-003
Trip Blank Lot02182020 B-AMS SHP0277	B20040945-010	MW504-I	B20041045-004
MW458-I	B20040946-001	MW506-D	B20041045-005
MW457-D	B20040946-002	MW506-I	B20041045-006
MW457-I	B20040946-003	PZ-22	B20041045-007
MW454-D	B20040946-004	PZ-17	B20041045-008
MW454-I	B20040946-005	PT-03GW034	B20041045-009
MW413-D	B20040946-006	Trip Blank Lot03312020 B-JDB SHP0277	B20041045-010
Trip Blank Lot03312020 B-JDB SHP0277	B20040946-007		
MW413-I	B20041033-001		
MW451-D	B20041033-002		
MW451-I	B20041033-003		
MW452-D	B20041033-004		
MW452-I	B20041033-005		
Trip Blank Lot03312020 B-JDB SHP0277	B20041033-006		

**Table 2
Data Verification Checklist**

Item	Yes	No	N/A	Note
Were samples checked for compliance with specifications, including type and location, to ensure that measurements represent the actual environment at a given time and location?	X			
Were sample collection procedures as specified in the task QAPP and associated SAP followed by Tasman personnel and verified by the Tasman Project Manager?	X			
Were any deviations from the planned sample handling procedures noted on chain-of-custody forms or in field log books?		X		
Did Tasman field personnel evaluate the sample containers and ensure they were appropriate for the nature of the same and type of data to be generated from the sample?	X			
Was each sample verified to ensure that the procedures used to generate the data were implemented as specified?	X			
Were QC checks performed during sample collection, handling and analysis?	X			
Were calibrations performed within an acceptable time prior to generation of measurement data?	X			

**Table 3
Data Validation Checklist**

Item	Yes	No	N/A	Note
Does the laboratory case narrative note any nonconformance issues with the analytical data?		X		1
Were sample chain-of-custody forms complete?		X		2
Were detection limits in accordance with the project requirements?		X		3
Were the requested analytical methods in compliance with project requirements?	X			
Were samples received in good condition within method specified requirements?	X			
Were samples analyzed within method specified or technical holding times?	X			
Were reported units appropriate for the associated sample matrix/matrices and method(s) of analysis?	X			
Do the laboratory reports include all analytes requested to be analyzed on the chain-of-custody?	X			
Did the laboratory indicate that the initial or continuing calibration verification results were within acceptable limits?	X			
Was the total number of method blank samples prepared or analyzed equal to at least 5% (1 in 20 samples)?	X			
Were laboratory blank samples free of analyte contamination?	X			
Was the total number of matrix spike samples prepared or analyzed equal to at least 5% (1 in 20 samples)?	X			
Were project samples used to prepare matrix spikes and matrix spike duplicates?	X			
Were MS/MSD percent recoveries and the MS/MSD RPD within project-specific limits?	X			4
Was the reference material used for the LCS the correct matrix and concentration?	X			
Was the total number of LCS samples analyzed equal to at least 5% (1 in 20) of the total number of samples?	X			
Were LCS samples prepared in the same manner as the associated samples?	X			
Were LCS/LCSD percent recoveries and LCS/LCSD RPDs within project-specific limits?	X			5
Were surrogate recoveries within project-specific, laboratory-specific and/or method-specific limits?	X			6
Were the number of equipment, trip or field blanks collected as required in the QAPP or SAP?	X			7
Were equipment, trip and/or field blank samples free of analyte contamination?	X			8
Were field duplicate samples collected as specified by the project SAP or QAPP?	X			9
Were field duplicate sample RPD values within project-specific limits?	X			10
Were laboratory duplicate sample RPD values within project-specific, laboratory-specific or method-specific limits?			X	
Were any data qualified? (If so, qualified data are summarized in Table 4.)		X		

Table 3 Notes

1. The case narrative indicates that tests associated with analyst identified as ELI-CA were subcontracted to Energy Laboratories, PO Box 247, Casper, WY, EPA Number WY00002; this was for Total Organic Carbon analyses.

2. For data package B20040782, Energy noted: "Total Organic Carbon requested on Chain of Custody for sample MW431-I however a container was not received. Total Organic Carbon analysis is not needed for sample MW431-I per phone conversation with Scott Krauszer on 4/10/20." No additional corrective action needed.

For data package B20040689, Energy noted: "All samples were collected on 04/09/2020 per the container labels." Review of the Chain of Custody indicates the form was not completed correctly. The sample collection date was entered for the first sample only. Tasman has been notified of this error, the samples were logged by Energy correctly, no corrective action needed.

For data package B20040570, Energy noted: "The collection time indicated on the container label for sample MW408-D is 14:06 and on the Chain of Custody it is 13:45. Proceeded with the collection indicated on the Chain of Custody." Upon review of daily notes, the Groundwater Sampling Field Data Sheet and Chain of Custody (COC) it was determined that the time written on the COC was incorrect. The actual sample collection time was 14:06. Energy has been asked to revise this on the analytical data.

3. The reporting limit for the following samples reflected a 10 times dilution.

- MW007GW036-701 B20040702-001
- MW431-D-701 B20040782-004
- MW431-D B20040782-005
- MW431-I B20040782-006
- MW501-I B20040945-003
- MW503-D B20040945-004
- MW500-D B20040945-006
- MW502-D B20041045-001
- MW502-I B20041045-002
- MW504-D B20041045-003
- MW413-I B20041033-001

The samples were diluted due to sample matrix interference.

4. MS/MSD percent recoveries and the MS/MSD RPD were within project-specific limits for LSGPS COCs.
5. LCS/LCSD percent recoveries and RPDs were within project-specific limits for LSGPS COC.
6. Surrogate recoveries were within project specific limits for LSGPS COCs:
7. Field blanks are not required during the groundwater monitoring field events (Section 1.4.2.2.1 of the MQAPP). Equipment rinse blanks are a requirement of the GWMP if re-usable equipment is used. Disposable sampling equipment was used for this sampling event.
8. Each cooler containing samples for VOC analysis included one trip blank; ten (10) trip blanks were analyzed for VOCs during this sampling event. All trip blanks were free of LSGPS COCs.
9. Field duplicate samples were collected at a rate of five percent (5%). Sixty-one (61) samples were natural samples and four (4) were duplicates according to the following identification:

- | | |
|-----------------|-------------------------|
| MW126GW036-701, | duplicate of MW126GW36 |
| MW007GW036-701, | duplicate of MW007GW036 |
| MW431-D-701, | duplicate of MW431-D |
| MW501-D-701 | duplicate of MW501-D |

10. Below are the results of the four (4) field duplicate samples for COCs. For liquid matrix samples, the RPD between duplicate samples must be less than 25% (Section 2.7 of the MQAPP. All data met validation acceptance criteria, with the following exceptions:

The RPD criterion was exceeded for field duplicate samples MW007GW036 and MW007GW036-701 for PCE and VC. The natural sample, MW007GW036 reported concentration of the compounds, and the duplicate samples was non-detect at a reporting limit 10 times that of the natural sample. The data

will be qualified with a J: the analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

Contaminant of Concern	Natural Sample	Result (µg/L)	Duplicate Sample	Result (µg/L)	RPD (%)
PCE	MW126GW036	19	MW126GW036-701	22	15
TCE	MW126GW036	11	MW126GW036-701	11	0
<i>cis</i> -1,2-DCE	MW126GW036	45	MW126GW036-701	48	6
VC	MW126GW036	0.69	MW126GW036-701	0.75	8
PCE	MW007GW036	0.55	MW007GW036-701	< 5.0	160
TCE	MW007GW036	3.5	MW007GW036-701	3.8 J	8
<i>cis</i> -1,2-DCE	MW007GW036	842	MW007GW036-701	872	3.5
VC	MW007GW036	0.81	MW007GW036-701	< 5.0	144
PCE	MW431-D	593	MW431-D-701	634	6.7
TCE	MW431-D	69	MW431-D-701	68	1.4
<i>cis</i> -1,2-DCE	MW431-D	75	MW431-D-701	76	1.3
VC	MW431-D	< 5.0	MW431-D-701	< 5.0	0
PCE	MW501-D	11	MW501-D-701	11	0
TCE	MW501-D	15	MW501-D-701	16	6.5
<i>cis</i> -1,2-DCE	MW501-D	78	MW501-D-701	80	2.5
VC	MW501-D	2.9	MW501-D-701	3.0	3.4

Table 4
Qualified Data Summary

Analyte	Sample ID	Laboratory ID	Laboratory Result	Validator Qualifier	Reason for Qualification
PCE	MW007GW036	B20040702-002	0.55	J	Exceeded RPD
VC	MW007GW036	B20040702-002	0.81	J	Exceeded RPD

References

ATC, 2012. Groundwater Monitoring Work Plan, Operable Unit 2, Lockwood Solvent Groundwater Plume Site, Billings, Montana, ATC Associates Inc., Billings, MT, Revised December 14.

Cardno, 2013. Remedial Design Assessment Quality Assurance Project Plan, Operable Unit 2, Lockwood Solvent Groundwater Plume Site, Billings, Montana, Revision 2, Cardno ATC, Billings, Montana, April 24.

EPA, 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C., EPA 540-R-08-005, January 13.

MDEQ, 2010. Montana Department of Environmental Quality Data Validation Guidelines for Evaluating Analytical Data, Montana Department of Environmental Quality, Helena, Montana, August 5.

Tasman, 2017. Second Revised Remedial Design Assessment Ozone Sparge/Vapor Recovery Pilot Test Work Plan, Sampling and Analysis Plan and Field Sampling Plan, Operable Unit 2, Lockwood Solvent Groundwater Plume Site, Billings, Montana, Tasman Geosciences, Inc., Billings, Montana, August 25.

Appendix C

April 2020 Groundwater Sampling Field Sheets and Notes

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/8 /2020 WELL NO. MW006
 PROJECT NUMBER: _____ TEMPERATURE: 41 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 8.72 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 27.75 ~~29.94~~ FT.
 E. Height of Water Column in casing (h = TD - SWL): 19.03 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.			
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	= _____ PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	= _____ PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: 18 minutes

OBSERVATIONS: start: 1119

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1122	~0.25	clear	none	9.6	7.20	1986	122.8	0.80
1125	~0.50	clear	none	9.7	7.12	1991	123.5	0.63
1128	~1.00	clear	none	9.7	7.08	1991	123.3	0.54
1131	~1.25	clear	none	9.7	7.08	1989	122.2	0.47
1134	~1.50	clear	none	9.8	7.08	1986	121.2	0.42
1137	~1.75	clear	none	9.7	7.08	1986	120.4	0.42

Total Volume of Water Purged From Well: ~ 1.75 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW006 GW036</u>	<u>1137</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
		<u>1 - 250 mL amber bottle</u>	<u>H3PO3</u>	<u>A5317C</u>

COMMENTS: Tubing set at ~ 20 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4 / 9 / 2020 WELL NO. MW007
 PROJECT NUMBER: _____ TEMPERATURE: 28 °F
 FIELD PERSONNEL: SK WEATHER: SUNNY, CALM

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 8.59 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 31.75 FT.
 E. Height of Water Column in casing (h = TD - SWL): 23.16 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 0923

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
0926	~ 0.25	light black	NONE	9.1	6.50	1912	-64.3	0.90
0929	~ 0.50	clear	NONE	9.1	6.63	1903	-94.3	0.76
0932	~ 1.00	clear	NONE	9.2	6.71	1900	-117.3	0.67
0935	~ 1.50	clear	NONE	9.2	6.75	1897	-133.6	0.63
0938	~ 2.00	clear	NONE	9.2	6.79	1894	-152.6	0.59

Total Volume of Water Purged From Well: ~ 2.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW007GW036/</u>	<u>0938</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>MW007GW036-701</u>	<u>0730</u>	<u>1 - 500 mL plastic bottle</u>	<u>None</u>	<u>E300.0/A2320 B</u>
		<u>1 - 250 mL plastic bottle (filtered)</u>	<u>HNO3</u>	<u>E6010.20</u>
		<u>2 - 40 mL VOA Vials</u>	<u>H2SO4</u>	<u>SW8015M</u>
		<u>1 - 250 mL Amber Glass</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~ 24 ft below TOC. Ferrous Iron (FE2) concentration - 1.0 mg/L

collected duplicate at fictitious time of 0730. Collected DMC sample (1 Liter)

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/10/2020 WELL NO. MW009
 PROJECT NUMBER: _____ TEMPERATURE: 58 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 7.42 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 29.19 FT.
 E. Height of Water Column in casing (h = TD - SWL): 21.77 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.	x	feet of water	=	PV (gallons)
2" diameter =	0.5 gals/ft	0.82 gals/ft	x	_____	=	_____ PV (gallons)
4" diameter =	2.0 gals/ft	3.25 gals/ft	x	_____	=	_____ PV (gallons)
6" diameter =	4.4 gals/ft	7.35 gals/ft	x	_____	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: 15 minutes

OBSERVATIONS: start: 1417

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1420	~0.25	clear	none	8.6	7.54	2050	40.5	3.08
1423	~0.50	clear	none	8.6	7.24	2102	41.9	1.08
1426	~1.00	clear	none	8.7	7.22	2109	41.1	0.77
1429	~1.50	clear	none	8.6	7.23	2113	40.5	0.68
1432	~2.00	clear	none	8.6	7.23	2130	39.0	0.59

Total Volume of Water Purged From Well: ~ 2.00 gallons

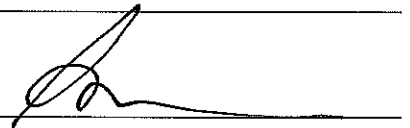
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW009 GW036</u>	<u>1432</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1-125ml amber bottle</u>	<u>H3PO4</u>	<u>A5310C</u>
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~ 23 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/8/2020 WELL NO. MW117R
 PROJECT NUMBER: _____ TEMPERATURE: 31 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 8.30 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 36.75 FT.
 E. Height of Water Column in casing (h = TD - SWL): 28.45 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1026

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1029	~0.25	CLEAR	NONE	9.0	6.47	2155	148.5	0.77
1032	~0.50	CLEAR	NONE	9.2	6.76	2129	136.9	0.61
1035	~1.00	CLEAR	NONE	9.1	6.85	2131	131.0	0.51
1038	~1.25	CLEAR	NONE	9.1	6.82	2129	126.0	0.48
1041	~1.50	CLEAR	NONE	9.2	6.96	2128	120.4	0.47

Total Volume of Water Purged From Well: ~ 1.50 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW117R GW036</u>	<u>1041</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 250 mL Amber glass</u>	<u>H3PO4</u>	<u>A5310 R</u>

COMMENTS: Tubing set at ~ 31 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/8/2020 WELL NO. MW408-I
 PROJECT NUMBER: _____ TEMPERATURE: 45 °F
 FIELD PERSONNEL: JR WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.17 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 17.85 FT.
 E. Height of Water Column in casing (h = TD - SWL): 13.68 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: spot: 1420

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1423	~0.25	clear	none	9.4	7.75	2527	60.2	11.66
1426	~0.50	clear	none	9.6	7.69	2556	64.2	11.08
1429	~1.00	clear	none	9.6	7.65	2539	68.0	10.93
1432	~1.50	clear	none	9.6	7.63	2527	70.5	10.91
1435	~2.00	clear	none	9.7	7.61	2509	72.9	10.79

Total Volume of Water Purged From Well: ~ 2.00 gallons

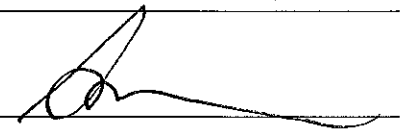
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW408-I</u>	<u>1435</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~15.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/8/2020 WELL NO. MW408-D
 PROJECT NUMBER: _____ TEMPERATURE: 45 °F
 FIELD PERSONNEL: SK WEATHER: slugg, calm

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.28 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 25.88 FT.
 E. Height of Water Column in casing (h = TD - SWL): 21.60 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter =	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter =	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter =	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: 21 minutes

OBSERVATIONS: start: 1345

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
<u>1348</u>	<u>~0.25</u>	<u>clear</u>	<u>none</u>	<u>10.2</u>	<u>7.57</u>	<u>2227</u>	<u>70.9</u>	<u>2.84</u>
<u>1351</u>	<u>~0.50</u>	<u>clear</u>	<u>none</u>	<u>10.6</u>	<u>7.58</u>	<u>2232</u>	<u>71.6</u>	<u>2.09</u>
<u>1354</u>	<u>~1.00</u>	<u>clear</u>	<u>none</u>	<u>10.7</u>	<u>7.57</u>	<u>2270</u>	<u>71.6</u>	<u>1.58</u>
<u>1357</u>	<u>~1.25</u>	<u>clear</u>	<u>none</u>	<u>10.8</u>	<u>7.55</u>	<u>2320</u>	<u>71.0</u>	<u>1.13</u>
<u>1400</u>	<u>~1.75</u>	<u>clear</u>	<u>none</u>	<u>10.9</u>	<u>7.52</u>	<u>2314</u>	<u>69.7</u>	<u>0.86</u>
<u>1403</u>	<u>~2.25</u>	<u>clear</u>	<u>none</u>	<u>10.8</u>	<u>7.51</u>	<u>2315</u>	<u>69.0</u>	<u>0.80</u>
<u>1406</u>	<u>~2.75</u>	<u>clear</u>	<u>none</u>	<u>10.8</u>	<u>7.51</u>	<u>2320</u>	<u>68.7</u>	<u>0.77</u>

Total Volume of Water Purged From Well: ~ 2.75 gallons

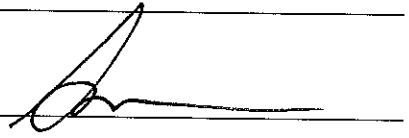
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW408-D</u>	<u>1406</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL amber bottle</u>	<u>H₂PO₄</u>	<u>AS310 C</u>

COMMENTS: Tubing set at ~ 23.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/8/2020 WELL NO. MW409-I
 PROJECT NUMBER: _____ TEMPERATURE: 45 °F
 FIELD PERSONNEL: SK WEATHER: sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.90 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 16.12 FT.
 E. Height of Water Column in casing (h = TD - SWL): 12.22 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: START: 1258

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1301	~0.25	CLEAR	NDMS	8.5	7.44	2576	54.4	10.67
1304	~0.50	CLEAR	NDMS	8.7	7.43	2535	55.7	10.27
1307	~1.00	CLEAR	NDMS	8.7	7.39	2512	57.5	9.78
1310	~1.50	CLEAR	NDMS	8.8	7.39	2506	57.7	9.68
1313	~2.00	CLEAR	NDMS	8.8	7.38	2513	58.5	9.60

Total Volume of Water Purged From Well: ~ 2.00 gallons

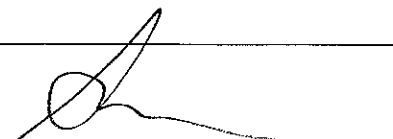
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW409-I</u>	<u>1313</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL amber</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~ 14 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/8/2020 WELL NO. MW409-D
 PROJECT NUMBER: _____ TEMPERATURE: 42 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.92 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 24.70 FT.
 E. Height of Water Column in casing (h = TD - SWL): 20.78 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>			
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	_____ feet of water	= _____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	_____ feet of water	= _____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	_____ feet of water	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: start: 1220

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1223	~0.25	clear	none	9.2	7.29	1997	134.8	1.39
1226	~0.50	clear	none	9.9	7.20	2028	126.4	0.95
1229	~1.00	clear	none	10.1	7.19	2033	134.8 83.4	1.21
1232	~1.50	clear	none	10.1	7.20	2034	70.5	1.28
1235	~2.00	clear	none	10.1	7.21	2036	49.7	1.52
1238	~2.50	clear	none	10.2	7.21	2033	34.8	1.73

Total Volume of Water Purged From Well: ~ 2.50 gallons

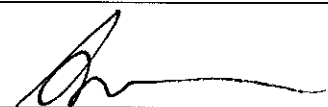
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW409-D</u>	<u>1238</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1-125 mL amber</u>	<u>H3PO4</u>	<u>A5310C</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~ 22.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.5 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/15/2020 WELL NO. MW413-I
 PROJECT NUMBER: _____ TEMPERATURE: 37 °F
 FIELD PERSONNEL: SK WEATHER: cloudy, light breeze

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 5.17 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 20.34 FT.
 E. Height of Water Column in casing (h = TD - SWL): 15.17 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: 15 minutes

OBSERVATIONS: start: 0937

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
0940	~0.25	clear	none	8.9	6.86	1686	-53.6	0.59
0943	~0.50	clear	none	9.0	6.31	1663	-95.6	0.66
0946	~1.00	clear	none	9.0	6.35	1668	-114.2	0.55
0949	~1.50	clear	none	9.1	6.48	1678	-124.2	0.54
0952	~2.00	clear	none	9.1	6.55	1690	-130.3	0.53

Total Volume of Water Purged From Well: ~ 2.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s) <u>MW413-I</u>	Time <u>0952</u>	Number/Size of Container(s) <u>3 - 40 mL VOA Vials</u>	Preservative <u>HCl</u>	Analysis <u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL amber bottle</u>	<u>H3PO4</u>	<u>AR314C</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~18.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: [Signature]

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/14 /2020 WELL NO. MW 413-D
 PROJECT NUMBER: _____ TEMPERATURE: 42 °F
 FIELD PERSONNEL: SK WEATHER: p. cloudy, light breeze

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 5.19 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 29.30 FT.
 E. Height of Water Column in casing (h = TD - SWL): 24.11 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: 21 minutes

OBSERVATIONS: start: 1440

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1443	~0.25	clear	none	10.2	7.28	2002	74.5	0.54
1446	~0.50	clear	none	10.4	7.20	2021	64.1	0.41
1449	~1.00	clear	none	10.5	7.19	2022	45.0	0.37
1452	~1.50	clear	none	10.6	7.19	2025	33.2	0.32
1455	~2.00	clear	none	10.6	7.20	2023	25.7	0.30
1458	~2.50	clear	none	10.7	7.22	2022	20.7	0.28
1501	~3.00	clear	none	10.6	7.22	2020	20.1	0.28

Total Volume of Water Purged From Well: ~ 3.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW 413-D</u>	<u>1501</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 500 mL plastic bottle</u>	<u>None</u>	<u>E300.0/A2320 B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 250 mL plastic bottle (filtered)</u>	<u>HNO3</u>	<u>E6010.20</u>
<u>↓</u>	<u>↓</u>	<u>2 - 40 mL VOA Vials</u>	<u>H2SO4</u>	<u>SW8015M</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber Bottle</u>	<u>H3PO4</u>	<u>A5310C</u>

COMMENTS: Tubing set at ~ 26.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Signature: [Signature]

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.

Tasman Geosciences, Inc.
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS OU2 DATE: 4/15/2020 WELL NO. MW451-T
 FIELD PERSONNEL: SK WEATHER/TEMPERATURE: 38° cloudy, windy

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.18 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 15.08 FT.
 E. Height of Water Column in casing (h = TD - SWL): 10.90 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: start: 1103

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1106	~0.25	light brown	none	8.9	7.18	1991	-33.4	1.24
1109	~0.50	clear	none	9.1	7.09	1998	-36.4	0.99
1112	~1.00	clear	none	9.1	7.14	1998	-38.2	0.91
1115	~1.50	clear	none	9.2	7.12	1996	-39.1	0.94
1118	~2.00	clear	none	9.2	7.12	1994	-39.6	0.93
1121	~2.50	clear	none	9.2	7.14	1994	-39.8	0.95

Total Volume of Water Purged From Well: ~ 2.50 gallons

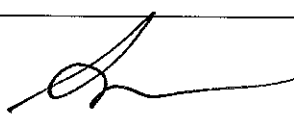
Purge Water Stored/Disposed of Where/How: poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative/Amount	Analysis
<u>MW451-I</u>	<u>1121</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B VOCs</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber bottles</u>	<u>H3PO4</u>	<u>AS310 C</u>

COMMENTS: Tubing set at ~ 13.5 ft below TOC. Fe2 concentration = 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences, Inc.
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS OU2 DATE: 4/15/2020 WELL NO. MW451-D
 FIELD PERSONNEL: SK WEATHER/TEMPERATURE: 40 cloudy, windy

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.18 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 24.36 FT.
 E. Height of Water Column in casing (h = TD - SWL): 20.18 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1029

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1032	~0.25	CLEAR	NONE	10.1	7.17	1963	-51.6	1.05
1035	~0.50	CLEAR	NONE	9.9	7.13	1972	-53.0	0.81
1038	~1.00	CLEAR	NONE	9.9	7.13	1968	-55.0	0.71
1041	~1.50	CLEAR	NONE	10.0	7.13	1969	-56.3	0.61
1044	~2.00	CLEAR	NONE	10.0	7.12	1967	-57.0	0.52

Total Volume of Water Purged From Well: ~ 2.00 gallons

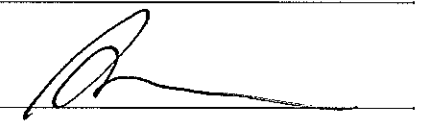
Purge Water Stored/Disposed of Where/How: poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: ---

Sample Number(s)	Time	Number/Size of Container(s)	Preservative/Amount	Analysis
<u>MW451-D</u>	<u>1044</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B VOCs</u>
<u>6</u>	<u>6</u>	<u>1 - 125 mL Amber bottle</u>	<u>H3PO4</u>	<u>AS310C</u>

COMMENTS: Tubing set at ~ 22 ft below TOC. Fe2 concentration = 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences, Inc.
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS OU2 DATE: 9/15/2020 WELL NO. MW 452-I
 FIELD PERSONNEL: SK WEATHER/TEMPERATURE: 35° light SWW, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.95 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 16.41 FT.
 E. Height of Water Column in casing (h = TD - SWL): 11.46 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>		
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	_____ feet of water = _____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	_____ feet of water = _____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	_____ feet of water = _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 24 minutes

OBSERVATIONS: start: 1252

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1255	~0.25	clear	NONE	9.4	7.18	2023	9.5	1.31
1258	~0.50	clear	NONE	9.4	7.15	2025	8.1	1.10
1301	~1.00	clear	NONE	9.5	7.15	2023	7.1	0.92
1304	~1.50	clear	NONE	9.5	7.14	2022	5.5	0.80
1307	~2.00	clear	NONE	9.5	7.14	2024	4.5	0.70
1310	~2.50	clear	NONE	9.5	7.14	2021	3.1	0.70
1313	~3.00	clear	NONE	9.5	7.14	2021	2.7	0.74
1316	~3.50	clear	NONE	9.5	7.14	2019	2.3	0.70

Total Volume of Water Purged From Well: ~ 3.50 gallons

Purge Water Stored/Disposed of Where/How: poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: ---

Sample Number(s)	Time	Number/Size of Container(s)	Preservative/Amount	Analysis
<u>MW 452-I</u>	<u>1316</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B VOCs</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 ml Amber bottle</u>	<u>H3PO4</u>	<u>A531DC</u>

COMMENTS: Tubing set at ~ 14 ft below TOC. Fe2 concentration = 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences, Inc.
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS OU2 DATE: 4/15/2020 WELL NO. MW452-D
 FIELD PERSONNEL: SK WEATHER/TEMPERATURE: 35° light snow, windy

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.94 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 25.01 FT.
 E. Height of Water Column in casing (h = TD - SWL): 20.07 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: start: 1211

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1214	~0.25	clear	NONE	10.0	7.18	2022	-2.7	0.46
1217	~0.50	clear	NONE	10.1	7.17	2025	-4.0	0.43
1220	~1.00	clear	NONE	10.1	7.13	2026	-5.5	0.41
1223	~1.50	clear	NONE	10.0	7.14	2028	-7.3	0.38
1226	~2.00	clear	NONE	10.0	7.14	2026	-8.2	0.34
1229	~2.50	clear	NONE	10.0	7.14	2022	-9.1	0.33

Total Volume of Water Purged From Well: ~ 2.50 gallons

Purge Water Stored/Disposed of Where/How: poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: ---

Sample Number(s) <u>MW452-D</u>	Time <u>1229</u>	Number/Size of Container(s) <u>3 - 40 mL VOA Vials</u>	Preservative/Amount <u>HCl</u>	Analysis <u>8260B VOCs</u>
<u>↓</u>	<u>↓</u>	<u>1-125 mL Amber bottle</u>	<u>H3PO4</u>	<u>A5310C</u>

COMMENTS: Tubing set at ~ 22 ft below TOC. Fe₂ concentration = 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/13/2020 WELL NO. MW453-I
 PROJECT NUMBER: _____ TEMPERATURE: 26 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, light breeze

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.25 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 11.15 FT.
 E. Height of Water Column in casing (h = TD - SWL): 7.90 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 12 minutes

OBSERVATIONS: Start: 1240

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1243	~0.25	clear	none	7.2	7.01	2039	37.8	0.79
1246	~0.50	clear	none	7.2	6.97	2038	36.5	0.59
1249	~1.00	clear	none	7.4	6.96	2039	33.8	0.57
1252	~1.50	clear	none	7.3	6.98	2052	30.3	0.57

Total Volume of Water Purged From Well: ~ 1.50 gallons

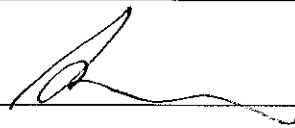
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW453-I</u>	<u>1252</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1-125 mL Amber bottle</u>	<u>H3PO4</u>	<u>AS310C</u>

COMMENTS: Tubing set at ~ 8.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/13/2020 WELL NO. MW453-D
 PROJECT NUMBER: _____ TEMPERATURE: 26 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, light breeze

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.41 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 23.02 FT.
 E. Height of Water Column in casing (h = TD - SWL): 19.61 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: Start: 1205

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1208	<u>~0.25</u>	<u>clear</u>	<u>NONE</u>	<u>8.3</u>	<u>7.00</u>	<u>2026</u>	<u>42.0</u>	<u>0.70</u>
1211	<u>~0.57</u>	<u>clear</u>	<u>NONE</u>	<u>8.4</u>	<u>6.93</u>	<u>2024</u>	<u>37.3</u>	<u>0.57</u>
1214	<u>~1.00</u>	<u>clear</u>	<u>NONE</u>	<u>8.4</u>	<u>6.94</u>	<u>2026</u>	<u>31.4</u>	<u>0.51</u>
1217	<u>~1.50</u>	<u>clear</u>	<u>NONE</u>	<u>8.5</u>	<u>6.92</u>	<u>2024</u>	<u>26.9</u>	<u>0.52</u>
1220	<u>~2.00</u>	<u>clear</u>	<u>NONE</u>	<u>8.5</u>	<u>6.92</u>	<u>2025</u>	<u>23.6</u>	<u>0.52</u>

Total Volume of Water Purged From Well: ~ 2.00 gallons


Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW453-D</u>	<u>1220</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber Bottle</u>	<u>H3PO4</u>	<u>A5310C</u>

COMMENTS: Tubing set at ~ 20.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/14/2020 WELL NO. MW454-I
 PROJECT NUMBER: _____ TEMPERATURE: 39 °F
 FIELD PERSONNEL: JK WEATHER: p. cloudy, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.19 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 15.19 FT.
 E. Height of Water Column in casing (h = TD - SWL): 11.00 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1342

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1345	~0.25	clear	none	9.3	7.23	2052	70.4	0.83
1348	~0.50	clear	none	9.3	7.20	2051	68.1	0.72
1351	~1.00	clear	none	9.3	7.21	2049	65.6	0.64
1354	~1.50	clear	none	9.3	7.20	2048	64.3	0.62
1357	~2.00	clear	none	9.3	7.20	2048	63.9	0.62

Total Volume of Water Purged From Well: ~ 2.00 gallons

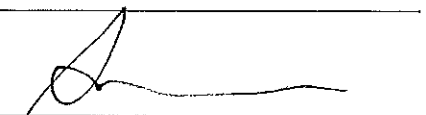
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s) <u>MW454-I</u>	Time <u>1357</u>	Number/Size of Container(s) <u>3 - 40 mL VOA Vials</u>	Preservative <u>HCl</u>	Analysis <u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1-125 mL Amber bottles</u>	<u>H3PO4</u>	<u>As3/nc</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~ 13 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/14/2020 WELL NO. MW454-D
 PROJECT NUMBER: _____ TEMPERATURE: 39 °F
 FIELD PERSONNEL: SK WEATHER: p. cloudy, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.09 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 24.53 FT.
 E. Height of Water Column in casing (h = TD - SWL): 20.44 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 21 minutes

OBSERVATIONS: start: 1250

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1253	~0.25	CLEAR	NONE	10.0	6.68	2054	87.4	3.01
1256	~0.50	CLEAR	NONE	9.9	6.86	2051	80.4	1.94
1259	~1.00	CLEAR	NONE	9.8	7.00	2043	76.3	1.48
1302	~1.50	CLEAR	NONE	9.9	7.06	2036	73.8	1.29
1305	~2.00	CLEAR	NONE	9.9	7.15	2040	70.2	1.18
1308	~2.50	CLEAR	NONE	9.9	7.20	2035	68.4	1.12
1311	~3.00	CLEAR	NONE	9.8	7.10	2039	66.7	1.00

Total Volume of Water Purged From Well: ~ 3.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW454-D</u>	<u>1311</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 500 mL plastic bottle</u>	<u>None</u>	<u>E300.0/A2320 B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 250 mL plastic bottle (filtered)</u>	<u>HNO3</u>	<u>E6010.20</u>
<u>↓</u>	<u>↓</u>	<u>2 - 40 mL VOA Vials</u>	<u>H2SO4</u>	<u>SW8015M</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber Bottle</u>	<u>H3PO4</u>	<u>A5310C</u>

COMMENTS: Tubing set at ~ 22 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Signature: [Signature]

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/10/2020 WELL NO. MW455-I
 PROJECT NUMBER: _____ TEMPERATURE: 46 °F
 FIELD PERSONNEL: SK WEATHER: SUNNY, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.15 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 15.19 FT.
 E. Height of Water Column in casing (h = TD - SWL): 11.04 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 12 minutes

OBSERVATIONS: start: 1033

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1036	~0.25	clear	NONE	9.5	6.81	1980	-274.7	0.74
1039	~0.50	clear	NONE	9.3	6.77	1961	-309.7	0.64
1042	~1.00	clear	NONE	9.4	6.75	1937	-328.9	0.64
1045	~1.50	clear	NONE	9.4	6.71	1913	-343.0	0.60

Total Volume of Water Purged From Well: ~ 1.50 gallons
 Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW455-I</u>	<u>1045</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber bottle</u>	<u>H3PO4</u>	<u>AS310 C</u>

COMMENTS: Tubing set at ~ 13 ft below TOC. Ferrous Iron (FE2) concentration - 0.5 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/9/2020 WELL NO. MW455-D
 PROJECT NUMBER: _____ TEMPERATURE: 40 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.23 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 24.68 FT.
 E. Height of Water Column in casing (h = TD - SWL): 20.45 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>	x	feet of water	=	_____	PV (gallons)
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	_____	=	_____	PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	_____	=	_____	PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	_____	=	_____	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 12 minutes

OBSERVATIONS: start: 1155

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1158	~0.25	clear	none	10.1	7.32	2036	-93.4	0.45
1201	~1.50	clear	none	10.2	7.28	2031	-93.7	0.40
1204	~1.00	clear	none	10.3	7.28	2033	-93.9	0.36
1207	~1.50	clear	none	10.3	7.24	2032	-97.5	0.33

Total Volume of Water Purged From Well: ~ 1.50 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW455-D</u>	<u>1207</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
↓	↓	<u>1 - 500 mL plastic bottle</u>	<u>None</u>	<u>E300.0/A2320 B</u>
↓	↓	<u>1 - 250 mL plastic bottle (filtered)</u>	<u>HNO3</u>	<u>E6010.20</u>
↓	↓	<u>2 - 40 mL VOA Vials</u>	<u>H2SO4</u>	<u>SW8015M</u>
↓	↓	<u>1 - 250 mL Amber Glass</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~ 22 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

collected DHC sample (1L:PK)

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.



Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/10/2020 WELL NO. MW 456-I
 PROJECT NUMBER: _____ TEMPERATURE: 43 °F
 FIELD PERSONNEL: SYK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.32 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 15.38 FT.
 E. Height of Water Column in casing (h = TD - SWL): 11.06 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: start: 0934

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
0937	~0.25	clear	NONE	8.6	6.37	2170	-7.5	3.04
0940	~0.50	clear	NONE	8.6	6.61	2105	-76.7	2.03
0943	~1.00	clear	NONE	8.4	6.74	1766	-95.6	1.83
0946	~1.50	clear	NONE	8.4	6.85	1688	-103.2	2.09
0949	~2.00	clear	NONE	8.4	6.90	1756	-109.2	2.11
0952	~2.50	clear	NONE	8.4	6.94	1802	-114.7	2.02

Total Volume of Water Purged From Well: ~ 2.50 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW 456-I</u>	<u>0952</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber bottles</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~ 13 ft below TOC. Ferrous Iron (FE2) concentration - 1.5 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in ft.
 4-inch hole.....0.65 gal/in ft.

Signature: [Signature]

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/9/2020 WELL NO. MW456-D
 PROJECT NUMBER: _____ TEMPERATURE: 35 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.59 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 26.99 FT.
 E. Height of Water Column in casing (h = TD - SWL): 22.40 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1055

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
<u>1058</u>	<u>~0.25</u>	<u>clear</u>	<u>none</u>	<u>9.8</u>	<u>7.33</u>	<u>2108</u>	<u>-115.8</u>	<u>0.67</u>
<u>1101</u>	<u>~0.50</u>	<u>clear</u>	<u>none</u>	<u>9.8</u>	<u>7.26</u>	<u>2105</u>	<u>-147.7</u>	<u>0.44</u>
<u>1104</u>	<u>~1.00</u>	<u>clear</u>	<u>none</u>	<u>9.8</u>	<u>7.25</u>	<u>2094</u>	<u>-176.8</u>	<u>0.36</u>
<u>1107</u>	<u>~1.50</u>	<u>clear</u>	<u>none</u>	<u>9.7</u>	<u>7.24</u>	<u>2087</u>	<u>-206.2</u>	<u>0.32</u>
<u>1110</u>	<u>~2.00</u>	<u>clear</u>	<u>none</u>	<u>9.9</u>	<u>7.25</u>	<u>2080</u>	<u>-231.2</u>	<u>0.29</u>

Total Volume of Water Purged From Well: ~ 2.00 gallons
 Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW456-D</u>	<u>1110</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
		<u>1 - 500 mL plastic bottle</u>	<u>None</u>	<u>E300.0/A2920-B</u>
		<u>1 - 250 mL plastic bottle (filtered)</u>	<u>HNO3</u>	<u>E6040.20</u>
		<u>2 - 40 mL VOA Vials</u>	<u>H2SO4</u>	<u>SW8015M*</u>
<u>MW456-D</u>	<u>1110</u>	<u>1 - 250 mL Amber Glass</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~24.5 ft below TOC. **Ferrous Iron (FE2) concentration - 1.0 mg/L**
Collected DHC sample (1 Liter)

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.



Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4 / 14 / 2020 WELL NO. MW457-I
 PROJECT NUMBER: _____ TEMPERATURE: 28 °F
 FIELD PERSONNEL: SK WEATHER: p. cloudy, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.86 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 14.95 FT.
 E. Height of Water Column in casing (h = TD - SWL): 10.09 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.			
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	= _____ PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	= _____ PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1112

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
<u>1115</u>	<u>~0.25</u>	<u>CLEAR</u>	<u>NONE</u>	<u>7.5</u>	<u>7.26</u>	<u>2077</u>	<u>-73.8</u>	<u>1.22</u>
<u>1118</u>	<u>~0.50</u>	<u>CLEAR</u>	<u>NONE</u>	<u>7.5</u>	<u>7.13</u>	<u>2063</u>	<u>-75.6</u>	<u>0.50</u>
<u>1121</u>	<u>~1.00</u>	<u>CLEAR</u>	<u>NONE</u>	<u>7.5</u>	<u>7.12</u>	<u>2060</u>	<u>-76.1</u>	<u>0.45</u>
<u>1124</u>	<u>~1.50</u>	<u>CLEAR</u>	<u>NONE</u>	<u>7.5</u>	<u>7.10</u>	<u>2058</u>	<u>-76.3</u>	<u>0.42</u>
<u>1127</u>	<u>~2.00</u>	<u>CLEAR</u>	<u>NONE</u>	<u>7.5</u>	<u>7.11</u>	<u>2056</u>	<u>-76.5</u>	<u>0.42</u>


Total Volume of Water Purged From Well: ~ 2.00 gallons
 Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW457-I</u>	<u>1127</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>L</u>	<u>↓</u>	<u>1 - 125 mL amber bottle</u>	<u>H3PO4</u>	<u>A5310 C</u>

COMMENTS: Tubing set at ~12.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4.14/2020 WELL NO. MW457-D
 PROJECT NUMBER: _____ TEMPERATURE: 28 °F
 FIELD PERSONNEL: SK WEATHER: p. cloudy, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.97 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 28.55 FT.
 E. Height of Water Column in casing (h = TD - SWL): 23.58 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 21 minutes

OBSERVATIONS: Start: 1033

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1036	~0.25	CLEAR	NONE	8.3	6.93	2372	-16.8	0.57
1039	~0.50	CLEAR	NONE	8.5	6.94	2389	-62.8	0.54
1042	~1.00	CLEAR	NONE	8.7	7.03	2390	-83.9	0.54
1045	~1.50	CLEAR	NONE	8.7	7.03	2394	-91.4	0.59
1048	~2.00	CLEAR	NONE	8.8	6.93	2393	-101.0	0.45
1051	~2.50	CLEAR	NONE	8.6	7.01	2403	-107.6	0.44
1054	~3.00	CLEAR	NONE	8.9	7.03	2423	-108.9	0.41

Total Volume of Water Purged From Well: ~ 3.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW457-D</u>	<u>1054</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1-125 mL Amber bottle</u>	<u>H3PO4</u>	<u>AS310C</u>

COMMENTS: Tubing set at ~ 26 ft below TOC. Ferrous Iron (FE2) concentration - 1.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/14/2020 WELL NO. MW458-I
 PROJECT NUMBER: _____ TEMPERATURE: 28 °F
 FIELD PERSONNEL: SK WEATHER: p. cloudy, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.87 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 13.56 FT.
 E. Height of Water Column in casing (h = TD - SWL): 8.69 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 0934

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
0937	~0.25	CLEAR	NONE	7.2	6.47	2161	117.6	0.71
0940	~0.50	CLEAR	NONE	7.3	6.63	2148	110.6	0.63
0943	~1.00	CLEAR	NONE	7.3	6.79	2142	103.8	0.53
0946	~1.50	CLEAR	NONE	7.3	6.87	2136	100.1	0.50
0949	~2.00	CLEAR	NONE	7.4	6.93	2137	98.9	0.47

Total Volume of Water Purged From Well: ~ 2.00 gallons

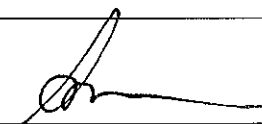
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW458-I</u>	<u>0949</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL amber bottle</u>	<u>H3PO4</u>	<u>A5314 C</u>

COMMENTS: Tubing set at ~ 11 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in ft.
 4-inch hole.....0.65 gal/in ft.

Signature: 

1/2

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/13/2020 WELL NO. MW458-D

PROJECT NUMBER: _____ TEMPERATURE: 30 °F

FIELD PERSONNEL: SK WEATHER: Sunny, Windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.

B. Static Water Level (SWL) below top of casing/piezometer: 5.01 FT.

C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.

D. Total Depth of well (TD) from top of casing/piezometer: 28.69 FT.

E. Height of Water Column in casing (h = TD - SWL): 23.68 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.			
2" diameter =	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	= _____ PV (gallons)
4" diameter =	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	= _____ PV (gallons)
6" diameter =	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: _____ ~ _____ minutes

OBSERVATIONS: Start: 1331

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1334	~0.25	CLEAR	NONE	9.2	7.99	3235	51.1	0.94
1337	~0.50	CLEAR	NONE	9.3	7.97	3169	37.8	0.61
1340	~1.00	CLEAR	NONE	9.2	7.94	3112	26.2	0.51
1343	~1.50	CLEAR	NONE	9.1	7.99	3059	11.9	0.45
1346	~2.00	CLEAR	NONE	9.4	7.93	3017	-3.0	0.44
1349	~2.50	CLEAR	NONE	9.3	7.92	3012	-12.7	0.44
1352	~3.00	CLEAR	NONE	9.4	7.93	3009	-22.8	0.41
1355	~3.30	CLEAR	NONE	9.5	7.92	2996	-34.3	0.41

Total Volume of Water Purged From Well: ~ 5.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW 458-D</u>	<u>1404</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1-125 mL Amber bottle</u>	<u>H3PO4</u>	<u>AS310C</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~ 26 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
1-inch hole.....0.041 gal/in.ft.
2-inch hole.....0.16 gal/in.ft.
4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/13/2020 WELL NO. MW 458-D cont'd
PROJECT NUMBER: _____ TEMPERATURE: 30 °F
FIELD PERSONNEL: SK WEATHER: Sunny, windy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
B. Static Water Level (SWL) below top of casing/piezometer: _____ FT.
C. DNAPL Level below top of casing/piezometer: scap. 1 FT. DNAPL Thickness: _____ FT.
D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ See pg. 1 minutes

OBSERVATIONS:

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1358	~4.00	clear	none	9.5	7.91	2999	-42.8	0.40
1401	~4.50	clear	none	9.5	7.91	2964	-49.3	0.38
1404	~5.00	clear	none	9.5	7.89	2942	-50.8	0.37

Total Volume of Water Purged From Well: ~ gallons

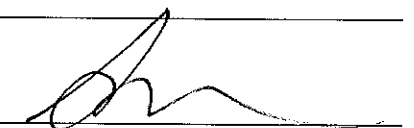
Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>See pg. 1</u>	_____	3 - 40 mL VOA Vials	HCl	8260B
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~ 26 ft below TOC. Ferrous Iron (FE2) concentration - See pg. 1 mg/L

Casing Capacities:
1-inch hole.....0.041 gal/lin.ft.
2-inch hole.....0.16 gal/lin.ft.
4-inch hole.....0.65 gal/lin.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/13/2020 WELL NO. MW459-I
 PROJECT NUMBER: _____ TEMPERATURE: 22 °F
 FIELD PERSONNEL: SK WEATHER: smg, light wind

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.54 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 13.20 FT.
 E. Height of Water Column in casing (h = TD - SWL): 9.66 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 21 minutes

OBSERVATIONS: start: 1053

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1056	~0.25	CLEAR	NONE	7.8	7.13	2039	290.6	0.74
1059	~0.50	CLEAR	NONE	7.9	7.09	2029	269.0	0.64
1102	~1.00	CLEAR	NONE	8.0	7.03	2022	261.1	0.59
1105	~1.50	CLEAR	NONE	7.8	7.03	2026	81.7	1.03
1108	~2.00	CLEAR	NONE	7.9	7.00	2017	42.4	0.60
1111	~2.50	CLEAR	NONE	7.9	7.01	2016	18.1	0.61
1114	~3.00	CLEAR	NONE	7.8	7.00	2009	18.0	0.58

Total Volume of Water Purged From Well: ~ 3.00 gallons


Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW459-I</u>	<u>1114</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL amber bottle</u>	<u>H3PO4</u>	<u>A5310C</u>

COMMENTS: Tubing set at ~ 10.5 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/13/2020 WELL NO. MW459-D
 PROJECT NUMBER: _____ TEMPERATURE: 22 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, light wind

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.96 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 28.45 FT.
 E. Height of Water Column in casing (h = TD - SWL): 24.49 FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1021

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1024	~0.25	CLEAR	MIN	9.5	6.84	2103	286.6	7.2
1027	~0.50	CLEAR	MIN	9.4	6.98	2105	286.9	0.71
1030	~1.00	CLEAR	MIN	9.6	7.05	2090	287.2	0.64
1033	~1.50	CLEAR	MIN	9.5	7.07	2083	287.0	0.61
1036	~2.00	CLEAR	MIN	9.7	7.09	2081	287.4	0.60

Total Volume of Water Purged From Well: ~ 2.00 gallons


Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>MW459-D</u>	<u>1036</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL Amber bottle</u>	<u>H3PO4</u>	<u>A5310C</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

COMMENTS: Tubing set at ~ 26 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 4/10/2020 WELL NO. PT-04
 PROJECT NUMBER: _____ TEMPERATURE: 48 °F
 FIELD PERSONNEL: SK WEATHER: Sunny, calm

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 7.69 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: 27.90 FT.
 E. Height of Water Column in casing (h = TD - SWL): 20.21 FT.
 F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: Start: 1128

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
<u>1132</u>	<u>~0.25</u>	<u>clear</u>	<u>NONE</u>	<u>9.6</u>	<u>7.61</u>	<u>2635</u>	<u>-191.8</u>	<u>1.10</u>
<u>1134</u>	<u>~0.50</u>	<u>clear</u>	<u>NONE</u>	<u>9.8</u>	<u>7.63</u>	<u>2645</u>	<u>-229.4</u>	<u>0.79</u>
<u>1137</u>	<u>~1.00</u>	<u>clear</u>	<u>NONE</u>	<u>9.7</u>	<u>7.61</u>	<u>2574</u>	<u>-260.5</u>	<u>0.58</u>
<u>1140</u>	<u>~1.50</u>	<u>clear</u>	<u>NONE</u>	<u>9.8</u>	<u>7.62</u>	<u>2534</u>	<u>-289.3</u>	<u>0.54</u>
<u>1143</u>	<u>~2.00</u>	<u>clear</u>	<u>NONE</u>	<u>9.9</u>	<u>7.60</u>	<u>2469</u>	<u>-275.0</u>	<u>0.51</u>

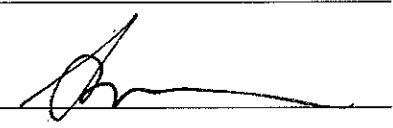
Total Volume of Water Purged From Well: ~ 2.00 gallons
 Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>PT-04GW036</u>	<u>1143</u>	<u>3 - 40 mL VOA Vials</u>	<u>HCl</u>	<u>8260B</u>
<u>↓</u>	<u>↓</u>	<u>1 - 125 mL amber bottle</u>	<u>H3PO4</u>	<u>AU310L</u>

COMMENTS: Tubing set at ~ 19 ft below TOC. Ferrous Iron (FE2) concentration - 0.0 mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin.ft.
 4-inch hole.....0.65 gal/lin.ft.

Signature: 

Tasman Geosciences Water Quality Meter Calibration Log

Project Name: LSS Semi-Annual & OS/VR GW Event **Date:** 4-8-2020
Weather: 32°F / Mostly cloudy / ~ 5 mph
Instrument: YSI Professional Plus **Calibrated By:** J. Ball
Serial Number: 15E106535

Initial Calibration **Barometric Pressure (mm HG):** 686.7

Parameter	Standard	Units	Temperature (°C)	Pre-Calibration Reading	Post-Calibration Reading
pH	7	s.u.	19.3	6.97	7.00
	4	s.u.	19.5	4.02	4.00
	10	s.u.	19.1	10.01	10.01
Specific Conductance	1413	µS/cm	19.2	1397	1412
		mS/cm			
Dissolved Oxygen		%	18.9	115.7	90.3
		mg/L			
ORP	100	mV	18.6	100.4	100.0

Post Field (Drift) Calibration **Barometric Pressure (mm HG):**

Parameter	Standard	Units	Temperature (°C)	Pre-Calibration Reading	Post-Calibration Reading
pH	7	s.u.			
	4	s.u.			
	10	s.u.			
Specific Conductance		µS/cm			
		mS/cm			
Dissolved Oxygen		%			
		mg/L			
ORP		mV			

Notes:

Tasman Geosciences Water Quality Meter Calibration Log

Project Name: LSS Semi Annual OS/UR EB GW Sampling Date: 4-13-20
 Weather: 18° sunny
 Instrument: VSI professional series Calibrated By: S. KRAUSZOR
 Serial Number: 15L 101065

Initial Calibration Barometric Pressure (mm HG): 685.3

Parameter	Standard	Units	Temperature (°C)	Pre-Calibration Reading	Post-Calibration Reading
pH	7	s.u.	18.4	7.00	7.00
	4	s.u.	18.9	4.91	4.00
	10	s.u.	18.1	9.92	10.00
Specific Conductance	1413	µS/cm	18.6	1401	1413
	-	mS/cm	-	-	-
Dissolved Oxygen	-	%	18.7	94.7	100.0
	-	mg/L	18.6	117.3	89.5
ORP	100.0	mV	18.7	94.7	100.0

Post Field (Drift) Calibration Barometric Pressure (mm HG):

Parameter	Standard	Units	Temperature (°C)	Pre-Calibration Reading	Post-Calibration Reading
pH	7	s.u.			
	4	s.u.			
	10	s.u.			
Specific Conductance		µS/cm			
		mS/cm			
Dissolved Oxygen		%			
		mg/L			
ORP		mV			

Notes:

4-8-20 Semi-Annual, OS/UR, EB GWSampling

0730 Calibrated V.S.I.

0843 Arrived at site, conducted JSA

0910 Turned off OS/UR system during
Sampling event

1026 started purging MW117R

1041 collected sample MW117R GW036

1119 started purging MW006

1137 collected sample MW006 GW036.

1221 started purging MW409-D

1233 Drzer being transported from site from
land farm expansion project.

1238 Collected sample MW409-D

1258 purging MW409-I

1313 collected sample from MW409-I

1345 purging MW409-D

1406 collected sample ^{MW}408-D

1420 started purging MW408-I

1435 collected sample MW408-I

1510 started purging PT-07

1528 collected sample PT-07 GW036

1556 samples dropped off at Energy Lab.

30°
partly cloudy
NE 24 mph
SK

4-9-20 Semi-Annual, OS/UR, EB, DHC GW sampling.

0700 calibrated V.S.I.

0815 arrived at site, conducted JSA

0825 loaded equipment into truck.

0923 started purging MW007

0938 collected MW007 GW036 ad duplicate
MW007 GW036-701, ad DHC sample

1055 started purging MW456-D

1140 collected MW456-D sample ad DHC sample

1155 started purging MW455-D

1207 collected sample from MW455-D ad DHC

1300 MW410-I/D ad MW412-I/D had
EOS in the well and were not sampled.

1328 started purging MW430-I.

1346 collected MW430-I ad DHC sample

1400 AS-49 (sparge point) was plugged ad
abandoned by J. Baill.

1405 Prepping DHC samples for shipment

1455 started purging MW430-D.

1513 collected sample MW430-D.

1530 unloaded equipment in shop, left site.

1540 Dropped off samples at Energy Lab.

SK
28°
ENE 10 mph
sunno

DN
Return to Base

4-10-20 LSS Semi Annual, DS/VR, EB GWSampling

0730 Calibrated KSI.

0853 Arrived at site, conducted JSA

0908 Loaded equipment in truck

0918 Set up on MW456 -I,

0934 started purging MW456 -I

0952 completed - sampling MW456 -I

1033 started purging MW455 -I,

1045 collected sample MW455 -I

1128 started purging PT-04

1143 collected sample PT-04 GW036

1245 started purging MW431 -D

1309 collected sample MW431 -D and duplicate MW431 -D-701 with fictitious time of 1230.

1325 started purging MW431 -I.

1343 collected sample MW431 -I

1417 started purging MW009

1432 collected sample MW009 GW036.

1457 Unloaded sampling equipment.

1505 left site

1517 Dropped samples at Energy Lake.

SK
43°
wsw 6 mph
sunny

SK

4-13-20 LSS Semi Annual, DS/VR, EB GWSampling

0730 Calibrated KSI

0915 Arrived at site, conducted JSA.

0930 Loaded equipment into truck

0950 Set up on MW459 -I/D

1021 started purging MW459 -D

1036 collected sample MW459 -D.

1053 started purging MW459 -I

1114 collected sample from MW459 -I

1205 started purging MW453 -D

1220 collected sample from MW453 -D

1240 started purging MW453 -I

1252 collected sample MW453 -I

1331 started purging MW458 -D

1404 collected sample MW458 -D

1400 Bishaw Engineering on site to survey replacement wells at LTC expansion.

1440 Unloaded equipment at left site.

1446 Dropped samples at Energy Lake.

SK
22°
nw 6 mph
sunny

SK

04-14-20 Semi Annual, OS/VR, EB GW Sampling

0730 Calibrated YSI.

0840 Arrived on site, conducted JSA

0855 Loaded sampling equipment into truck.

0906 Setup on MW 458-I.

0936 Started purging MW 458-I

0949 Collected sample MW 458-I

1033 started purging MW 457-D

1054 Collected sample MW 457-D

1112 started purging MW 457-I

1127 collected sample MW 457-I

1145 off site to get additional tubing.

1209 Back on site, setting up at MW 454-I/D

1253 started purging MW 454-D

1311 collected sample MW 454-D

1342 started purging MW 454-I

1357 collected sample MW 454-I

1440 started purging MW 413-D

1501 collected sample MW 413-D

1530 Unloaded equipment, off-site.

1544 Dropped off samples at Energy Lab.

SK

30°

p. cloudy
light wind

DK

04-15-20 LSS Semi Annual, OS/VR, EB GW sampling

0730 Calibrated YSI.

0850 Arrived on site, conducted JSA

0900 Loaded truck with sampling equipment

0913 setting up on MW 413-I

0937 started purging MW 413-I

0952 collected sample MW 413-I

1029 started purging MW 451-D.

1044 collected sample MW 451-D.

1103 started purging MW 451-I.

1121 collected sample MW 451-I.

1211 started purging MW 452-D.

1229 collected sample MW 452-D

1252 started purging MW 452-I

1316 collected sample MW 452-I

1343 Unloading sampling equipment.

1355 Emptying approx. 70 gallons of purge

water from truck tank to shop purge tank.

1405 emptied truck tank.

1416 offsite, taking samples to Energy Lab.

1424 Dropped samples at Energy Lab.

35

light overcast
NW E. 16 mph

SK

cloudy

DK

Rite in the Rain

Location LSGPOUZ

Date 4-8-2020

87

Project / Client April 2020 Semi-Annual GW sampling

0800 Calibrate YSI in office, SK shut off core pump system
0927 Arrive on site, complete JSA
0939 Load equipment from ship and purge tank in
truck.

37°F

Misty, cloudy

NNE 6 mph

JB

1030 Begin purging MW126

1107 Collect natural sample MW126GW036 and duplicate sample
MW126GW036-701 labeled w/ fictitious time of 0945

1144 Begin purging MW008

1200 Collect sample MW008GW036

1221 Begin purging MW121

1304 Collect sample MW121GW036

1335 Begin purging MW004GW036 JB

1350 Collect sample MW004GW036

1410 Begin purging MW122

1447 Collect sample MW122GW036

1504 Offsite to hand deliver samples to Energy Laboratory.

1514 Hand deliver samples to Energy

JB

Rite in the Rain

88

Location LSGPS 042

Date ⁴ 8-9-2020

Project / Client April 2020 Semi-Annual GW Sampling

32°F / Fair / E 9 mph / JB

- 0715 Calibrate YSI in office
- 0848 Arrive on site, complete JSA and load equipment in shop.
- 0920 Begin purging MW005
- 0936 Collect sample MW005GW036
- 0958 Begin purging MW116
- 1014 Collect sample MW116GW036
- 1043 Begin purging MW128
- 1108 Collect sample MW128GW036
- ~~1222~~ ¹²⁰³ Begin purging MW110
- 1222 Collect sample MW110GW036
- 1247 Begin purging MW100
- 1303 Collect sample MW100GW036
- 1429 Drain ~34 gallons from purge tank to IDW tank in shop
- 1433 Finish draining purge tank, unload equipment in shop.
- 1441 Off site to deliver samples to Energy Laboratories.
- 1448 Hand deliver samples to Energy.

JB

89

Location LSGPS 042

Date ⁴ 8-14-2020

Project / Client April 2020 Semi-Annual GW Sampling

33°F / Mostly Cloudy / WSW 19 mph / JB

- 0715 Calibrate YSI in office.
- 0822 Arrive on site, complete JSA and load equipment from shop.
- 0923 Begin purging MW501-D
- 0957 Collect natural sample ^{MW501-D} and duplicate sample MW501-D-701 labeled w/ fictitious time of 0830.
- 1013 Begin purging MW501-I
- 1031 Collect sample MW501-I
- 1105 Begin purging MW503-D
- 1133 Collect sample MW503-D
- 1145 Begin purging MW503-I
- 1201 Collect sample MW503-I
- 1233 Begin purging MW500-D
- 1304 Collect sample MW500-D
- 1326 Begin purging MW500-I
- 1351 Collect sample MW500-I
- 1424 Begin purging MW505-D
- ^{1443 JB} ~~1500~~ Collect sample MW505-D
- 1500 Begin purging MW505-I
- 1516 Collect sample MW505-I
- 1530 Drain ~26 gallons from purge tank to IDW tank in shop.
- 1536 Finish draining purge tank, unload equipment in shop.
- 1542 Off site to deliver samples to Energy Laboratories.
- 1550 Hand deliver samples to Energy.

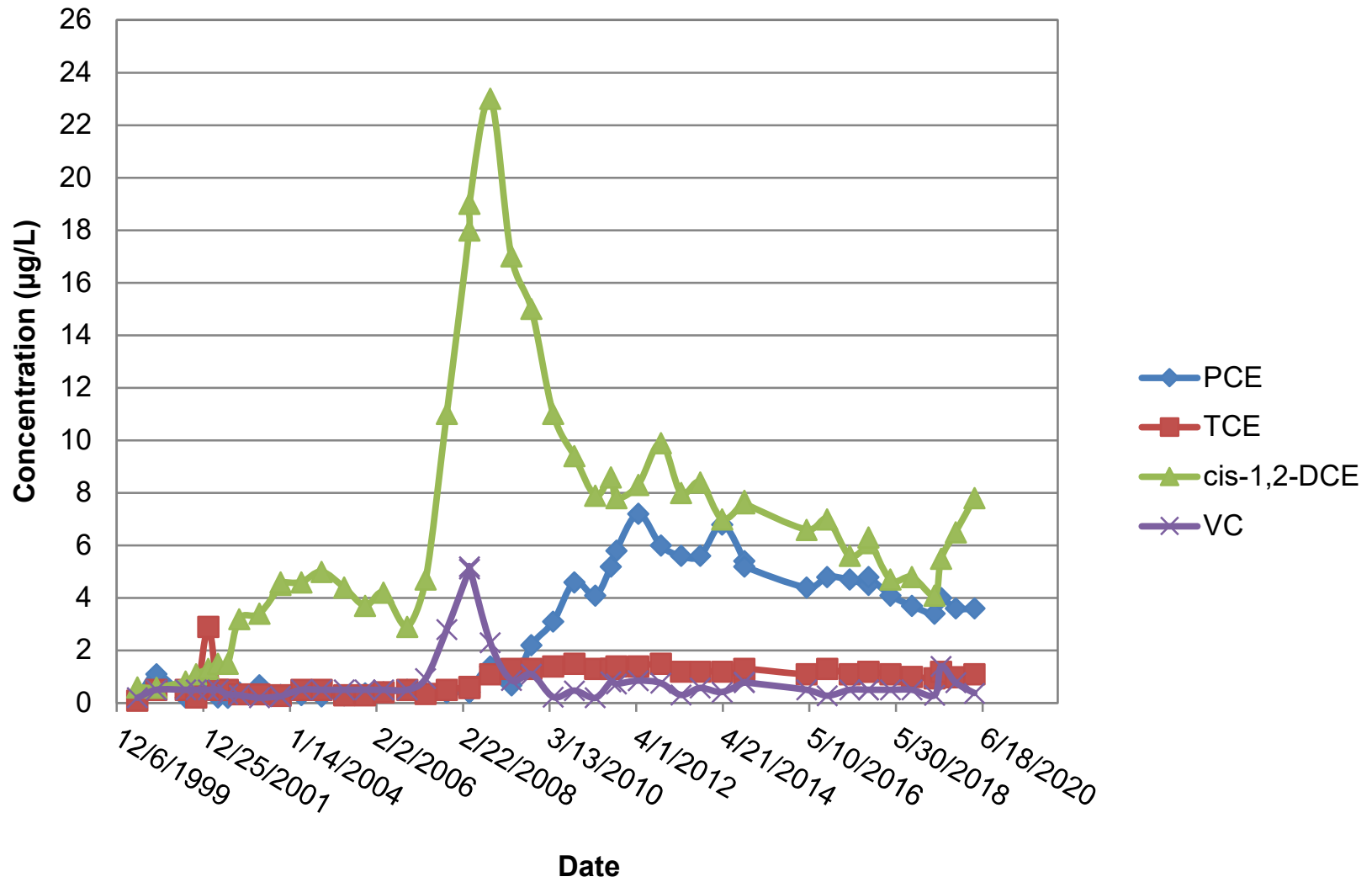
JB

Return to the Bin

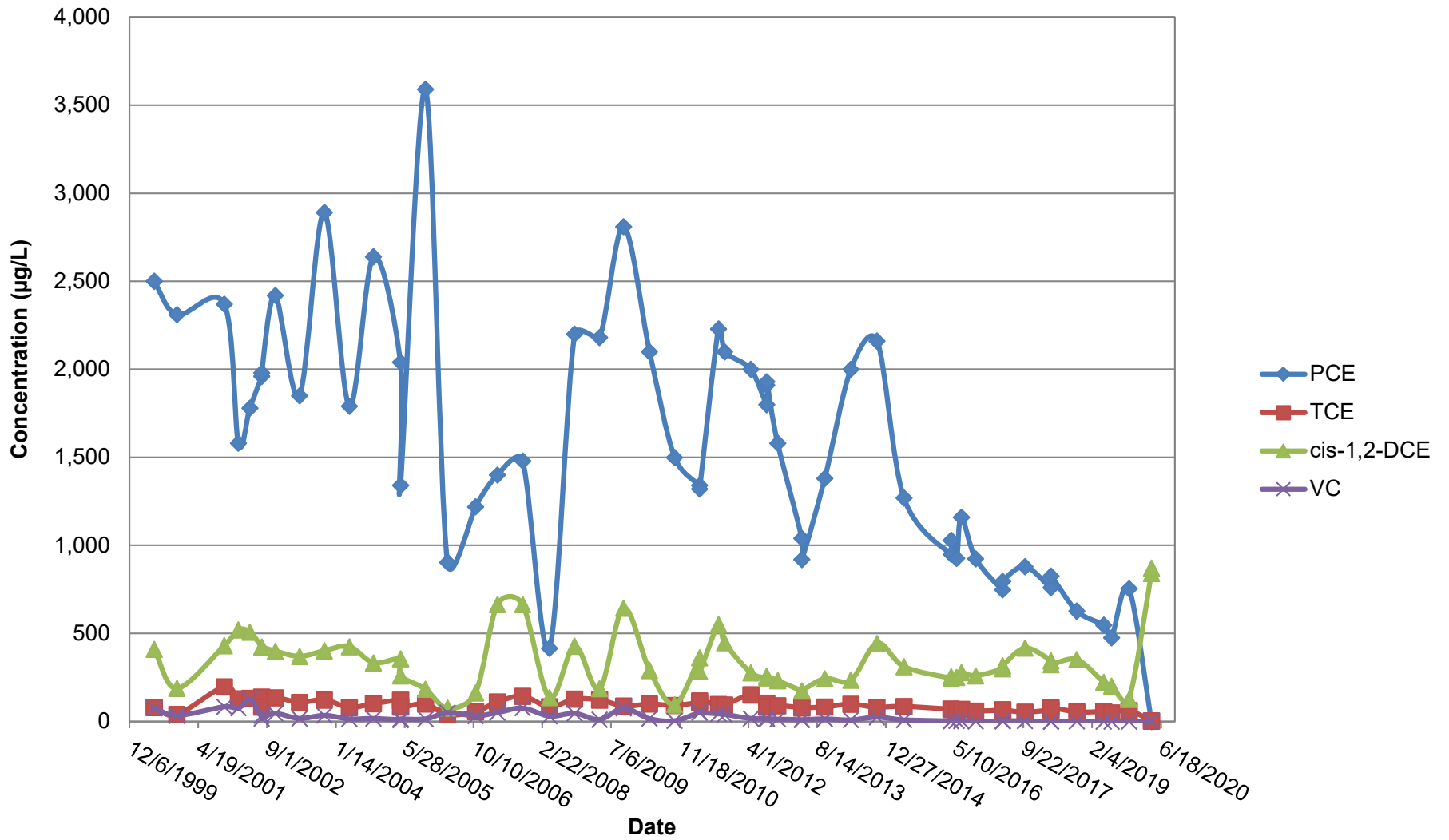
Appendix D

COC Concentration Trend Graphs

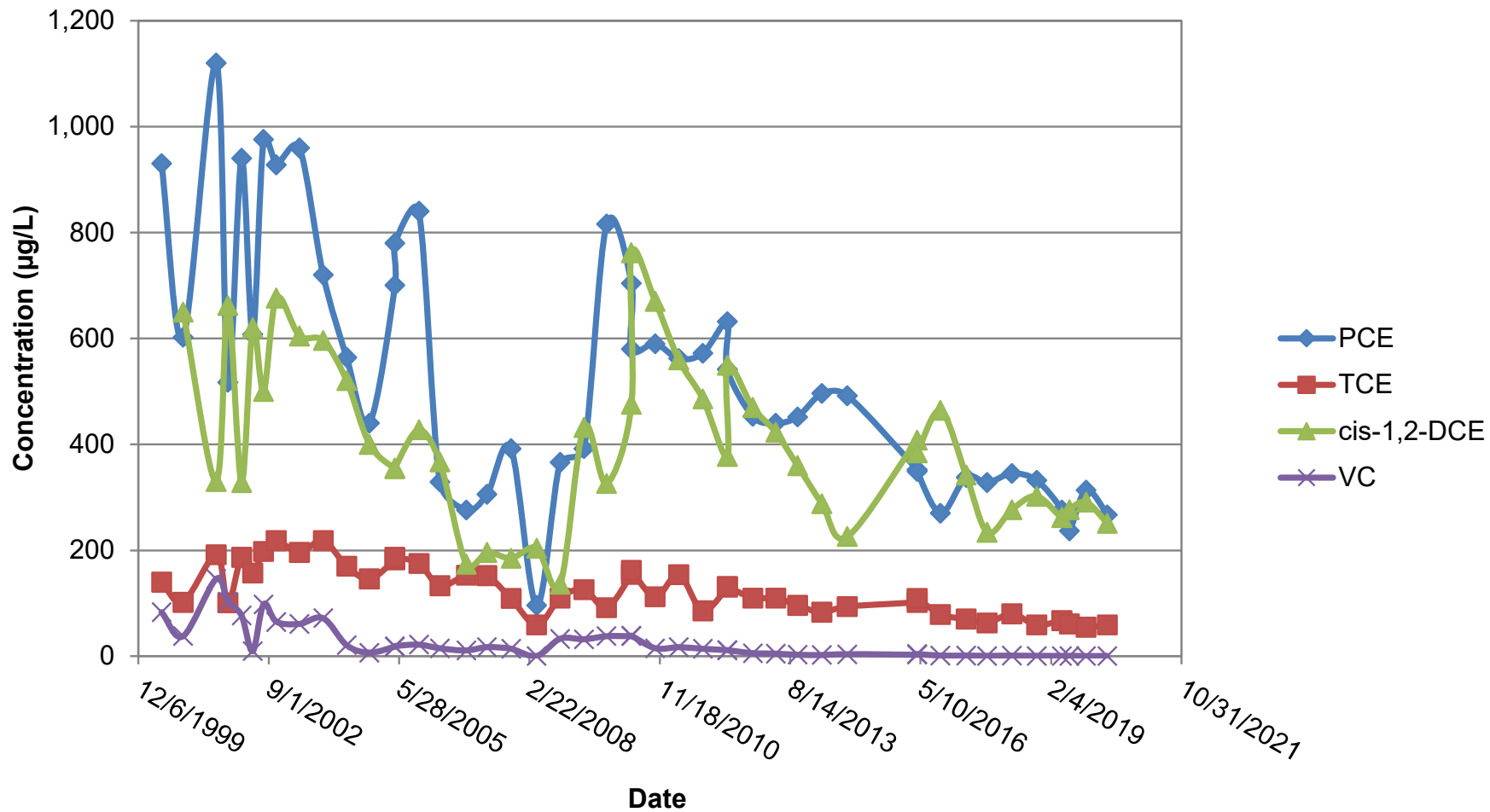
MW006
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



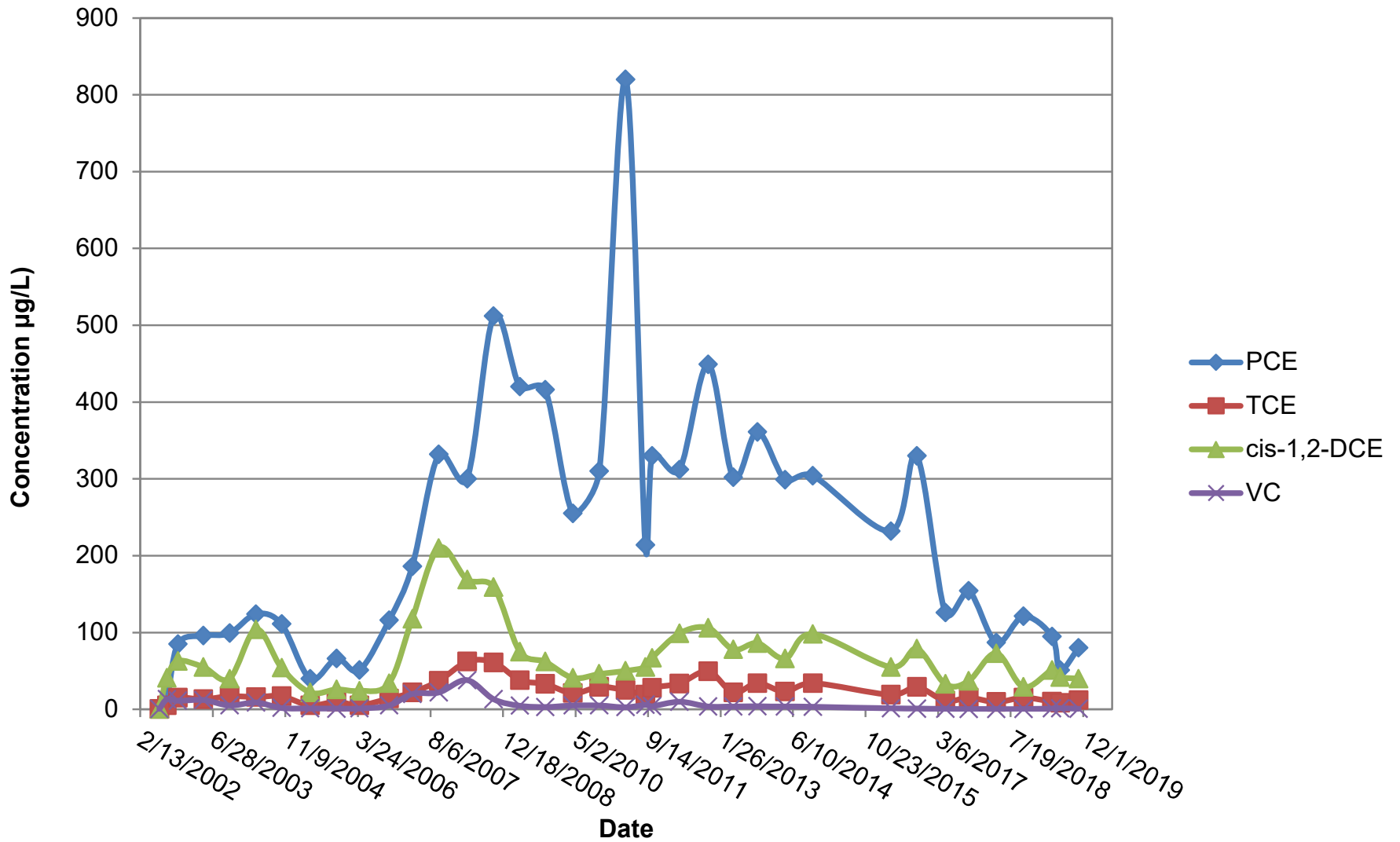
MW007
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



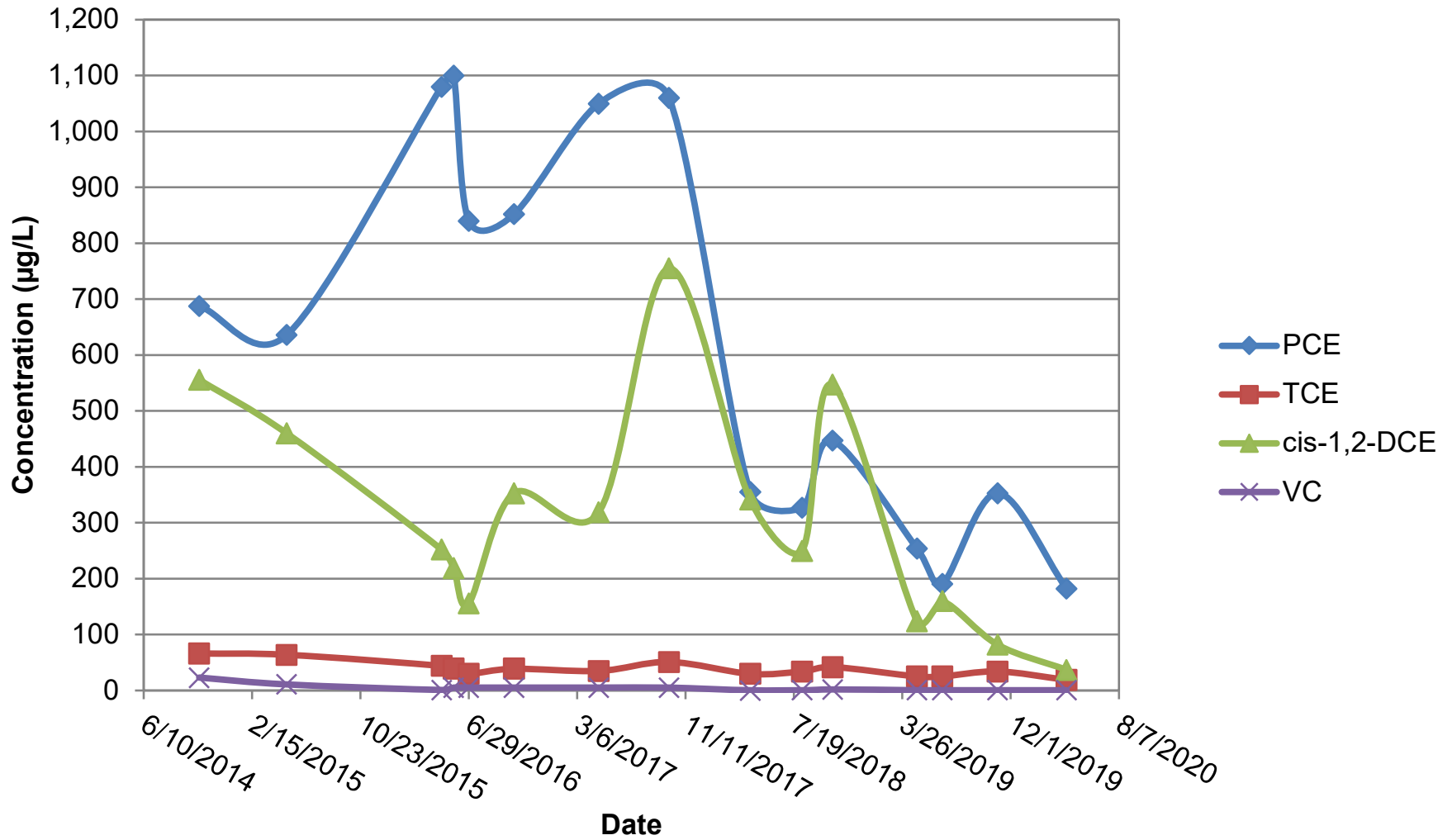
MW009
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



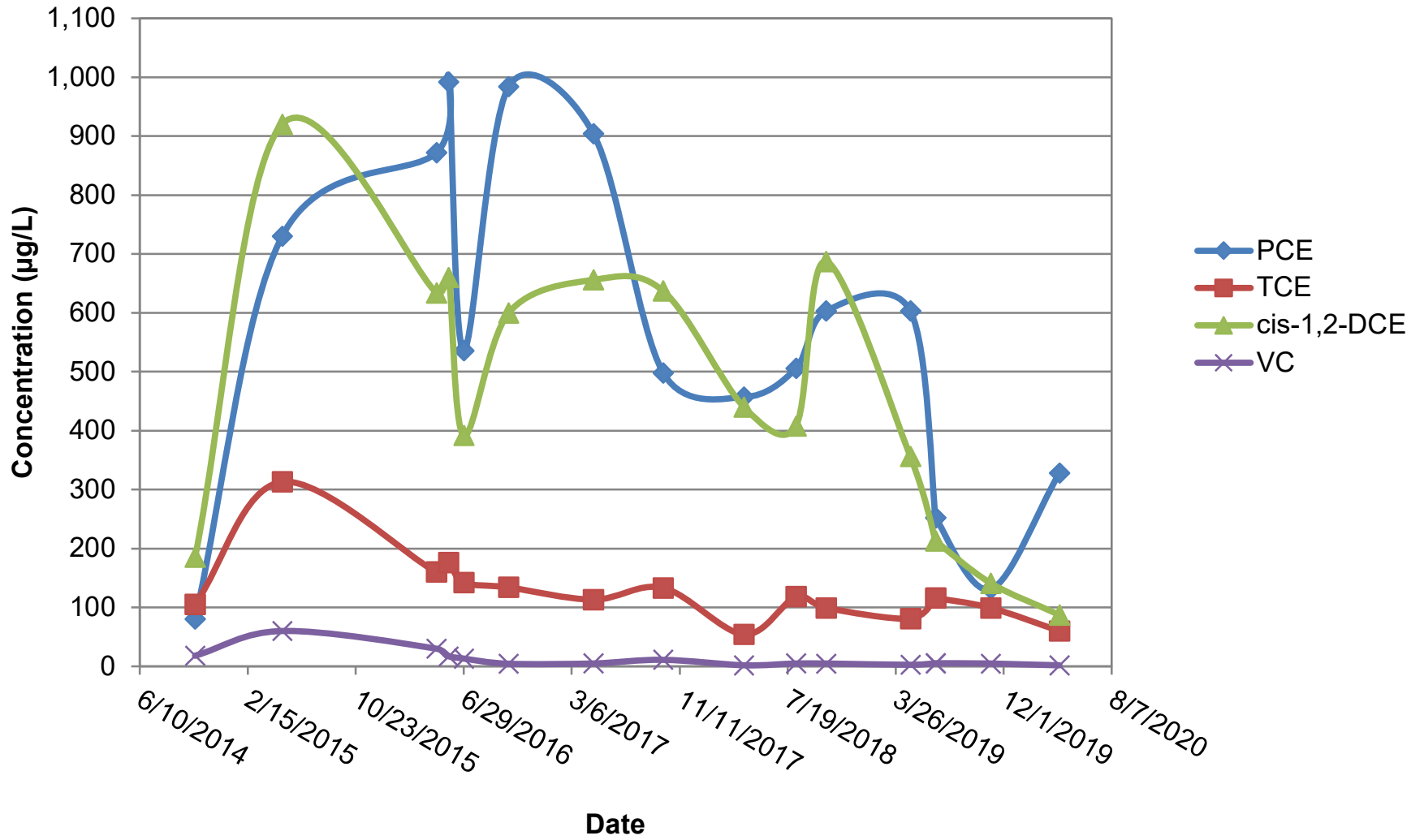
MW117
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



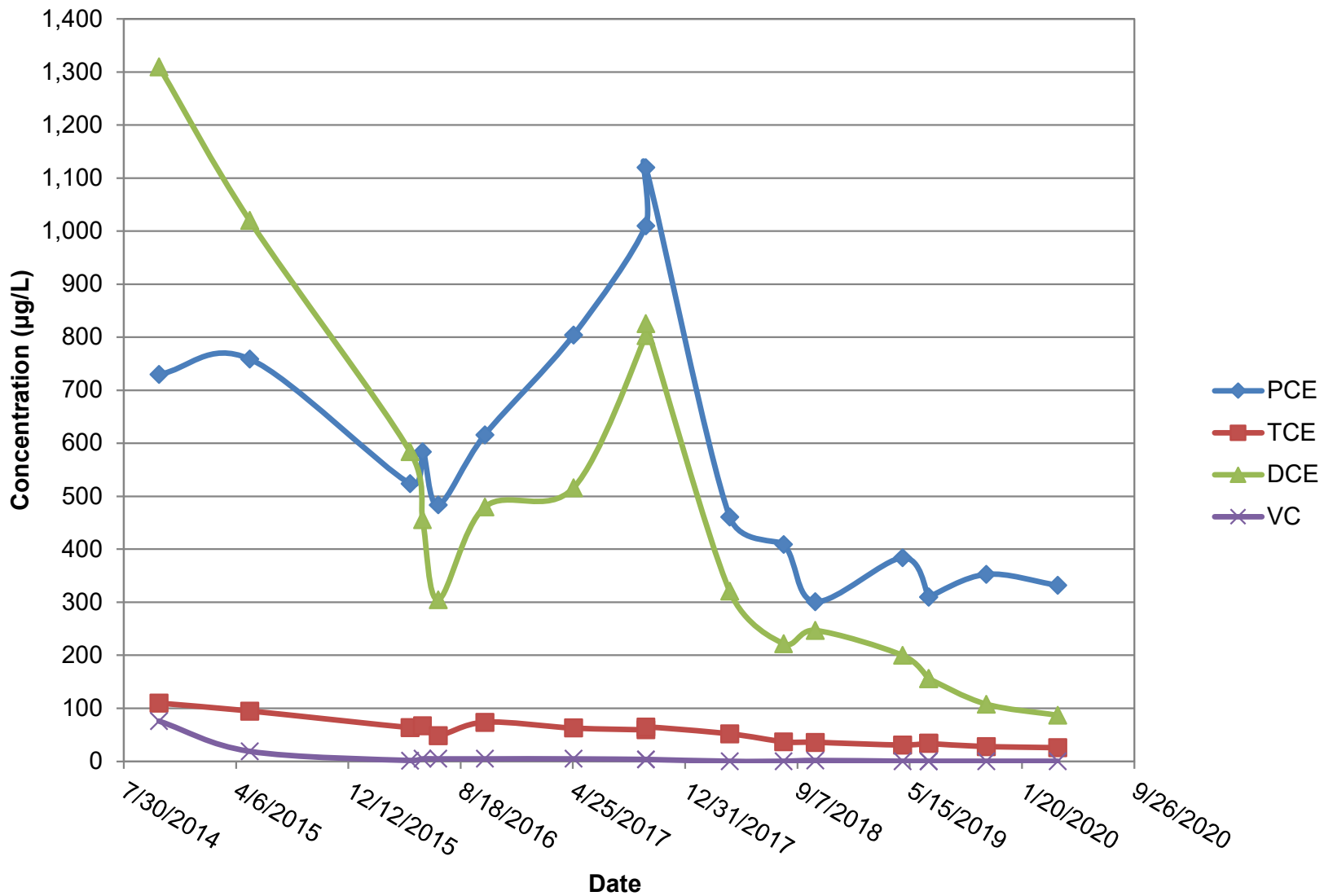
MW408-I
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



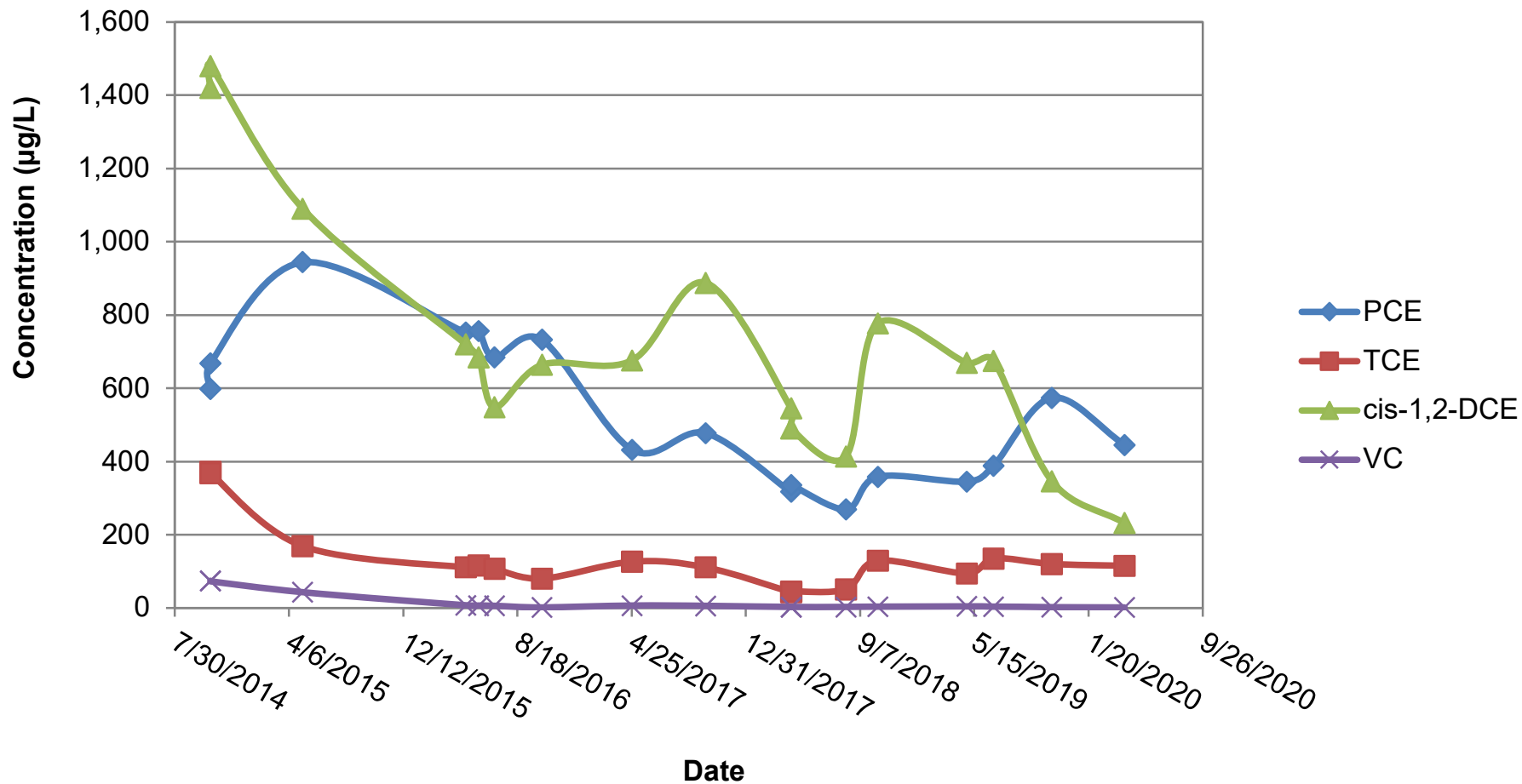
**MW408-D
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



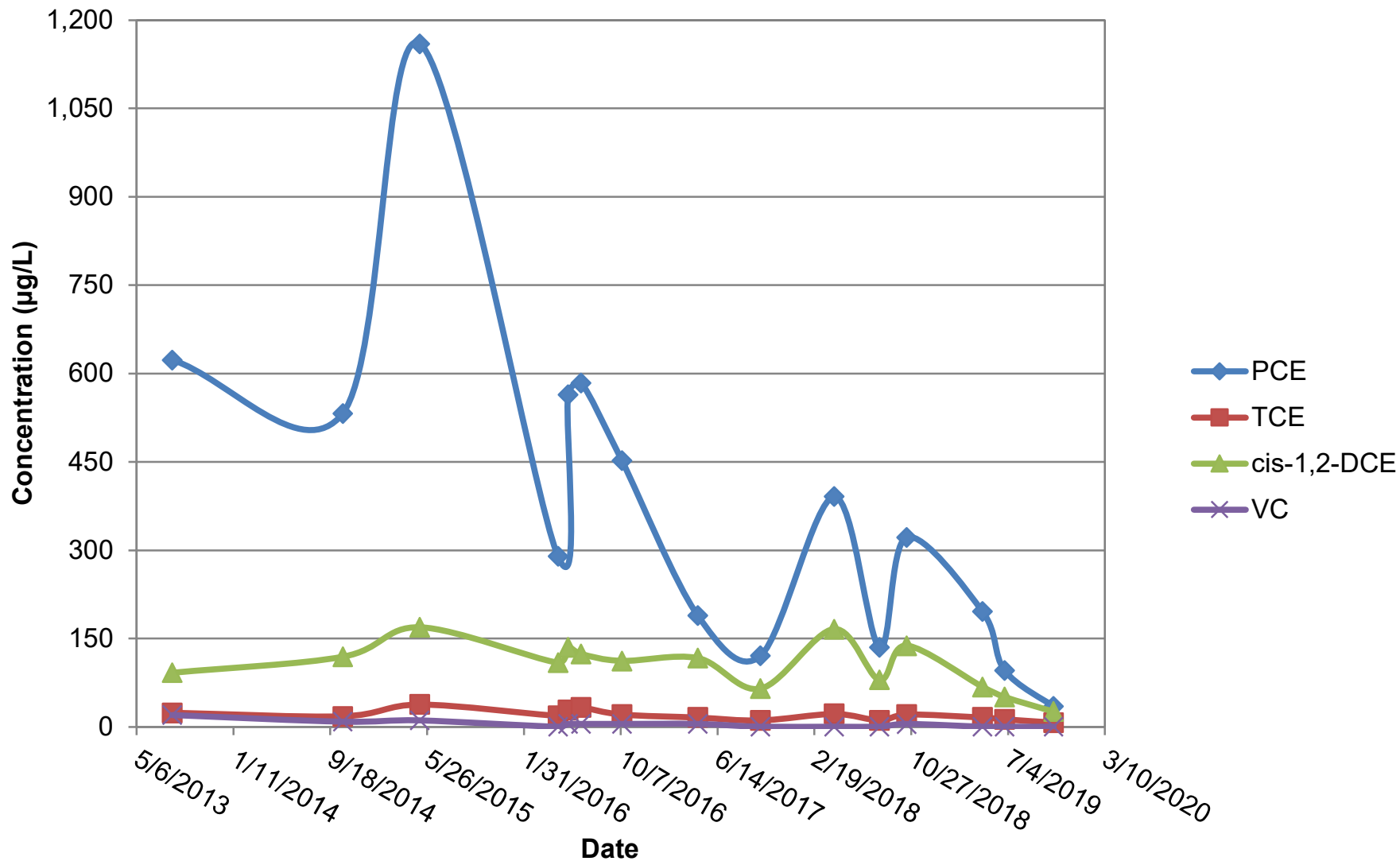
**MW409-I
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



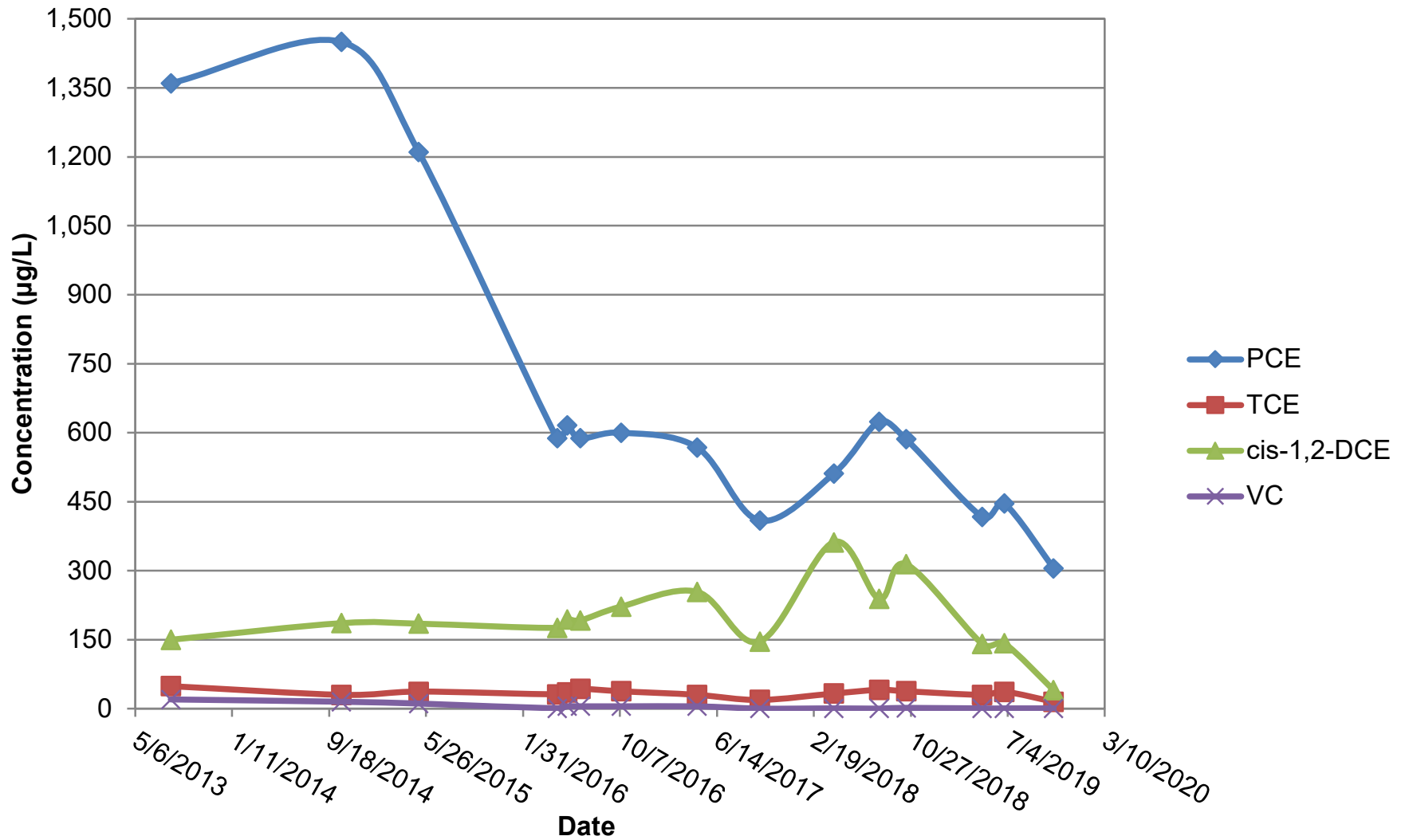
MW409-D
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



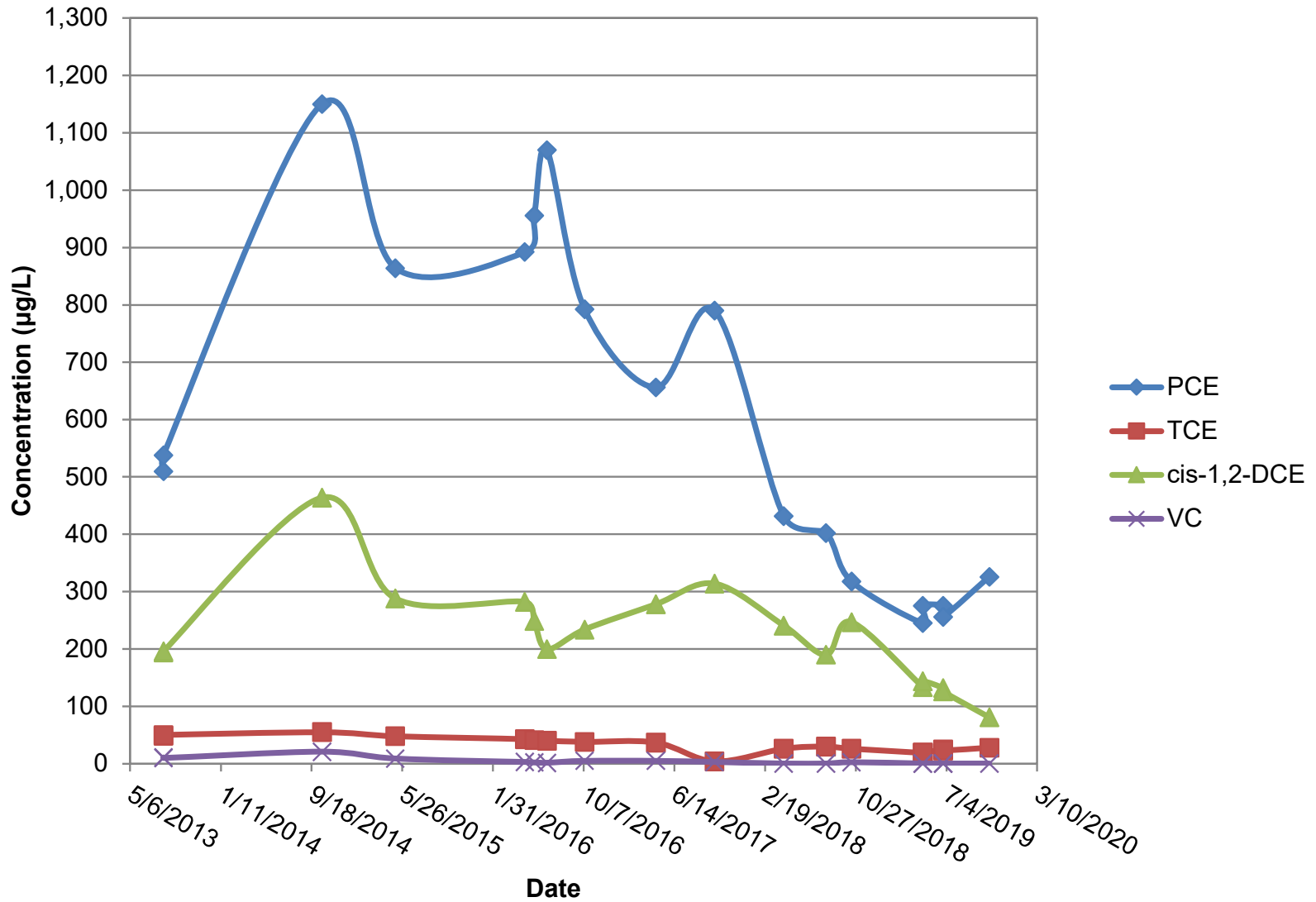
**MW410-I
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



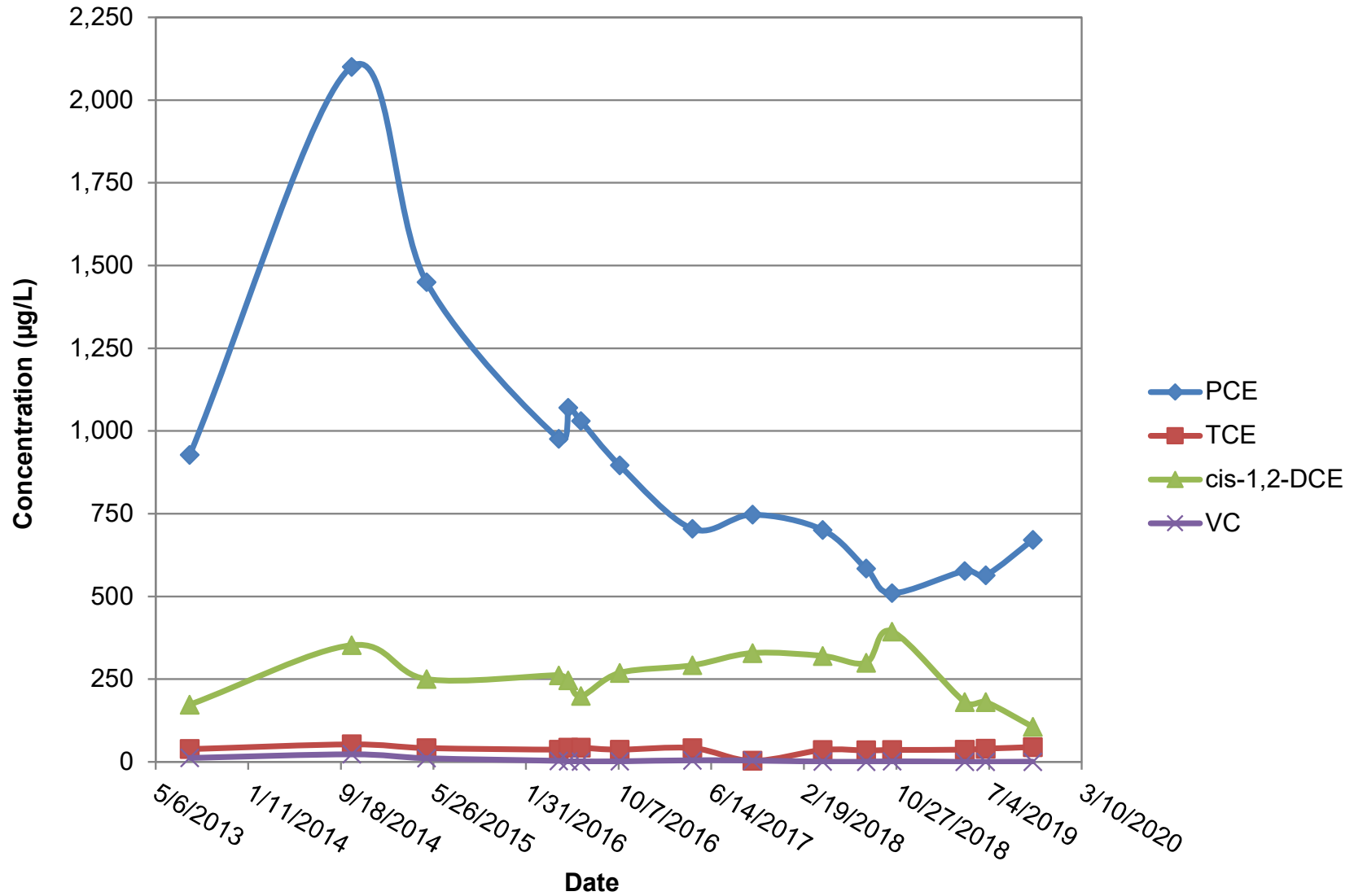
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



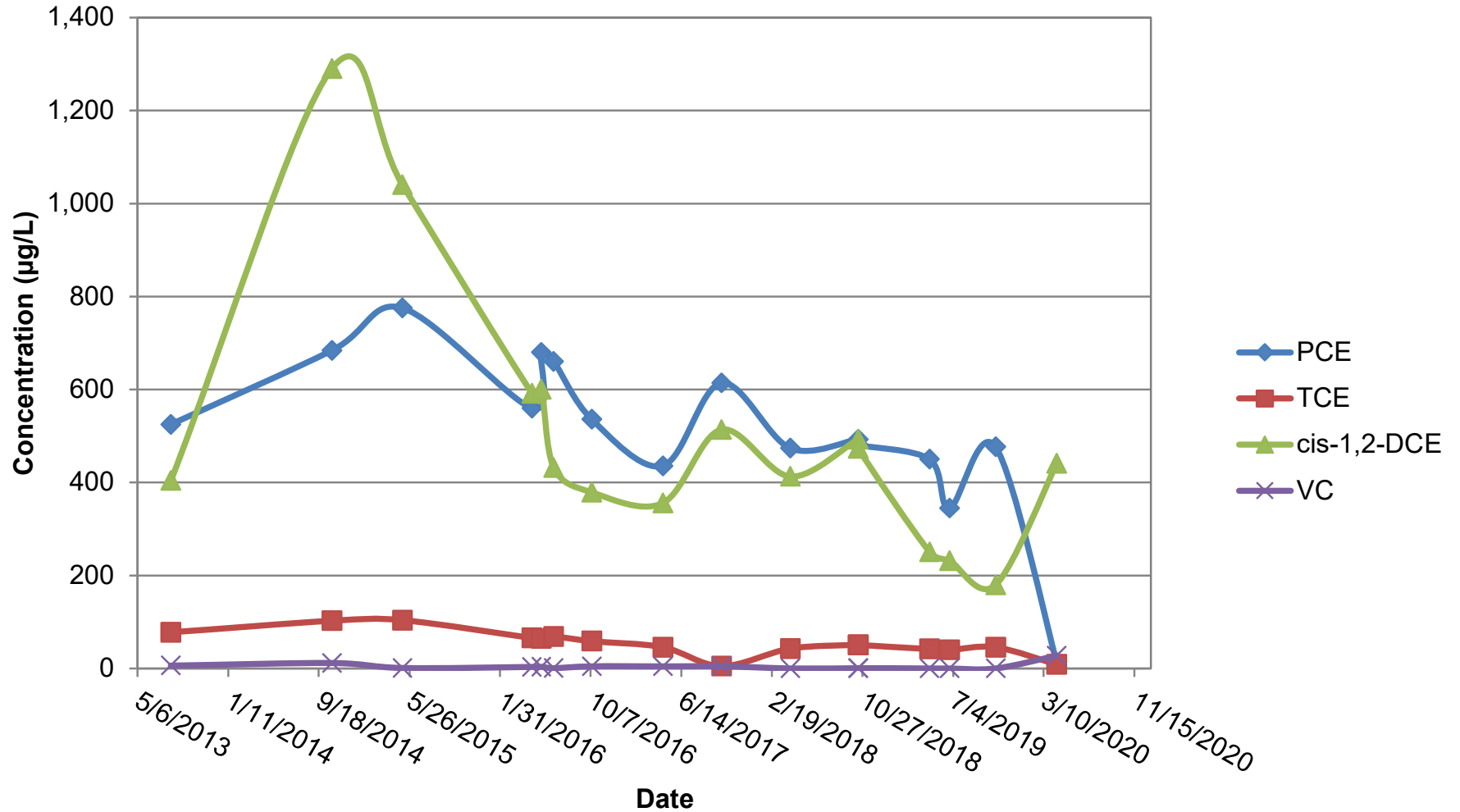
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



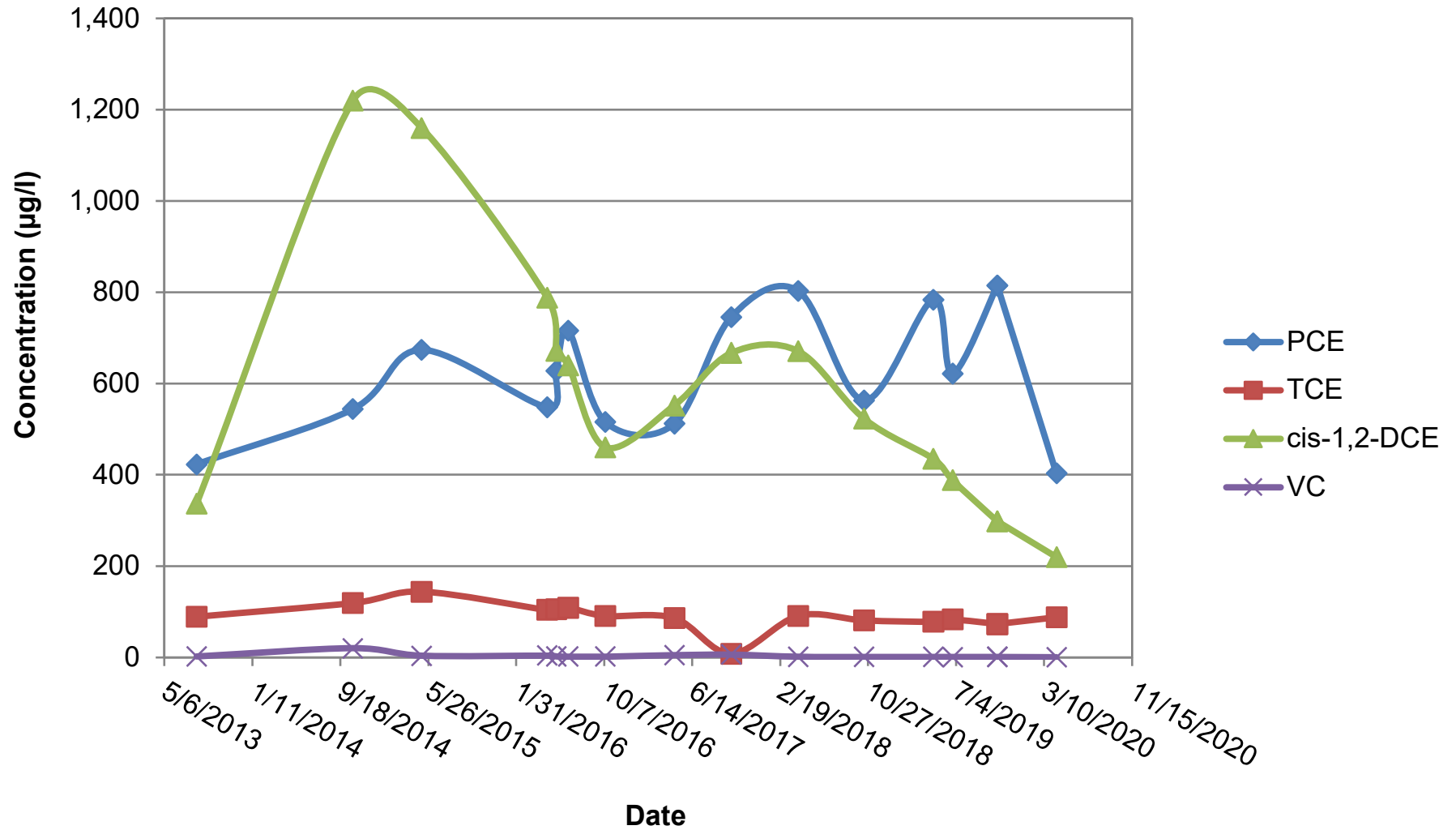
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



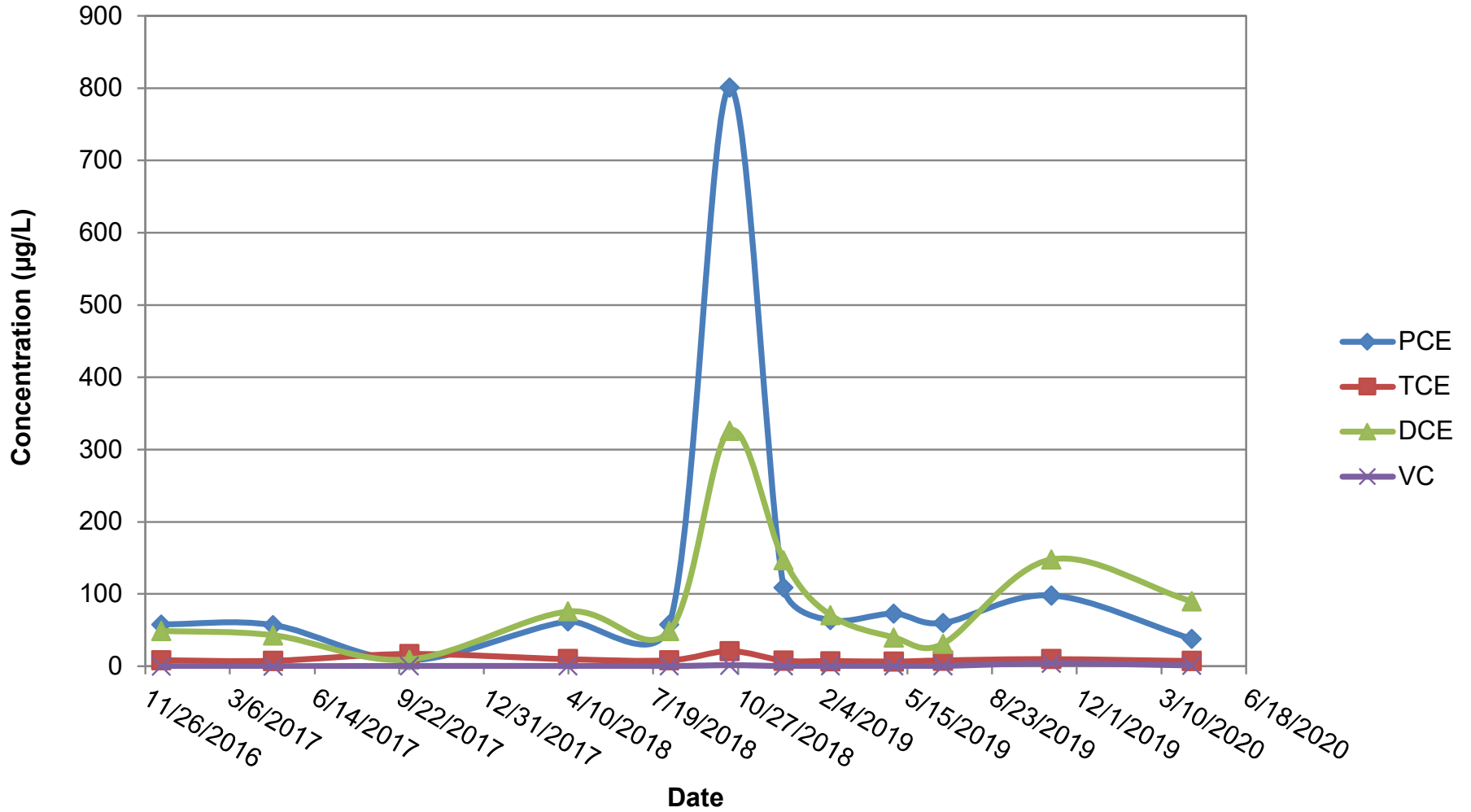
MW413-I
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



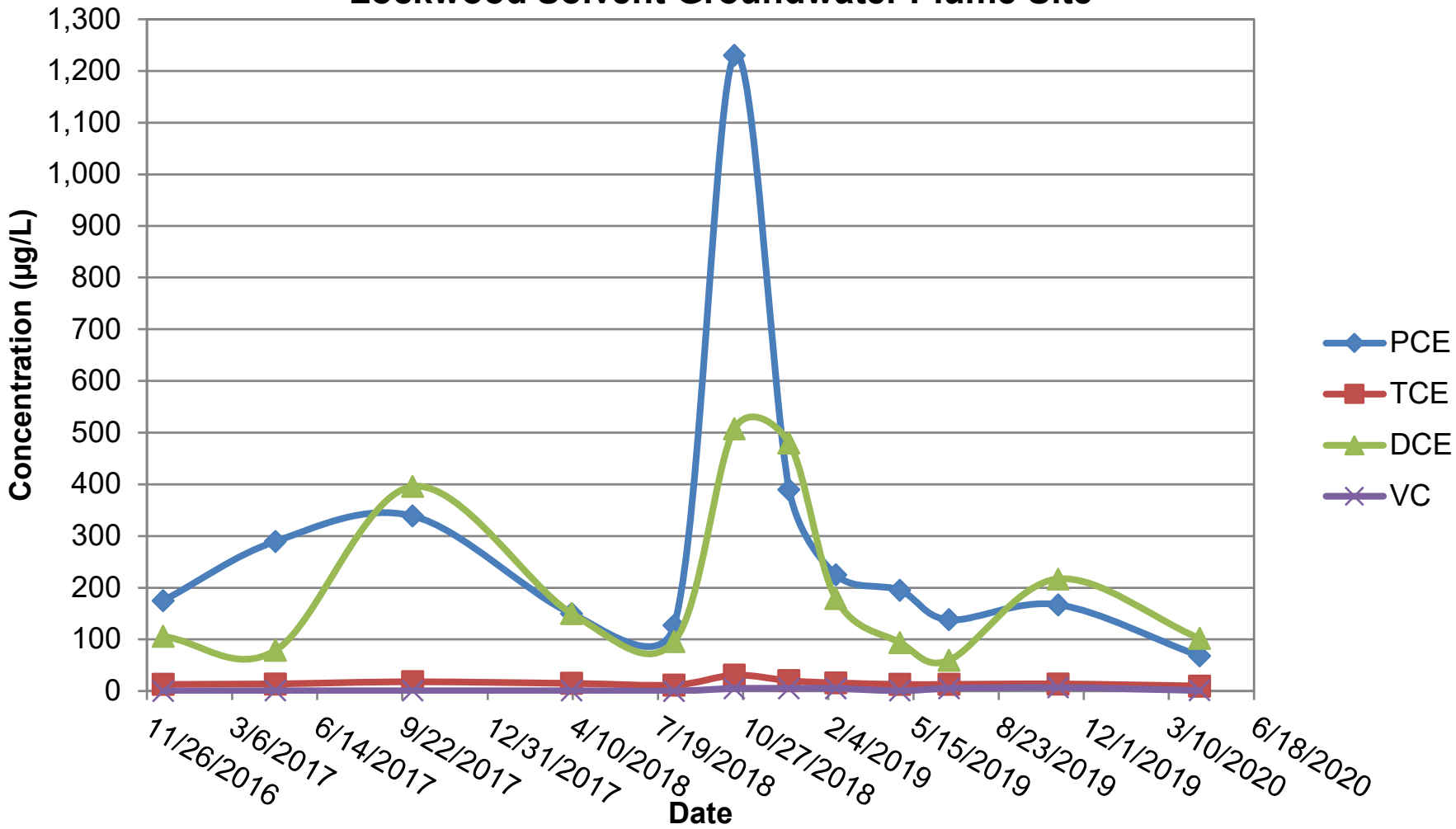
**MW413-D
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



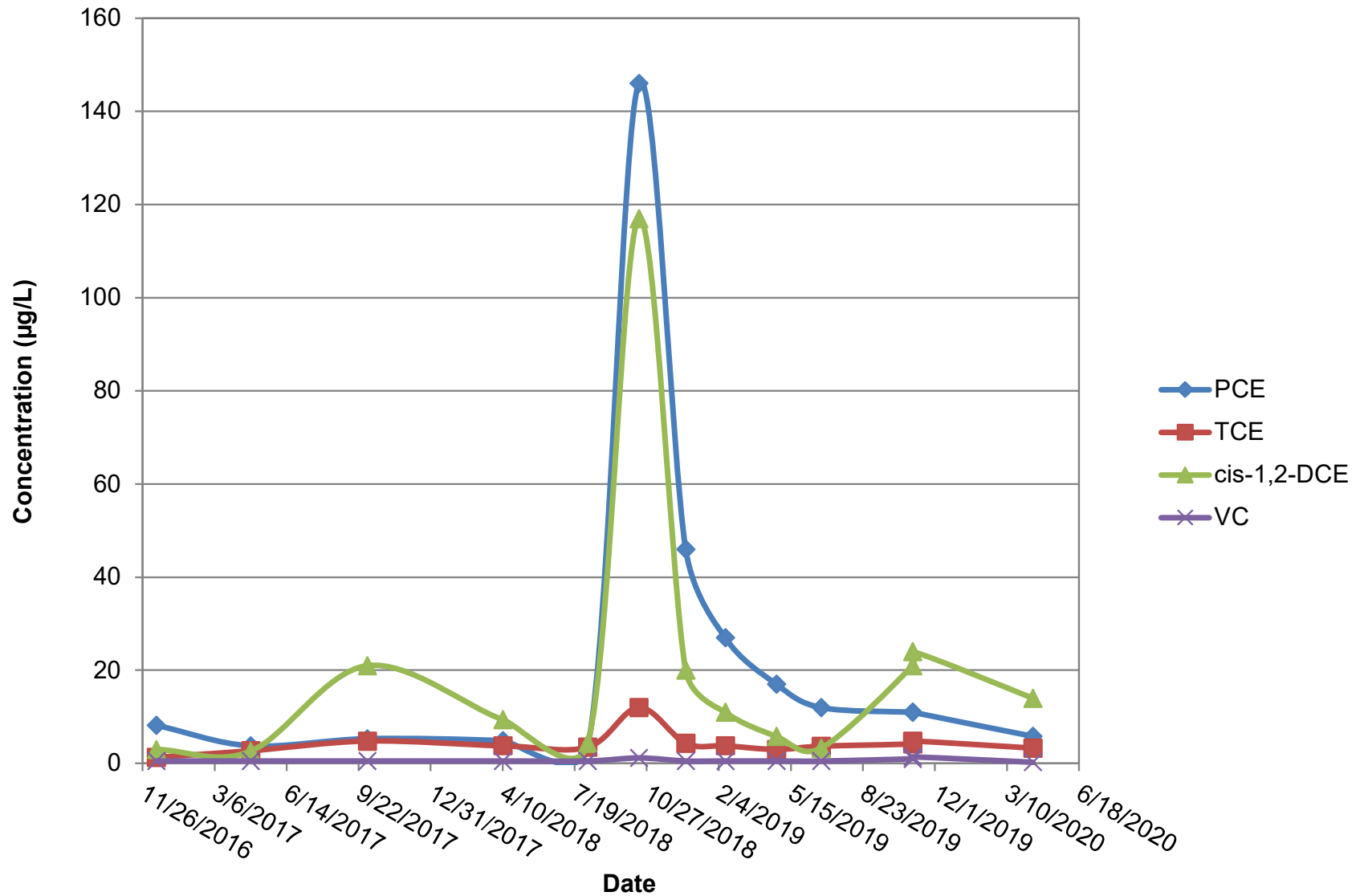
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



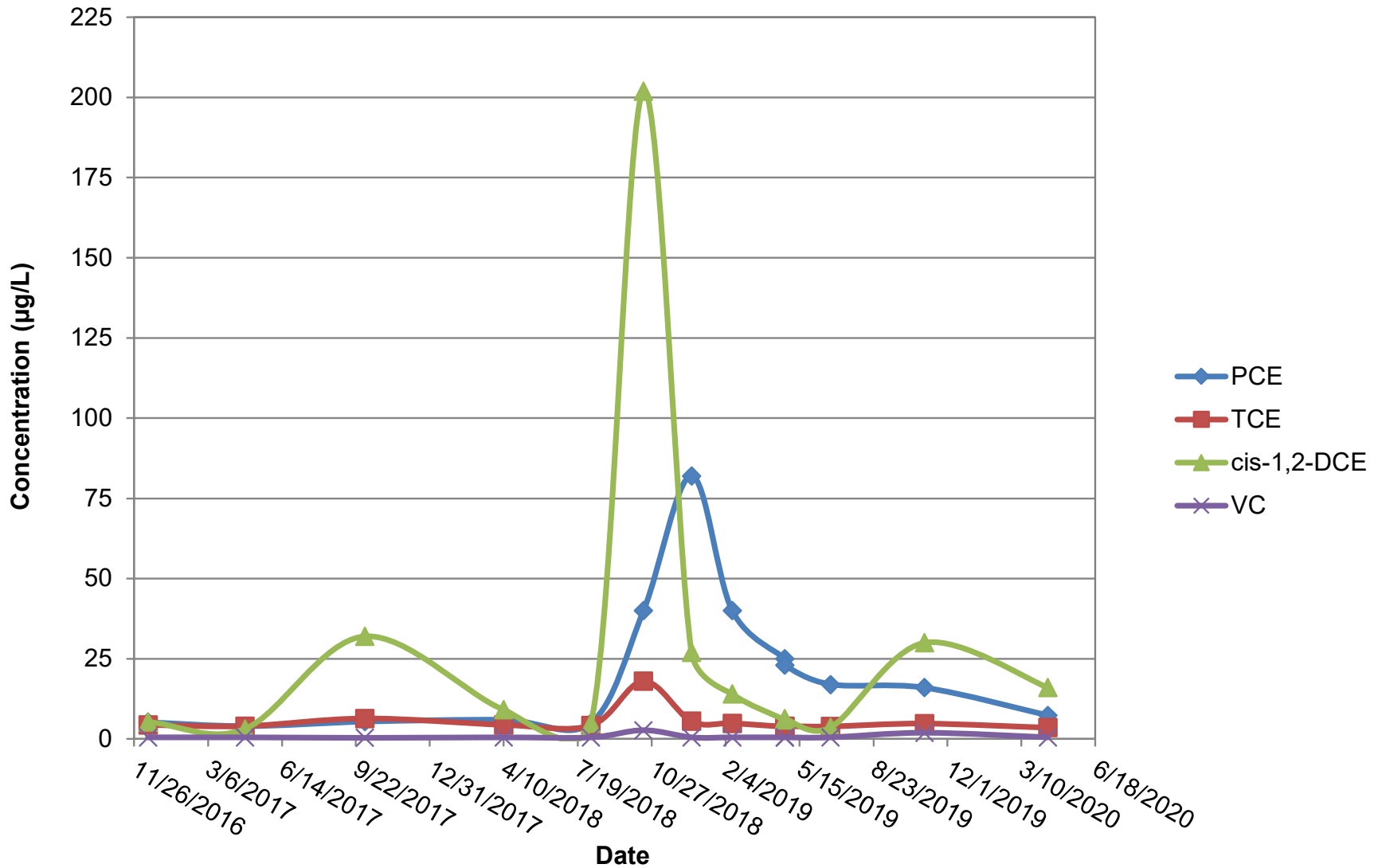
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



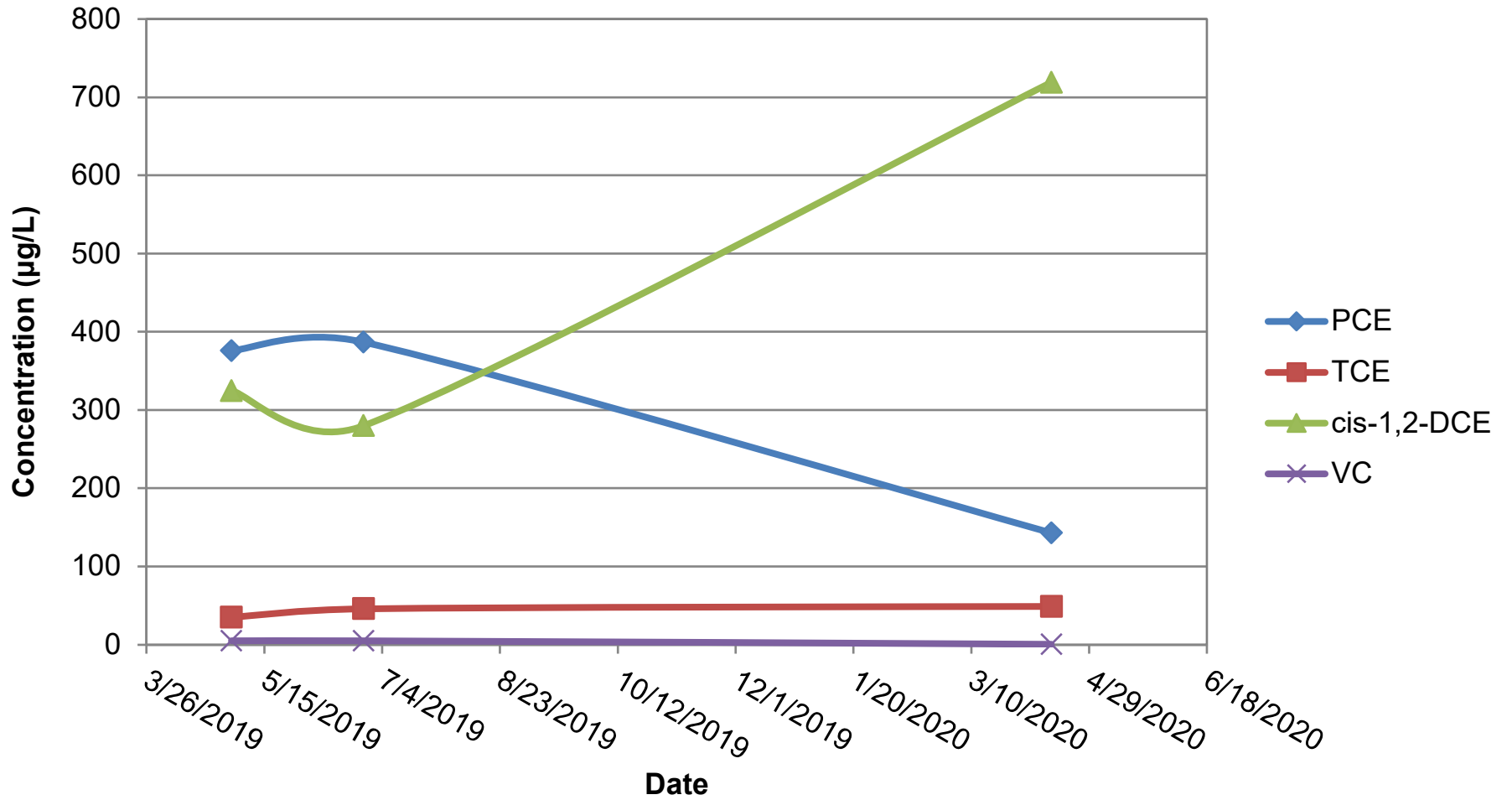
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Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



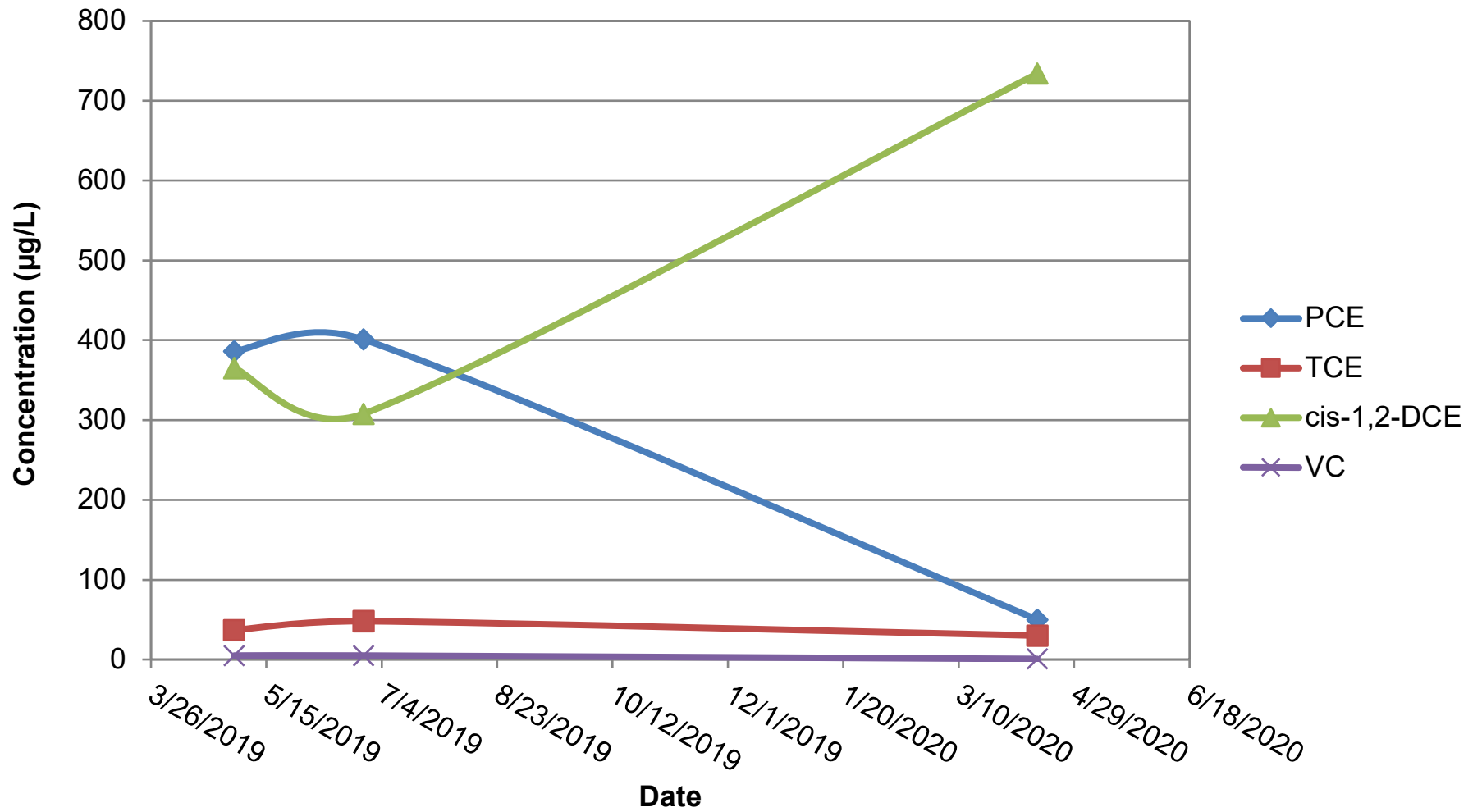
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Operable Unit 2
Lockwood Solvent Groundwater Plume Site



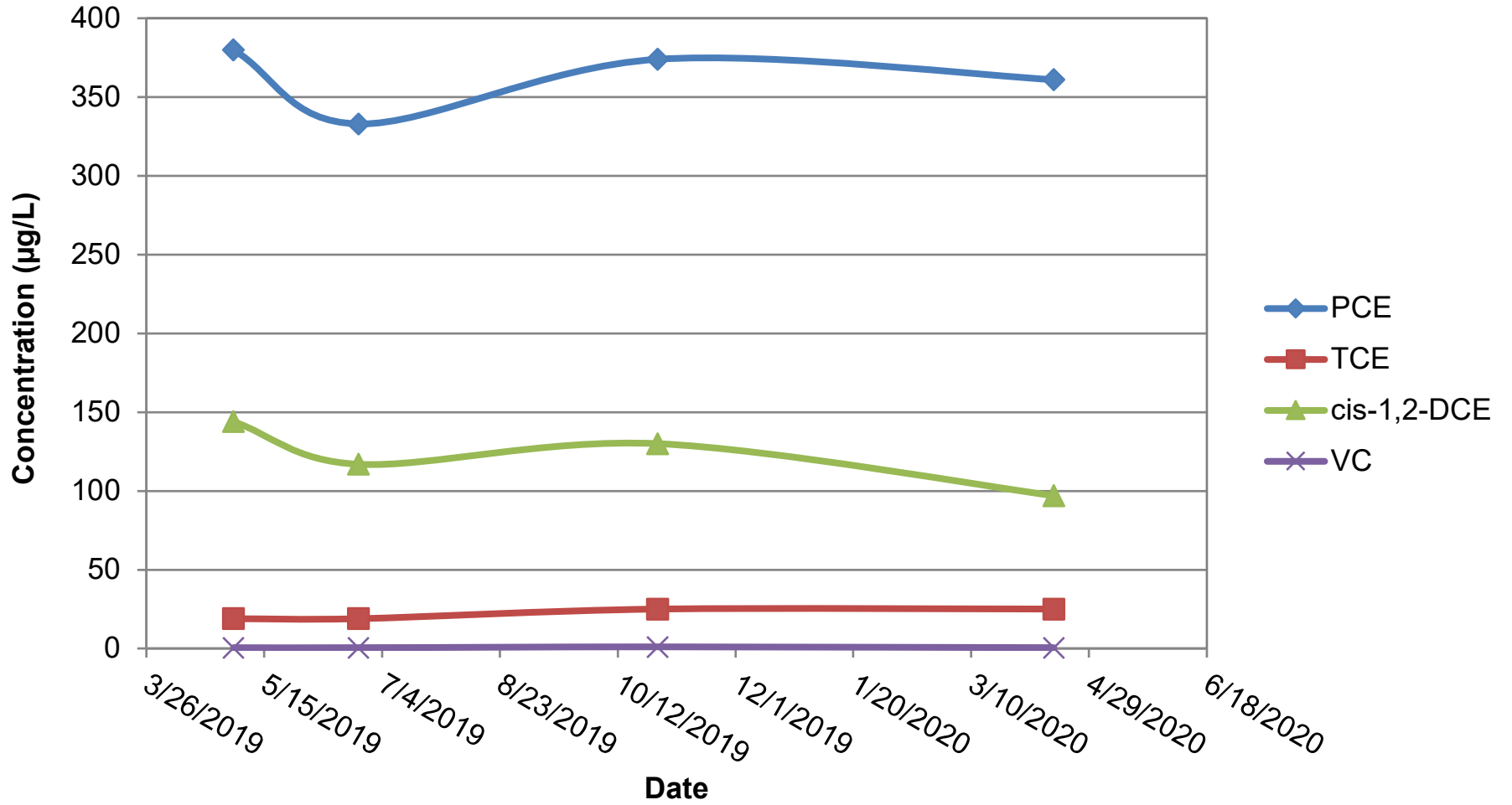
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



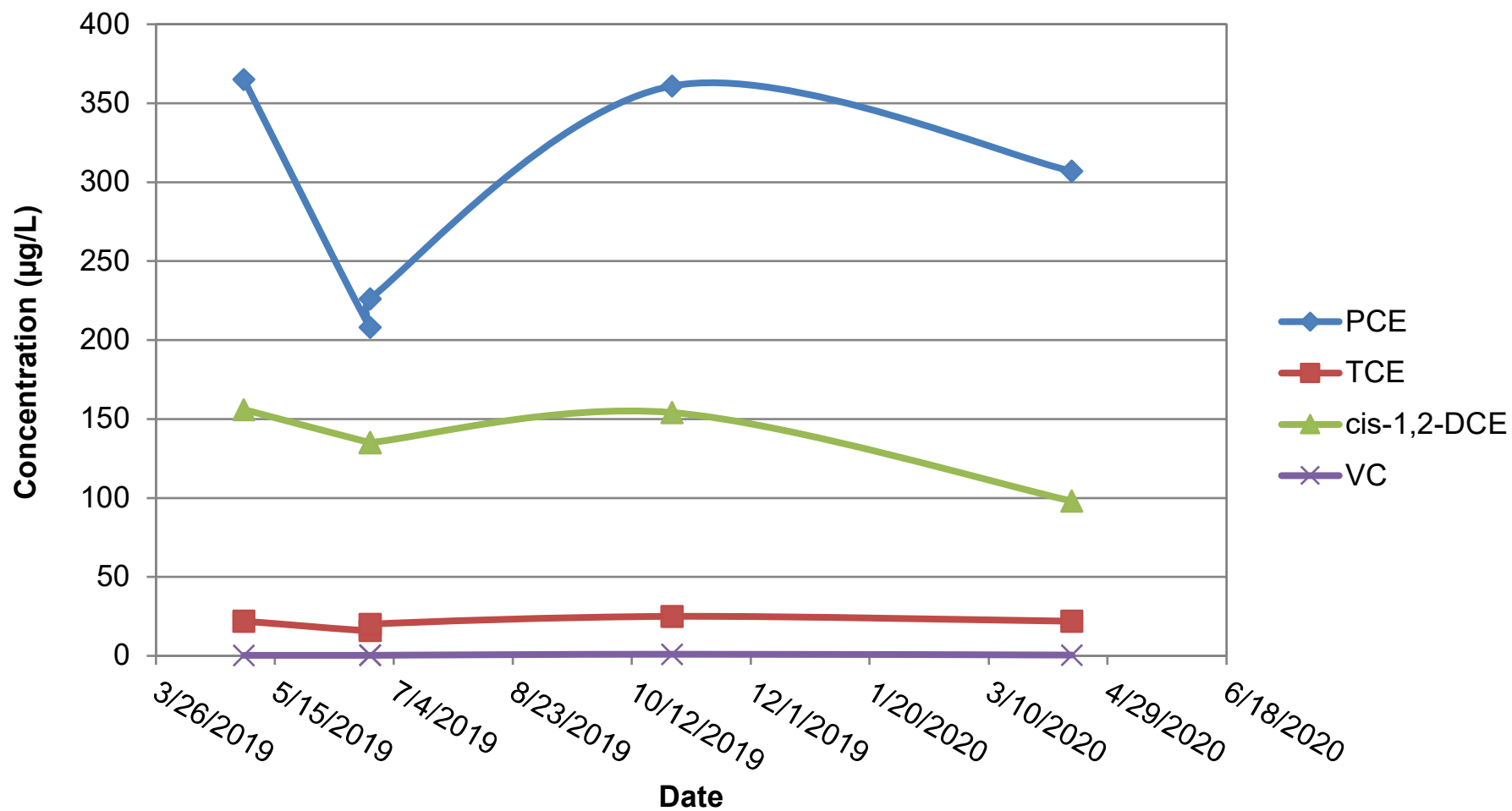
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



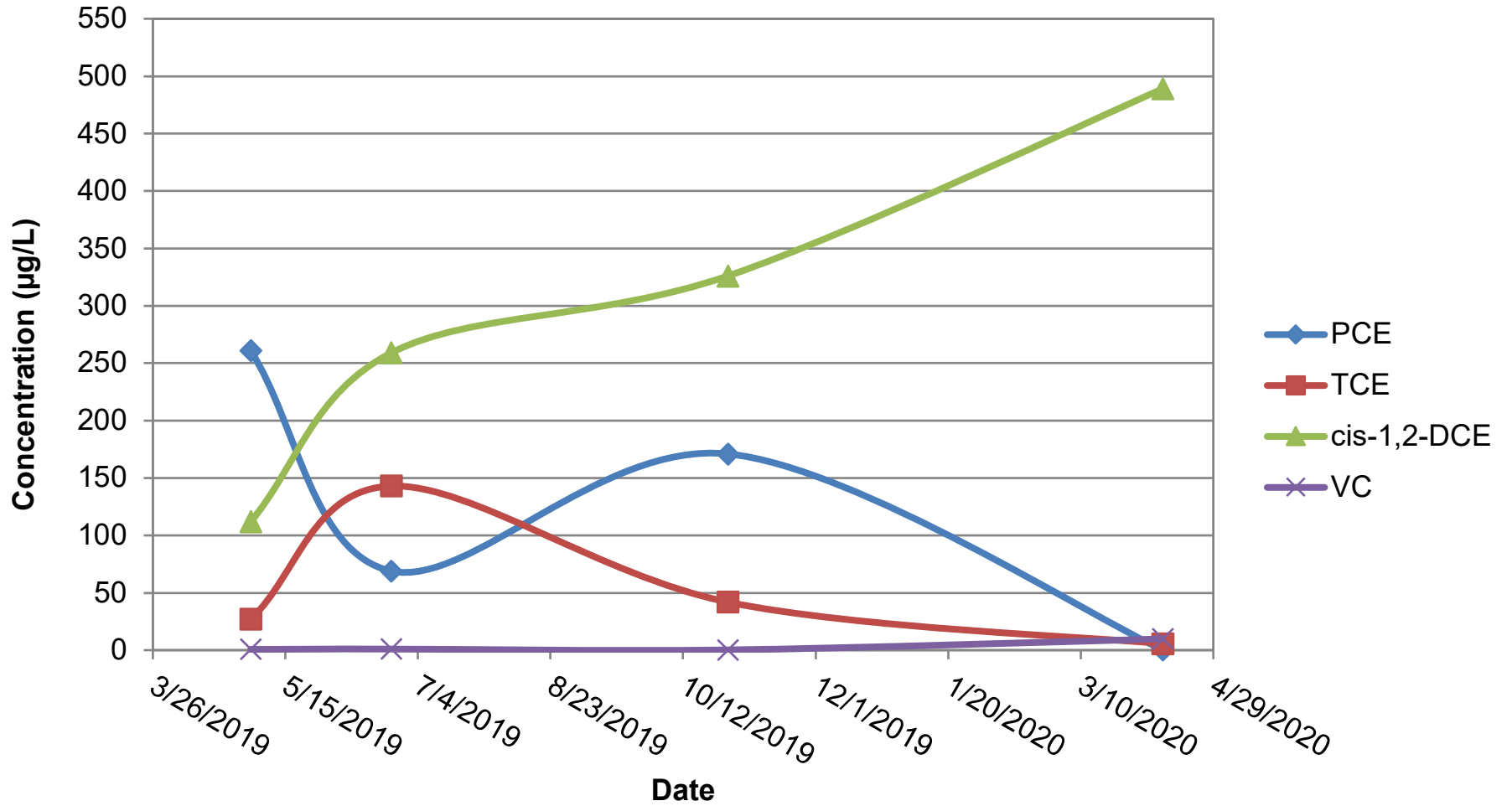
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Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



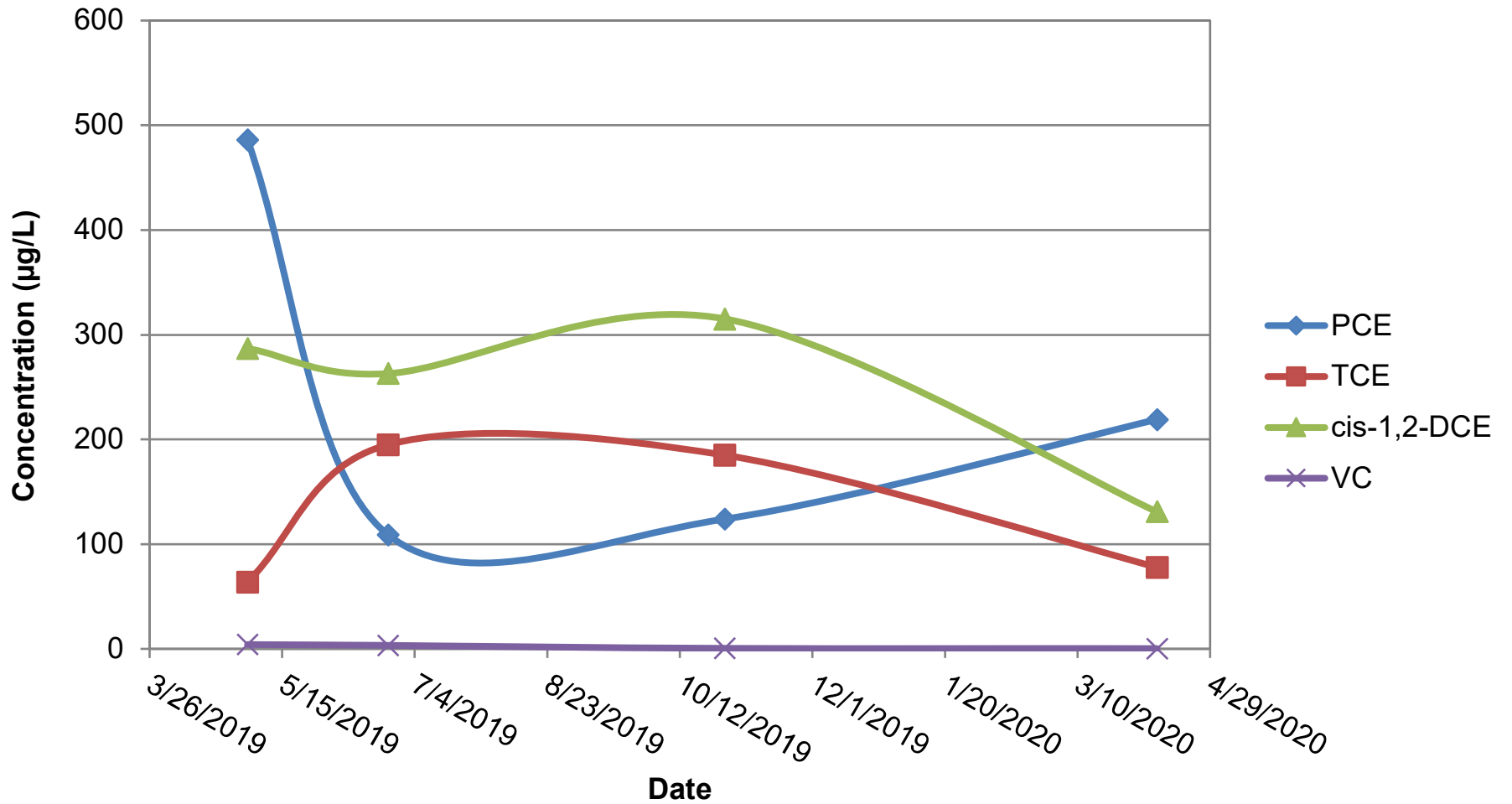
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Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



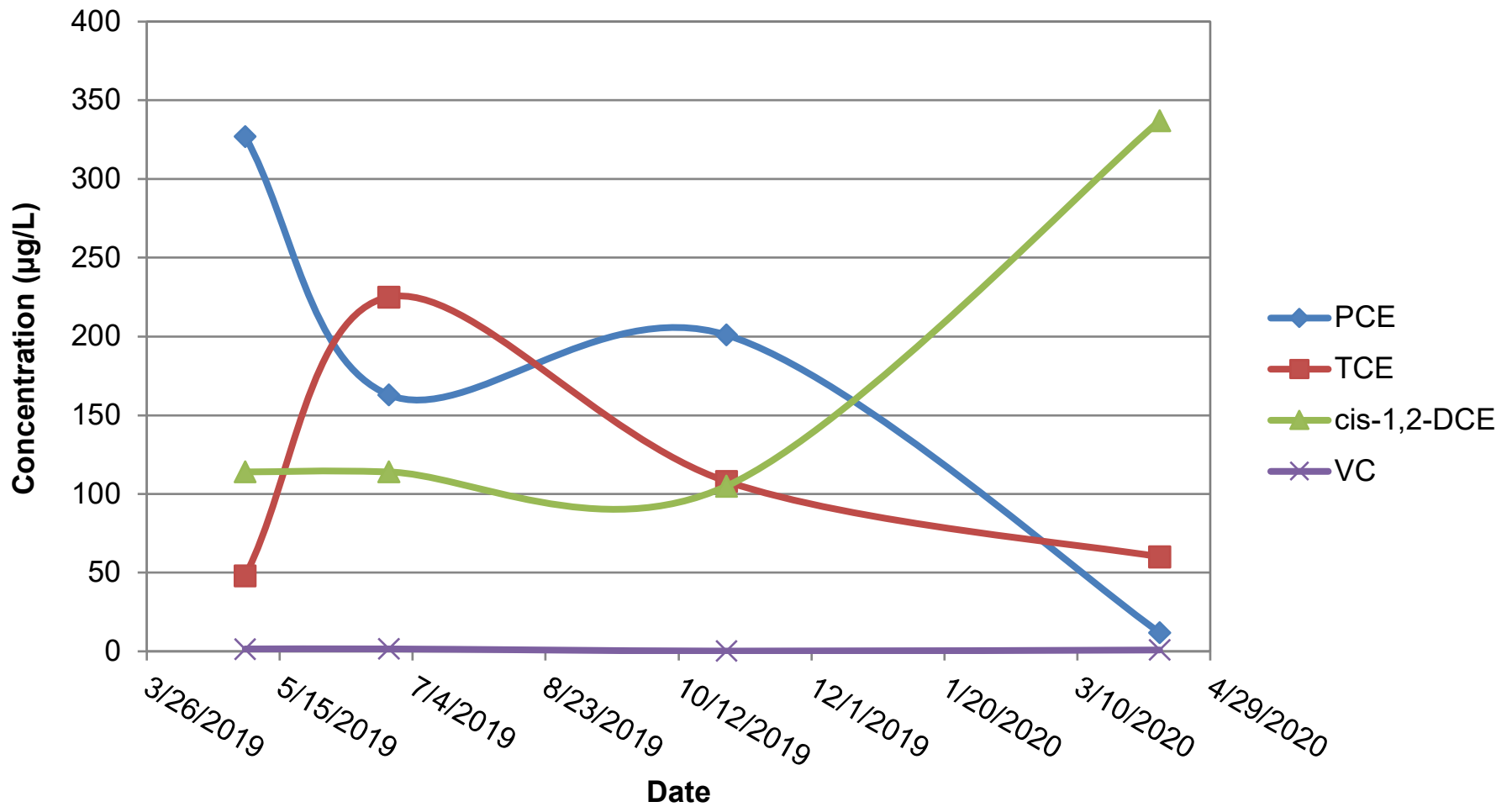
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Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



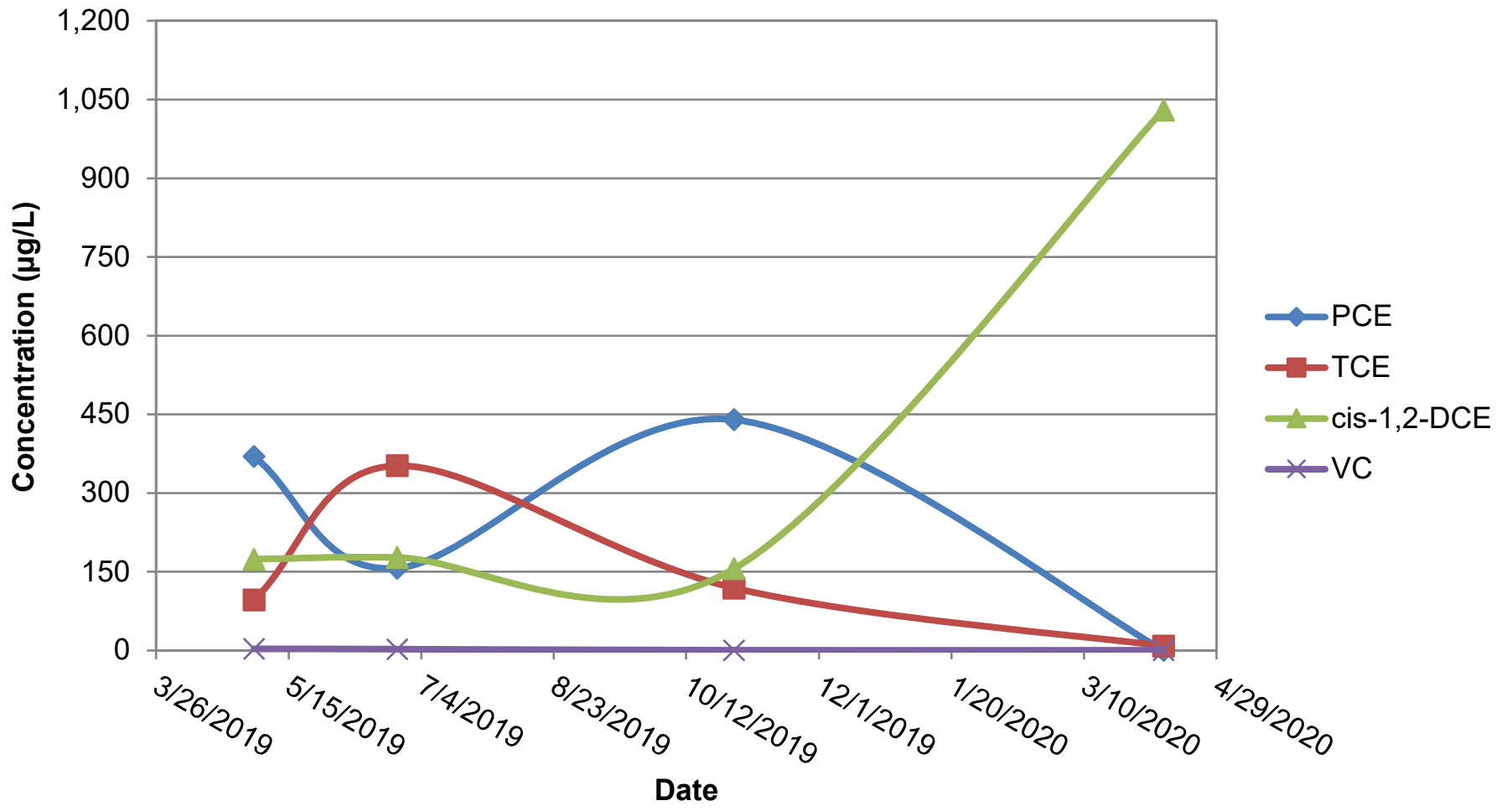
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Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



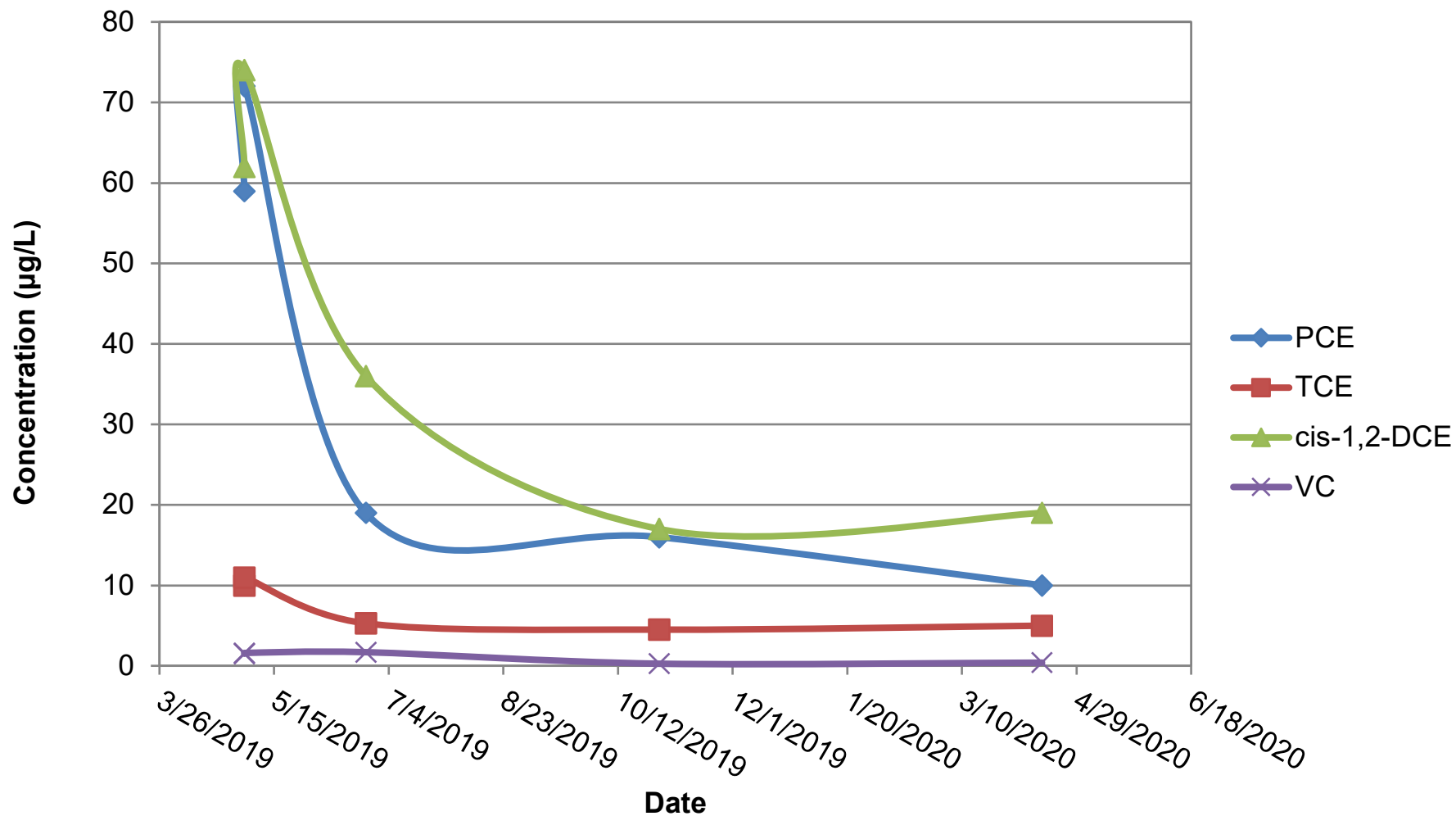
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



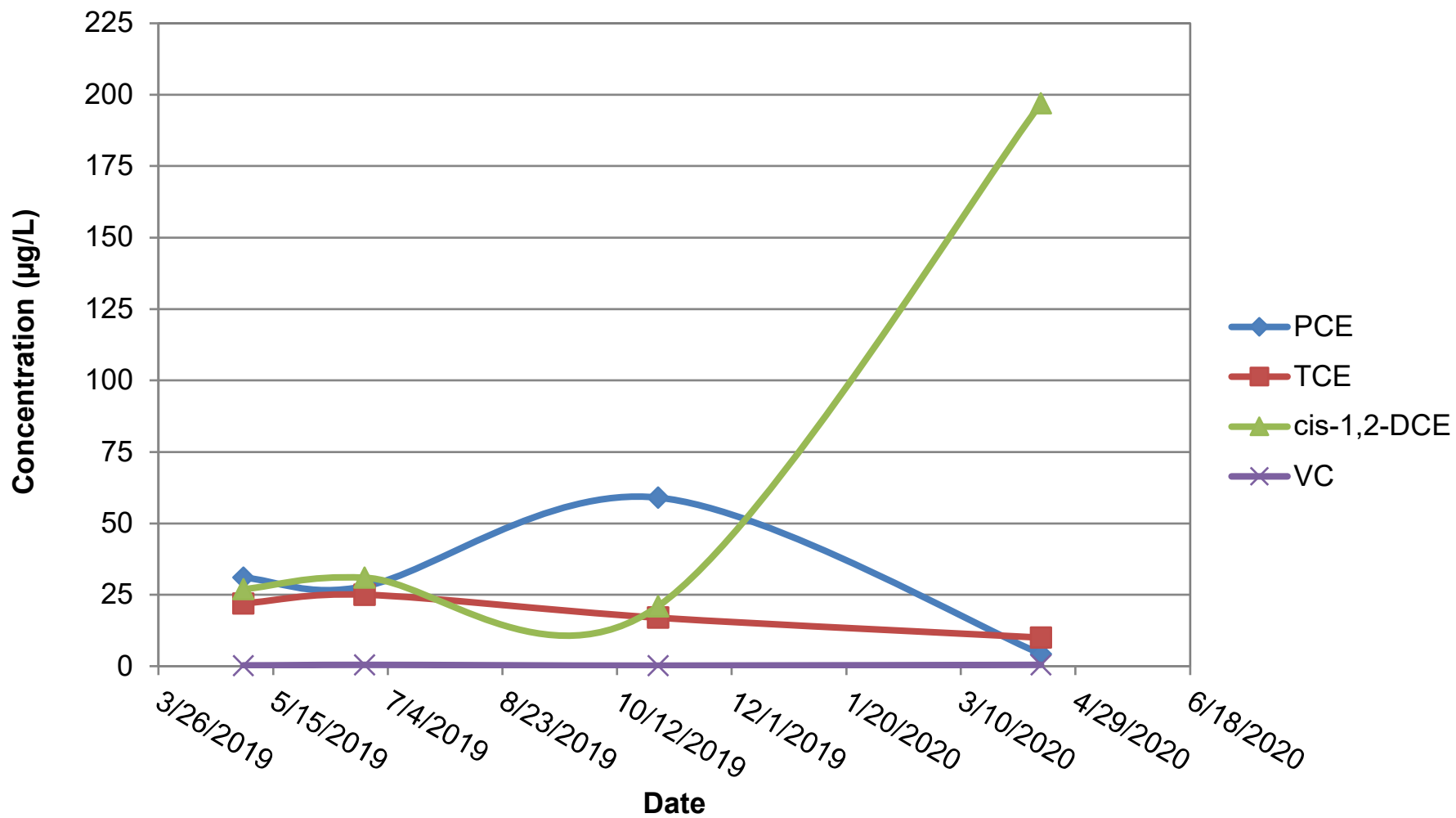
**MW456-D
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



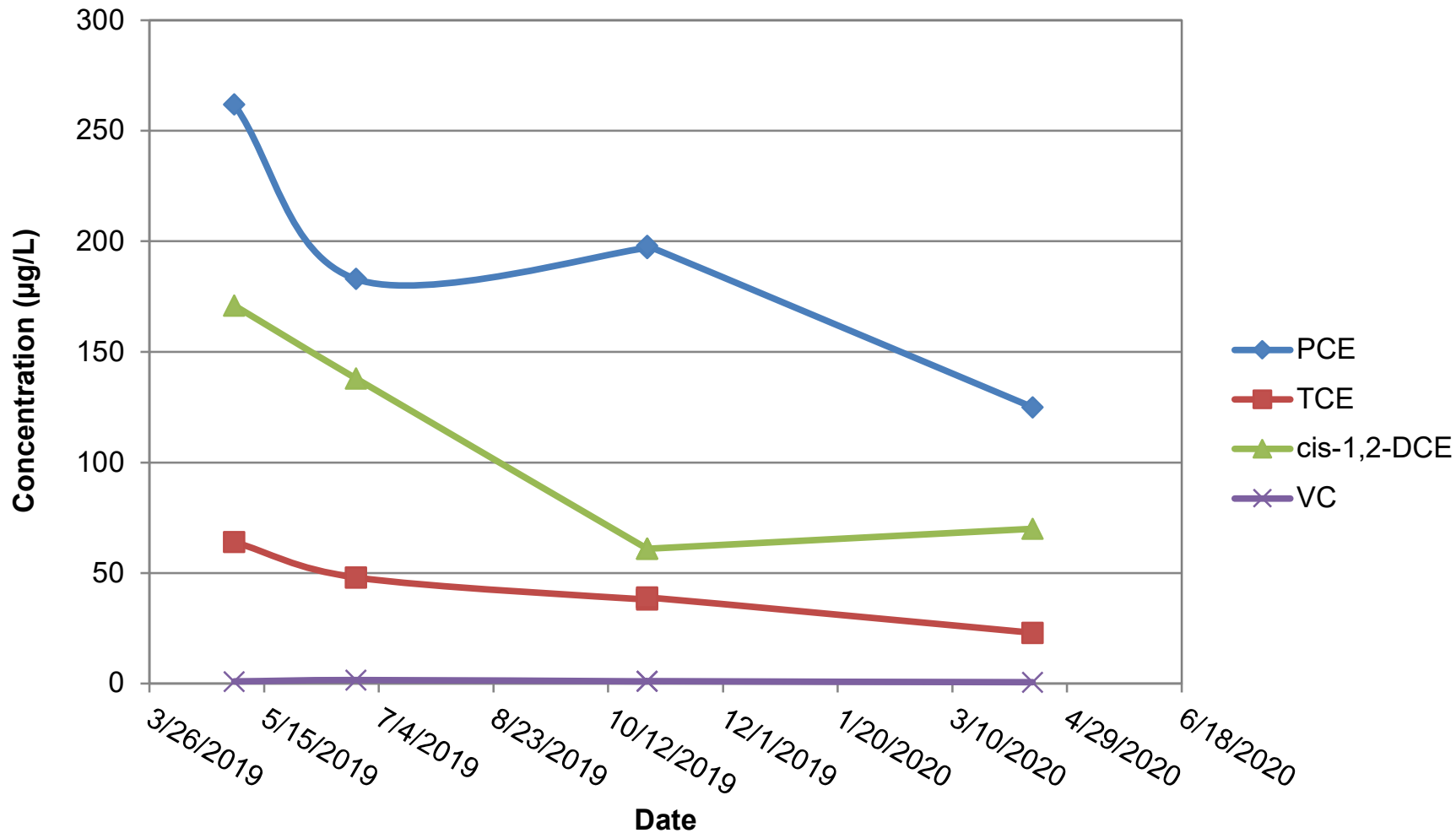
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



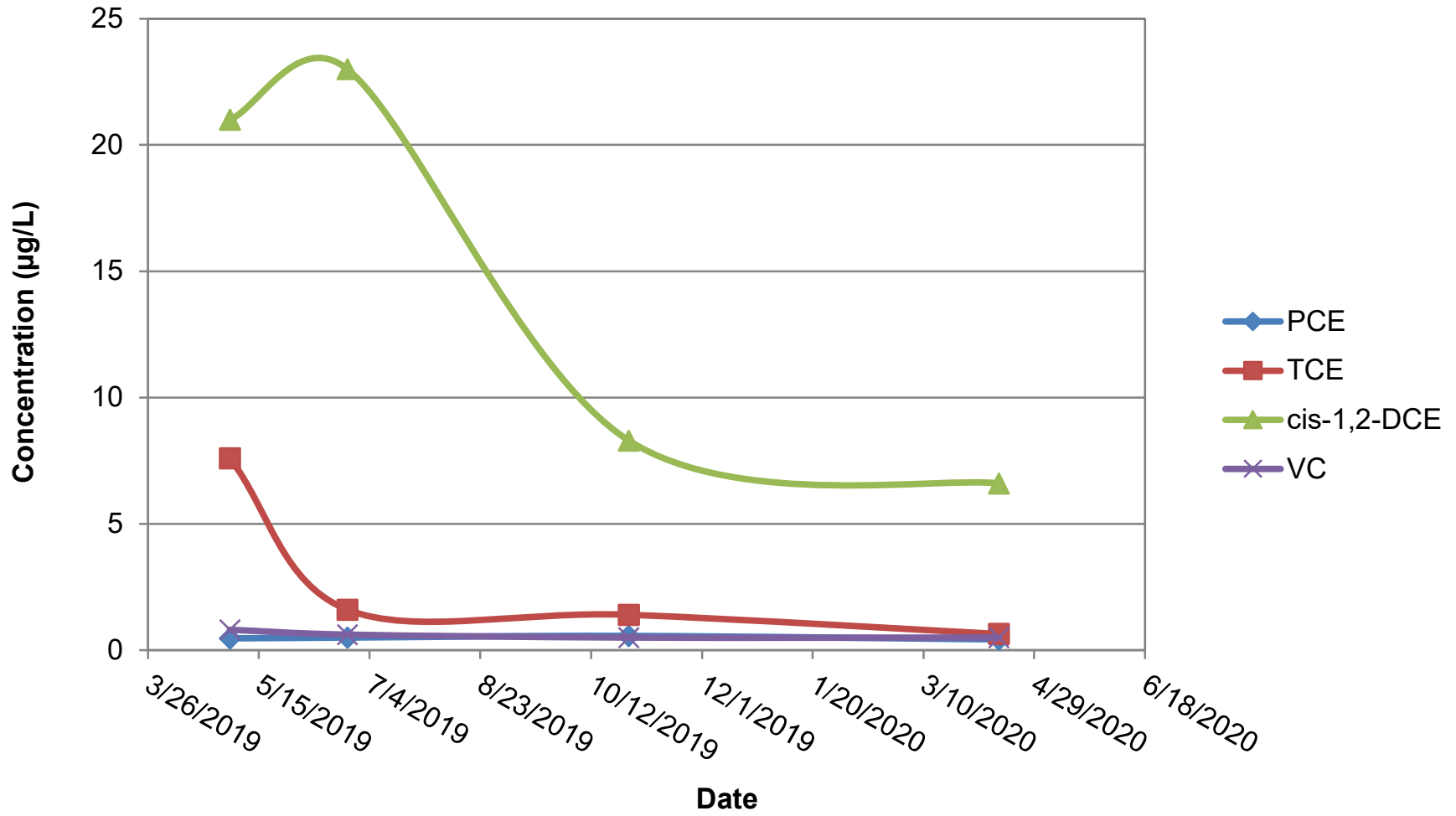
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Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



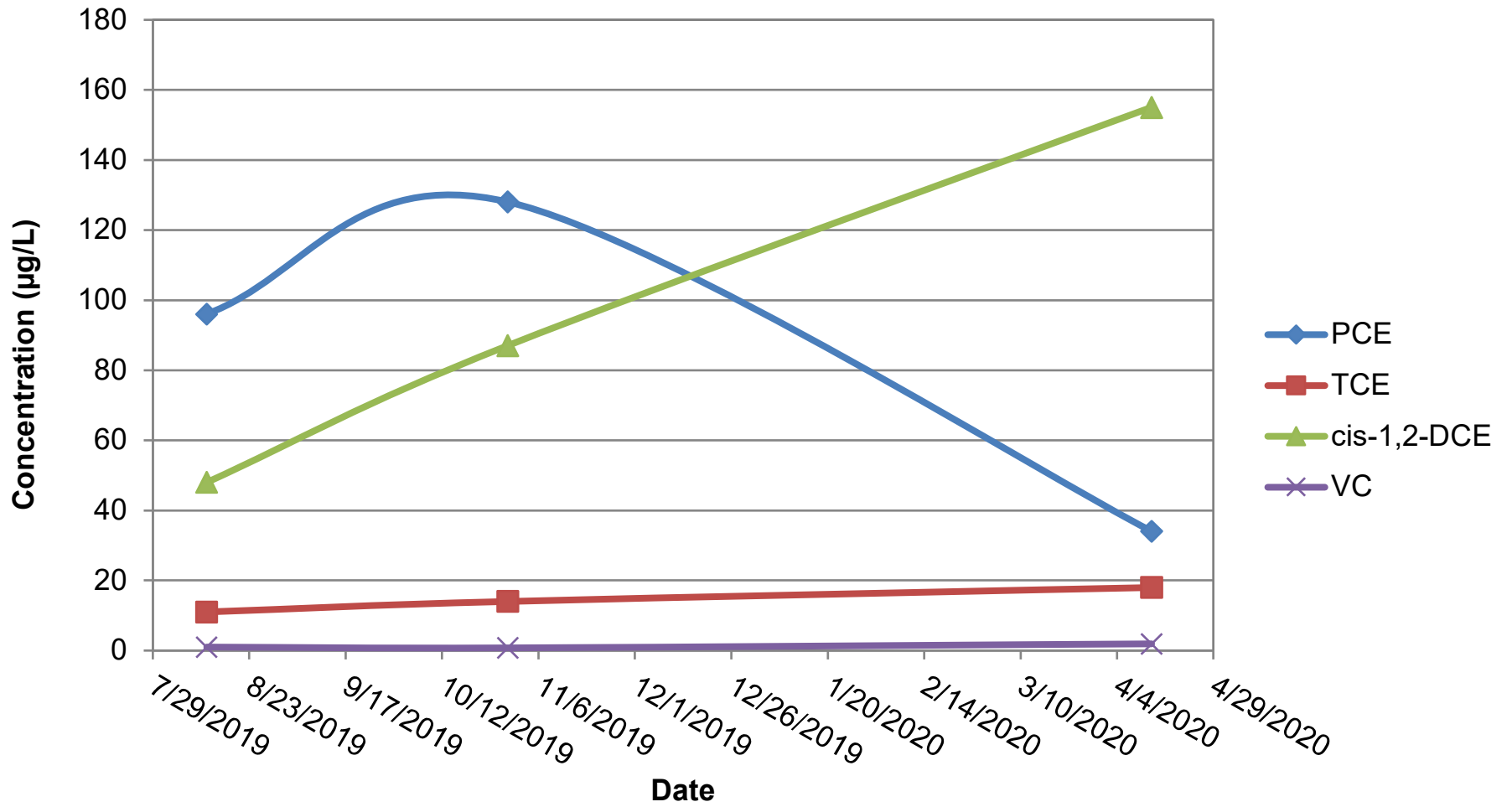
**MW458-I
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



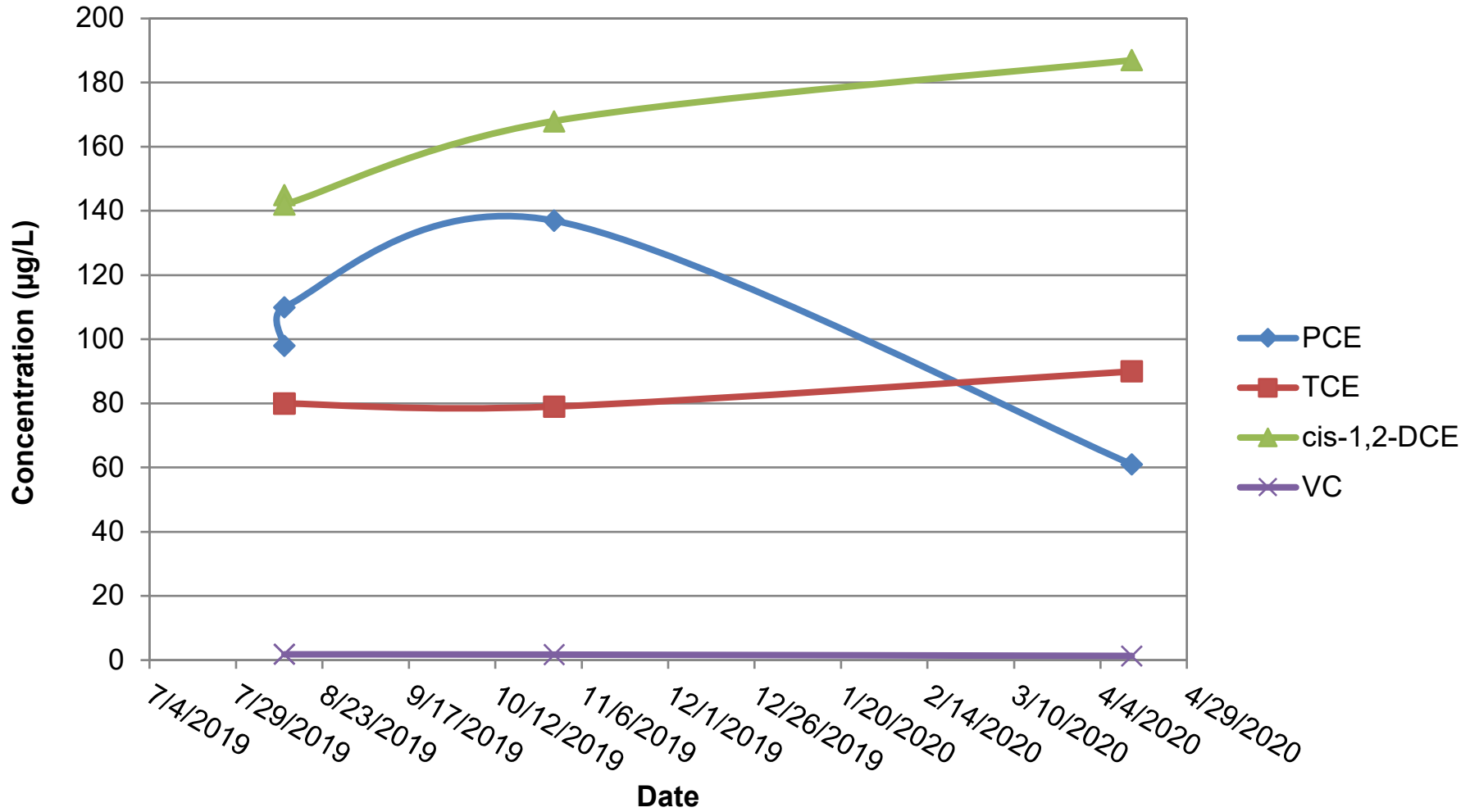
**MW458-D
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



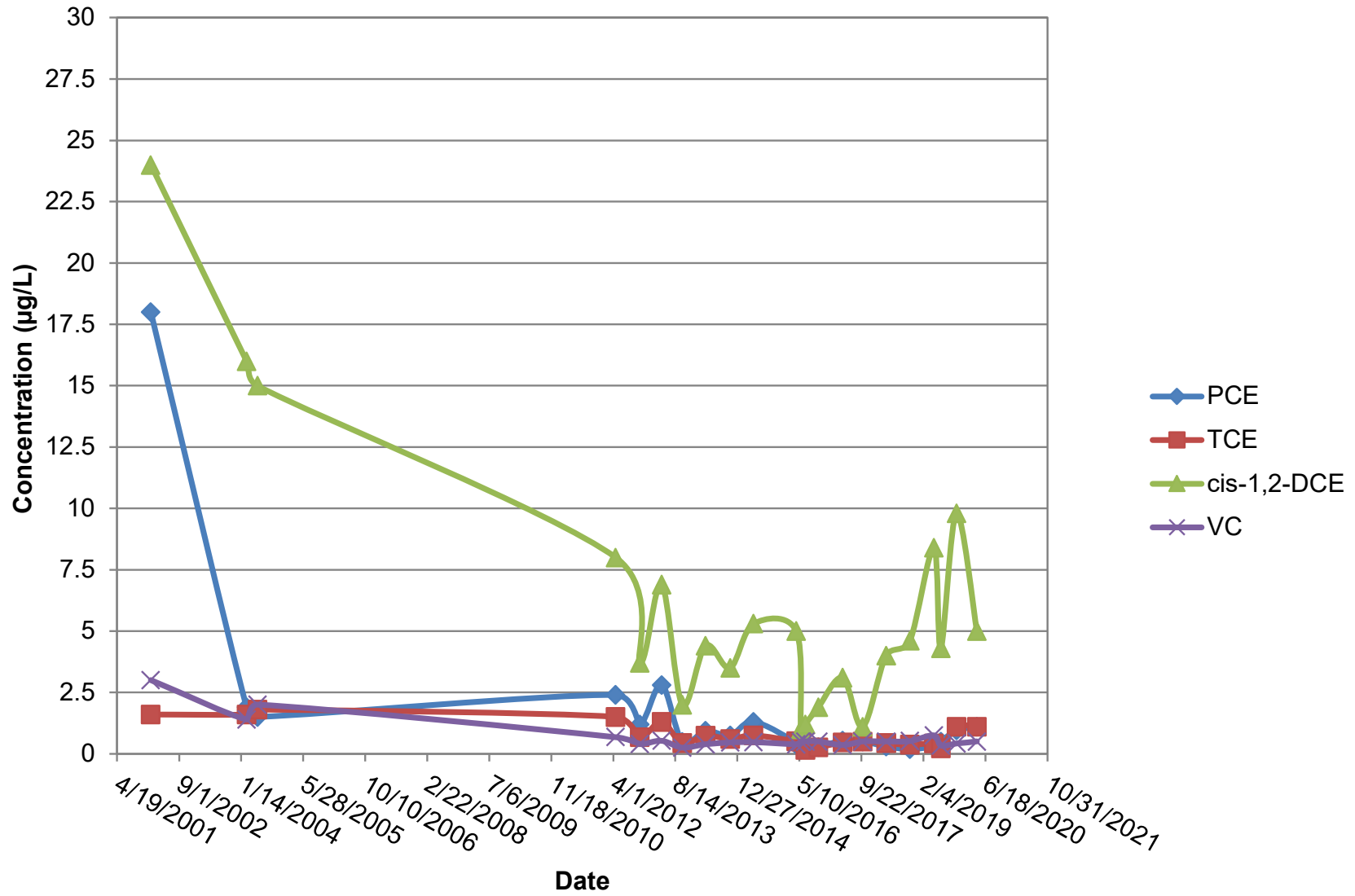
**MW459-I
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



**MW459-D
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site**



PT-04
Groundwater COC Concentrations
Operable Unit 2
Lockwood Solvent Groundwater Plume Site



Appendix E

EB Performance Groundwater Monitoring Field Sheets

Project: Lockwood Solvent Site - Enhanced Bioremediation Performance Monitoring

Field Personnel: R. Paulson 5/26/20 / R. Paulson 5/27/20

Weather/Temperature: 71°F Pt Cloudy / 64°F Pt. Cloudy



Well ID	Date	Time	Depth to Water (ft. below TOC)	Temperature (°C)	pH (S.U.)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)
MW006	5-27-20	0949	7.74	10.1	7.33	1991	-51.3	0.28
MW007	5-26-20	1355	7.68	10.0	7.29	1825	-309.2	0.21
MW009	5-27-20	1043	6.37	7.3	7.91	1985	-33.2	3.52
MW117R	5-27-20	1015	7.21	9.4	7.38	2139	-56.1	0.38
MW408-I	5-27-20	1620	3.74	11.1	7.67	2564	-12.9	7.01
MW408-D	5-27-20	1557	3.80	11.7	7.56	2218	-84.1	0.56
MW409-I	5-27-20	1533	3.53	10.6	7.55	2291	-18.4	7.92
MW409-D	5-27-20	1511	3.58	11.5	7.41	2072	-67.6	1.33
MW410-I								
MW410-D								
MW412-I								
MW412-D								
MW413-I	5-27-20	1139	4.68	10.3	7.02	1748	-244.6	0.38
MW413-D	5-27-20	1120	4.70	11.1	7.39	2018	-52.7	0.37
MW451-I	5-27-20	1410	3.94	10.1	7.29	2081	-43.6	0.63
MW451-D	5-27-20	1352	3.94	10.8	7.29	2027	-43.3	0.40
MW452-I	5-27-20	1326	4.63	10.4	7.29	2072	-78.5	0.29
MW452-D	5-27-20	1313	4.67	10.9	7.26	2071	-76.0	0.35
MW453-I	5-26-20	1049	2.41	9.0	7.17	1954	-57.6	0.53
MW453-D	5-26-20	1031	2.55	10.0	7.11	1928	-64.2	0.50
MW454-I	5-27-20	1212	3.75	9.5	7.36	2040	-147.4	0.33
MW454-D	5-27-20	1159	3.63	10.6	7.50	2019	-152.9	0.90
MW455-I	5-26-20	1136	3.75	9.7	7.16	2018	-365.6	0.22
MW455-D	5-26-20	1120	3.95	10.6	7.39	2004	-152.3	0.32
MW456-I	5-26-20	1253	3.87	9.5	7.28	2238	-262.7	0.32
MW456-D	5-26-20	1232	4.13	10.5	7.38	2154	-250.8	0.69
MW457-I	5-26-20	1334	4.40	9.0	7.22	2038	-254.0	0.33
MW457-D	5-26-20	1321	4.45	10.2	7.65	2818	-316.0	0.23
MW458-I	5-27-20	0932	4.35	9.7	7.21	2133	-105.7	0.30
MW458-D	5-27-20	0918	4.58	10.7	8.08	3231	-166.9	0.27
MW459-I	5-27-20	1243	3.00	9.4	7.24	2055	-132.2	0.62
MW459-D	5-27-20	1229	3.30	10.7	7.29	2089	-135.0	0.26
PT-04	5-26-20	1204	7.41	9.3	7.83	2959	-351.6	0.28

EVO
IN
WELLS

Notes:

TOC = top of casing

ORP = oxidation-reduction potential

S.U. = standard units

DO = dissolved oxygen

oil/water interface probe not operational

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 5/27/2020 WELL NO. MW408-I
 PROJECT NUMBER: EB GW TEMPERATURE: 74 °F
 FIELD PERSONNEL: R. Paulson WEATHER: pt. Cloudy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.74 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
 E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>			
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	_____ feet of water	= _____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	_____ feet of water	= _____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	_____ feet of water	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 21 minutes

OBSERVATIONS: pump start: 1559

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1602	~0.25	Clear	None	11.4	7.68	2585	-24.8	7.37
1605	~0.5	Clear	None	11.2	7.67	2611	-21.6	7.78
1608	~0.75	Clear	None	11.0	7.68	2610	-19.5	7.55
1611	~1.0	"	"	11.1	7.67	2586	-17.3	7.30
1614	~1.25	"	"	11.3	7.67	2584	-14.7	7.22
1617	~1.5	"	"	11.1	7.70	2578	-14.4	7.03
1620	~1.75	"	"	11.1	7.67	2564	-12.9	7.01

Total Volume of Water Purged From Well: ~ 1.75 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
_____	_____	3 - 40 mL VOA Vials	HCl	8260B
_____	_____	1 - 500 mL plastic bottle	None	E300.0/A2320 B
_____	_____	1 - 250 mL plastic bottle (filtered)	HNO3	E6010.20
_____	_____	2 - 40 mL VOA Vials	H2SO4	SW8015M

COMMENTS: Tubing set at ~ _____ ft below TOC. **Ferrous Iron (FE2) concentration -** _____ mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: R. Paulson

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 5/27/2020 WELL NO. MW406-D
 PROJECT NUMBER: EB GW TEMPERATURE: 74 °F
 FIELD PERSONNEL: R. Paulson WEATHER: pt. Cloudy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 380 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
 E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: Pump start: 1539

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1542	~0.25	rocky Clear	None	11.7	7.59	2131	-27.8	2.40
1545	~0.5	"	"	11.7	7.59	2128	-26.2	1.32
1548	~0.75	Clear	"	11.6	7.60	2184	-28.8	1.05
1551	~1.0	"	"	11.7	7.57	2196	-30.9	0.60
1554	~1.25	"	"	11.8	7.56	2203	-32.6	0.57
1557	~1.5	"	"	11.7	7.56	2218	-34.1	0.56

Total Volume of Water Purged From Well: ~ 1.5 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
		3 - 40 mL VOA Vials	HCl	8260B
		1 - 500 mL plastic bottle	None	E300.0/A2320 B
		1 - 250 mL plastic bottle (filtered)	HNO3	E6010.20
		2 - 40 mL VOA Vials	H2SO4	SW8015M

COMMENTS: Tubing set at ~ _____ ft below TOC. Ferrous Iron (FE2) concentration - _____ mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 5/27/2020 WELL NO. MW409-I
 PROJECT NUMBER: FB GW TEMPERATURE: 74 °F
 FIELD PERSONNEL: R. Radson WEATHER: Pt. Cloudy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.53 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
 E. Height of Water Column in casing (h = TD - SWL): _____ FT.

~~F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:~~

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	_____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: Pump Start: 1515

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1518	~0.25	Clear	None	10.6	7.57	2317	-42.4	8.93
1521	~0.5	"	"	10.6	7.56	2289	-39.9	8.44
1524	~0.75	"	"	10.5	7.56	2290	-31.0	8.27
1527	~1.0	"	"	10.5	7.56	2290	-20.2	7.90
1530	~1.25	"	"	10.5	7.56	2289	-19.7	7.93
1533	~1.5	"	"	10.6	7.55	2291	-18.4	7.92

Total Volume of Water Purged From Well: ~ 1.5 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
		3 - 40 mL VOA Vials	HCl	8260B
		1 - 500 mL plastic bottle	None	E300.0/A2320 B
		1 - 250 mL plastic bottle (filtered)	HNO3	E6010.20
		2 - 40 mL VOA Vials	H2SO4	SW8015M

COMMENTS: Tubing set at ~ _____ ft below TOC. Ferrous Iron (FE2) concentration - _____ mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Signature: R. Radson

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 5/27/2020 WELL NO. MW409-D
 PROJECT NUMBER: FB GW TEMPERATURE: 74 °F
 FIELD PERSONNEL: R. Paulson WEATHER: Pl. Cloudy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 3.58 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
 E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 27 minutes

OBSERVATIONS: Pump start: 1444

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1447	~0.25	Clear	None	11.7	7.38	2043	-11.8	0.61
1450	~0.5	Clear	None	11.7	7.38	2055	-14.0	0.55
1453	~0.75	"	"	11.6	7.37	2061	-22.9	0.57
1456	~1.0	"	"	11.6	7.37	2068	-42.2	0.70
1459	~1.25	"	"	11.9	7.38	2069	-52.9	0.91
1502	~1.5	"	"	11.5	7.40	2074	-57.5	0.99
1505	~1.75	"	"	11.5	7.40	2073	-62.1	1.15
1508	~2.0	"	"	11.5	7.40	2073	-64.3	1.27
1511	~2.25	"	"	11.5	7.41	2072	-67.6	1.33

Total Volume of Water Purged From Well: ~ 2.25 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
		3 - 40 mL VOA Vials	HCl	8260B
		1 - 500 mL plastic bottle	None	E300.0/A2320 B
		1 - 250 mL plastic bottle (filtered)	HNO3	E6010.26
		2 - 40 mL VOA Vials	H2SO4	SW8015M

COMMENTS: Tubing set at ~ _____ ft below TOC. Ferrous Iron (FE2) concentration - _____ mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: R. Paulson

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 5/27/2020 WELL NO. MW413-I
 PROJECT NUMBER: EB GW TEMPERATURE: 70 °F
 FIELD PERSONNEL: R. Paulson WEATHER: Pt. Cloudy

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
- B. Static Water Level (SWL) below top of casing/piezometer: 4.68 FT.
- C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
- D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
- E. Height of Water Column in casing (h = TD - SWL): _____ FT.
- F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.			
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	= _____ PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	= _____ PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: Pump Start: 1121

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1124	~0.25	Clear	None	10.2	7.00	1711	-223.6	0.55
1127	~0.5	"	"	10.2	7.01	1721	-229.3	0.48
1130	~0.75	"	"	10.3	7.00	1726	-233.3	0.44
1133	~1.00	"	"	10.3	7.00	1728	-240.0	0.40
1136	~1.25	"	"	10.2	7.02	1753	-244.1	0.37
1139	~1.5	"	"	10.3	7.02	1748	-244.6	0.38

Total Volume of Water Purged From Well: ~ 1.5 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
		3 - 40 mL VOA Vials	HCl	8260B
		1 - 500 mL plastic bottle	None	E300.0/A2320 B
		1 - 250 mL plastic bottle (filtered)	HNO3	E6010.20
		2 - 40 mL VOA Vials	H2SO4	SW8015M

COMMENTS: Tubing set at ~ _____ ft below TOC. **Ferrous Iron (FE2) concentration -** _____ mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in ft.
 4-inch hole.....0.65 gal/in ft.

Signature: 

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 5/27/2020 WELL NO. MW413-D
 PROJECT NUMBER: EB GW TEMPERATURE: 66 °F
 FIELD PERSONNEL: R. Paulson WEATHER: PT. Cloudy

FIELD MEASUREMENTS:

A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 4.70 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
 E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well-Vols.	5 Well Vols.				
2" diameter	= 0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	= 2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	= 4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 21 minutes

OBSERVATIONS: Pump start 1059

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1102	~0.25	Clear	None	11.0	7.38	2011	-33.2	0.91
1105	~0.5	"	"	11.1	7.40	2015	-46.5	0.74
1108	~1.0	"	"	11.0	7.38	2015	-49.9	0.68
1111	~1.25	"	"	11.0	7.39	2016	-51.6	0.61
1114	~1.5	"	"	11.1	7.39	2012	-51.9	0.54
1117	~1.75	"	"	11.2	7.38	2014	-52.3	0.40
1120	~2.0	"	"	11.1	7.39	2018	-52.7	0.37

Total Volume of Water Purged From Well: ~ 20 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
		3 - 40 mL VOA Vials	HCl	8260B
		1 - 500 mL plastic bottle	None	E300.0/A2320 B
		1 - 250 mL plastic bottle (filtered)	HNO3	E6010.20
		2 - 40 mL VOA Vials	H2SO4	SW8015M

COMMENTS: Tubing set at ~ _____ ft below TOC. **Ferrous Iron (FE2) concentration -** _____ mg/L

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Signature: 

Project: Lockwood Solvent Site - Enhanced Bioremediation Performance Monitoring

Field Personnel: SK JB

Weather/Temperature: 56, sunny, calm



Well ID	Date	Time	Depth to Water (ft. below TOC)	Temperature (°C)	pH (S.U.)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)
MW006	6-30-20	0910	4.49	10.3	7.27	2025	42.2	0.47
MW007	6-30-20	1040	5.02	10.1	7.31	1874	-342.3	0.29
MW009	6-30-20	1311	3.35	8.6	7.95	2006	-147.7	2.25
MW117R	6-30-20	0903	4.13	9.5	7.07	2169	-6.7	0.89
MW408-I	*							
MW408-D	*							
MW409-I	*							
MW409-D	*							
MW410-I	**							
MW410-D	**							
MW412-I	**							
MW412-D	**							
MW413-I	6-30-20	1535	1.83	11.5	7.11	1827	-313.4	0.35
MW413-D	6-30-20	1517	1.84	11.8	7.40	2045	-85.4	0.41
MW451-I	6-30-20	1449	1.47	11.2	7.29	2111	-44.6	0.70
MW451-D	6-30-20	1430	1.44	10.9	7.28	2046	-34.9	0.34
MW452-I	6-30-20	1413	2.12	11.2	7.26	2104	-50.6	0.35
MW452-D	6-30-20	1354	2.11	11.2	7.12	2122	-34.2	0.52
MW453-I			submerged under standing water					
MW453-D			submerged under standing water					
MW454-I	6-30-20	1227	1.11	10.0	7.40	2051	-259.7	0.30
MW454-D	6-30-20	1216	1.10	10.5	7.53	2052	-267.6	0.27
MW455-I	6-30-20	1141	1.31	9.8	7.23	2090	-387.9	0.29
MW455-D	6-30-20	1128	1.29	10.3	7.46	2073	-271.3	0.30
MW456-I	6-30-20	1115	1.23	10.7	7.28	2243	-282.4	0.40
MW456-D	6-30-20	1058	1.74	10.3	7.35	2173	-290.9	0.27
MW457-I	6-30-20	1024	1.61	11.1	7.24	2072	-152.3	0.38
MW457-D	6-30-20	1013	1.59	10.2	7.99	3047	-212.9	0.30
MW458-I	6-30-20	0945	1.14	11.9	7.19	2148	-80.2	0.44
MW458-D	6-30-20	0930	1.27	10.6	8.10	3300	-148.1	0.34
MW459-I	6-30-20	1248	0.25	10.4	7.18	2041	-243.6	0.42
MW459-D	6-30-20	1239	0.44	10.5	7.34	2129	-246.2	0.28
PT-04	6-30-20	1155	5.29	9.3	7.89	3101	-393.3	0.24

Notes:

TOC = top of casing

ORP = oxidation-reduction potential

S.U. = standard units

DO = dissolved oxygen

* - submerged under standing water

** - still contain EDS, not monitored

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS EB PERFORMANCE MNTRG DATE: 6 / 30 / 2020 WELL NO. MW413-5

PROJECT NUMBER: Z051000003 TEMPERATURE: 68 °F

FIELD PERSONNEL: SK / JB WEATHER: Cloudy, light breeze

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
- B. Static Water Level (SWL) below top of casing/piezometer: 1.83 FT.
- C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
- D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
- E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

	3 Well Vols.	5 Well Vols.			
2" diameter =	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	= _____ PV (gallons)
4" diameter =	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	= _____ PV (gallons)
6" diameter =	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	= _____ PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 15 minutes

OBSERVATIONS: start: 1520

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1523	~0.25	clear	NONE	11.8	7.05	1911	-283.7	0.47
1526	~0.50	clear	NONE	11.7	7.09	1808	-298.4	0.43
1529	~1.00	clear	NONE	11.6	7.10	1815	-307.0	0.40
1532	~1.50	clear	NONE	11.6	7.10	1826	-313.0	0.36
1535	~2.00	clear	NONE	11.5	7.11	1827	-313.4	0.35

Total Volume of Water Purged From Well: ~ 2.00 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative	Analysis
<u>/</u>	<u>/</u>	<u>/</u>	HCl <u>/</u>	8260B <u>/</u>

COMMENTS: Tubing set at ~ _____ ft below TOC.

Casing Capacities:
1-inch hole.....0.041 gal/in.ft.
2-inch hole.....0.16 gal/in.ft.
4-inch hole.....0.65 gal/in.ft.

Signature: [Signature]

Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS EB PERFORMANCE MNTRG DATE: 6 / 30 /2020 WELL NO. MW413-D

PROJECT NUMBER: Z051000003 TEMPERATURE: 68 °F

FIELD PERSONNEL: SK/JP WEATHER: cloudy, light breeze

FIELD MEASUREMENTS:

- A. LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.
 B. Static Water Level (SWL) below top of casing/piezometer: 1.84 FT.
 C. DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.
 D. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
 E. Height of Water Column in casing (h = TD - SWL): _____ FT.

F. Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water	=	PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water	=	PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water	=	PV (gallons)

PURGING METHOD: Peristaltic Pump DURATION: ~ 18 minutes

OBSERVATIONS: start: 1459

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)
1502	~0.25	clear	none	12.1	7.44	2052	-87.6	0.75
1505	~0.50	clear	none	12.0	7.41	2049	-84.2	0.64
1508	~1.00	clear	none	12.0	7.40	2044	-84.0	0.58
1511	~1.50	clear	none	11.8	7.40	2044	-84.3	0.50
1514	~2.00	clear	none	11.8	7.40	2044	-84.9	0.44
1517	~2.50	clear	none	11.8	7.40	2045	-85.4	0.41

Total Volume of Water Purged From Well: ~ 2.50 gallons

Purge Water Stored/Disposed of Where/How: Poly tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Number/Size of Container(s)	Preservative HCl	Analysis
<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>8260B</u>
<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>
<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>

COMMENTS: Tubing set at ~ _____ ft below TOC.

Casing Capacities:
 1-inch hole.....0.041 gal/in.ft.
 2-inch hole.....0.16 gal/in.ft.
 4-inch hole.....0.65 gal/in.ft.

Signature: [Signature]

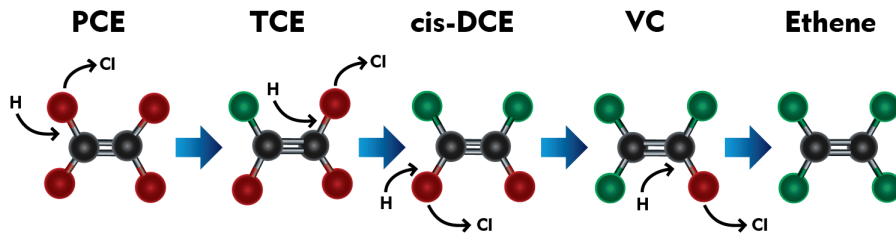
Appendix F

Microbial Insights DHC Interpretation Guide

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	<i>Dehalococcoides</i> spp.	Observation
	$\geq 10^4$ (cells/mL)	Lu et al. proposed that a concentration of 1×10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	10^1 to $< 10^4$ (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	$< 10^1$ (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

DHC Functional Genes (*tceA*, *bvcA*, *vcrA*)

A “stall” where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate *cis*-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, *cis*-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
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TCE Reductase

<i>tceA</i> gene	<p>The <i>tceA</i> gene encodes the enzyme responsible for reductive dechlorination of TCE to <i>cis</i>-DCE in some strains of <i>Dehalococcoides</i>.</p> <p>Absence of <i>tceA</i> does not preclude the potential for reductive dechlorination of TCE in the field since the <i>tceA</i> gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. <i>Dehalobacter</i>).</p> <p>Detection of the <i>tceA</i> gene provides an additional line of evidence indicating the potential for dechlorination of TCE.</p>
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Vinyl Chloride Reductase

<i>bvcA</i> gene	<p>The <i>bvcA</i> gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by <i>Dehalococcoides</i> sp. str. BAV1 (16).</p> <p>Presence of <i>bvcA</i> gene indicates the potential for reductive dechlorination of VC to ethene.</p> <p>Absence of both <i>bvcA</i> and <i>vcrA</i> genes suggests VC may accumulate.</p> <p>An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10⁴ cells/mL. The <i>bvcA</i> gene was detected in over 50% of these samples.</p> <p>Van Der Zaan et al (17) noted that the <i>bvcA</i> gene was the only VC reductase gene detected at three of their sites.</p> <p>Alfred Spormann’s laboratory at Stanford University (18) reported that the <i>bvcA</i> gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the <i>bvcA</i> gene for complete reductive dechlorination.</p>
<i>vcrA</i> gene	<p>The <i>vcrA</i> gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of <i>cis</i>-DCE and vinyl chloride by <i>Dehalococcoides</i> sp. strain VS (14).</p> <p>Presence of <i>vcrA</i> gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene.</p> <p>Absence of both <i>bvcA</i> and <i>vcrA</i> genes suggest VC may accumulate.</p> <p>As with the <i>bvcA</i> gene, detection of the <i>vcrA</i> gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).</p>

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
 Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: Company Name	MI Project Number: Unique Laboratory Identifier
Project: Your Project Name	Date Received: Date Samples Arrived

Sample Information

Client Sample ID:	Sample A	Sample B	Sample C
Sample Date:	00/00/0000	00/00/0000	00/00/0000
Units:	cells/mL	cells/mL	cells/mL
Analyst:	Intials	Intials	Intials

Dechlorinating Bacteria

	DHC			
<i>Dehalococcoides spp.</i>		1.84E+05	2.76E+02	2.28E+01 (J)

Functional Genes

tceA Reductase	TCE	6.00E+01	3.23E+01	<4.00E-01
bvcA Reductase	BVC	1.17E+04	1.81E+01	<4.00E-01
vcrA Reductase	VCR	8.42E+04	1.74E+02	<4.00E-01

"J" value
 Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL
 < = Result not detected

< value
 The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

I = Inhibited

"I" value
 QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. <i>Dehalococcoides</i>) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

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Appendix G

June 2020 IDW Liquid Matrix Analytical Report and Field Sheet



ANALYTICAL SUMMARY REPORT

June 25, 2020

Tasman Geosciences Inc
6855 W 119th Ave
Broomfield, CO 80020-2813

Work Order: B20061230 Quote ID: B2871

Project Name: Lockwood Solvent Site

Energy Laboratories Inc Billings MT received the following 2 samples for Tasman Geosciences Inc on 6/12/2020 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B20061230-001	IDW001LM	06/12/20 9:36	06/12/20	Aqueous	8260-Volatile Organic Compounds-Short List
B20061230-002	Trip Blank Lot091719 B-JDB SHP0275	06/12/20 0:00	06/12/20	Trip Blank	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: IDW001LM
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20061230-001
Collection Date: 06/12/20 09:36
Date Received: 06/12/20
Report Date: 06/25/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Bromobenzene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Bromochloromethane	ND	ug/L		0.50	0.082	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Bromodichloromethane	ND	ug/L		0.50	0.090	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Bromoform	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Bromomethane	ND	ug/L		0.50	0.27	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
n-Butylbenzene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Carbon tetrachloride	ND	ug/L		0.50	0.079	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Chlorobenzene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Chlorodibromomethane	ND	ug/L		0.50	0.080	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Chloroethane	ND	ug/L		0.50	0.29	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Chloroform	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Chloromethane	ND	ug/L		0.50	0.23	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2-Dibromoethane	ND	ug/L		0.50	0.092	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
2-Chlorotoluene	ND	ug/L		0.50	0.13	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
4-Chlorotoluene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.28	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Dibromomethane	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,3-Dichlorobenzene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,4-Dichlorobenzene	ND	ug/L		0.50	0.13	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Dichlorodifluoromethane	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1-Dichloroethane	ND	ug/L		0.50	0.087	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2-Dichloroethane	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1-Dichloroethene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2-Dichloropropane	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,3-Dichloropropane	ND	ug/L		0.50	0.093	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
2,2-Dichloropropane	ND	ug/L		0.50	0.16	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1-Dichloropropene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: IDW001LM
Project: Lockwood Solvent Site
Matrix: Aqueous

Lab ID: B20061230-001
Collection Date: 06/12/20 09:36
Date Received: 06/12/20
Report Date: 06/25/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Ethylbenzene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Hexachlorobutadiene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Isopropylbenzene	ND	ug/L		0.50	0.15	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
p-Isopropyltoluene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.089	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Methylene chloride	ND	ug/L		0.50	0.071	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Naphthalene	ND	ug/L		0.50	0.058	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
n-Propylbenzene	ND	ug/L		0.50	0.16	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Styrene	ND	ug/L		0.50	0.080	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.094	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.17	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Tetrachloroethene	0.40	ug/L	J	0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Toluene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.074	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1,1-Trichloroethane	ND	ug/L		0.50	0.090	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,1,2-Trichloroethane	ND	ug/L		0.50	0.096	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Trichloroethene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Trichlorofluoromethane	ND	ug/L		0.50	0.051	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
1,2,3-Trichloropropane	ND	ug/L		0.50	0.27	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Vinyl chloride	ND	ug/L		0.50	0.078	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
m+p-Xylenes	ND	ug/L		0.50	0.19	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
o-Xylene	ND	ug/L		0.50	0.091	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Xylenes, Total	ND	ug/L		0.50	0.091	SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Surr: Dibromofluoromethane	100	%REC		77-126		SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Surr: 1,2-Dichloroethane-d4	94.0	%REC		70-130		SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Surr: Toluene-d8	105	%REC		79-122		SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267
Surr: p-Bromofluorobenzene	89.0	%REC		76-127		SW8260B	06/22/20 15:30 / sbd			SV5972.I_200622B : 14		R344267

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot091719 B-JDB SHP0275
Project: Lockwood Solvent Site
Matrix: Trip Blank

Lab ID: B20061230-002
Collection Date: 06/12/20
Date Received: 06/12/20
Report Date: 06/25/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
Benzene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Bromobenzene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Bromochloromethane	ND	ug/L		0.50	0.082	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Bromodichloromethane	ND	ug/L		0.50	0.090	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Bromoform	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Bromomethane	ND	ug/L		0.50	0.27	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
n-Butylbenzene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
sec-Butylbenzene	ND	ug/L		0.50	0.15	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
tert-Butylbenzene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Carbon tetrachloride	ND	ug/L		0.50	0.079	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Chlorobenzene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Chlorodibromomethane	ND	ug/L		0.50	0.080	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Chloroethane	ND	ug/L		0.50	0.29	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Chloroform	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Chloromethane	ND	ug/L		0.50	0.23	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2-Dibromoethane	ND	ug/L		0.50	0.092	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
2-Chlorotoluene	ND	ug/L		0.50	0.13	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
4-Chlorotoluene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0	0.28	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Dibromomethane	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2-Dichlorobenzene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,3-Dichlorobenzene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,4-Dichlorobenzene	ND	ug/L		0.50	0.13	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Dichlorodifluoromethane	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1-Dichloroethane	ND	ug/L		0.50	0.087	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2-Dichloroethane	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1-Dichloroethene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
cis-1,2-Dichloroethene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
trans-1,2-Dichloroethene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2-Dichloropropane	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,3-Dichloropropane	ND	ug/L		0.50	0.093	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
2,2-Dichloropropane	ND	ug/L		0.50	0.16	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1-Dichloropropene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
cis-1,3-Dichloropropene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Tasman Geosciences Inc
Client Sample ID: Trip Blank Lot091719 B-JDB SHP0275
Project: Lockwood Solvent Site
Matrix: Trip Blank

Lab ID: B20061230-002
Collection Date: 06/12/20
Date Received: 06/12/20
Report Date: 06/25/20

Analyses	Result	Units	QUAL	RL	MDL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
VOLATILE ORGANIC COMPOUNDS												
trans-1,3-Dichloropropene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Ethylbenzene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Hexachlorobutadiene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Isopropylbenzene	ND	ug/L		0.50	0.15	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
p-Isopropyltoluene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Methyl tert-butyl ether (MTBE)	ND	ug/L		0.50	0.089	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Methylene chloride	ND	ug/L		0.50	0.071	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Naphthalene	ND	ug/L		0.50	0.058	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
n-Propylbenzene	ND	ug/L		0.50	0.16	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Styrene	ND	ug/L		0.50	0.080	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1,1,2-Tetrachloroethane	ND	ug/L		0.50	0.094	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1,2,2-Tetrachloroethane	ND	ug/L		0.50	0.17	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Tetrachloroethene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Toluene	ND	ug/L		0.50	0.11	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2,3-Trichlorobenzene	ND	ug/L		0.50	0.10	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2,4-Trichlorobenzene	ND	ug/L		0.50	0.074	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2,4-Trimethylbenzene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,3,5-Trimethylbenzene	ND	ug/L		0.50	0.12	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1,1-Trichloroethane	ND	ug/L		0.50	0.090	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,1,2-Trichloroethane	ND	ug/L		0.50	0.096	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Trichloroethene	ND	ug/L		0.50	0.14	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Trichlorofluoromethane	ND	ug/L		0.50	0.051	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
1,2,3-Trichloropropane	ND	ug/L		0.50	0.27	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Vinyl chloride	ND	ug/L		0.50	0.078	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
m+p-Xylenes	ND	ug/L		0.50	0.19	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
o-Xylene	ND	ug/L		0.50	0.091	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Xylenes, Total	ND	ug/L		0.50	0.091	SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Surr: Dibromofluoromethane	99.0	%REC		77-126		SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Surr: 1,2-Dichloroethane-d4	93.0	%REC		70-130		SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Surr: Toluene-d8	105	%REC		79-122		SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267
Surr: p-Bromofluorobenzene	90.0	%REC		76-127		SW8260B	06/22/20 15:56 / sbd			SV5972.I_200622B : 15		R344267

Report Definitions: RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 1		SampType: MS Tuning File			Lab ID: 22JUN02_D_TUNE			Method: SW8260B			
Analysis Date: 06/22/20 10:40		Units: %		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
95, Base Peak	100		100	0	100	0	100				
50, % of mass 95	26.1		100	0	26.1	15	40				
75, % of mass 95	50.9		100	0	50.9	30	60				
96, % of mass 95	6.60		100	0	6.6	5	9				
173, % of mass 174	ND		100	0	0	0	1.99				
174, % of mass 95	78.1		100	0	78.1	50	99.99				
175, % of mass 174	7.60		100	0	7.6	5	9				
176, % of mass 174	96.2		100	0	96.2	95	101				
177, % of mass 176	5.70		100	0	5.7	5	9				

Associated samples: **B20061230-001A, B20061230-002A**

Run ID :Run Order: SV5972.I_200622B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV062220			Method: SW8260B			
Analysis Date: 06/22/20 11:06		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.42	0.50	5	0	88	70	130				
Bromobenzene	4.80	0.50	5	0	96	70	130				
Bromochloromethane	5.18	0.50	5	0	104	70	130				
Bromodichloromethane	4.37	0.50	5	0	87	70	130				
Bromoform	5.37	0.50	5	0	107	70	130				
Bromomethane	4.85	0.50	5	0	97	70	130				
n-Butylbenzene	3.54	0.50	5	0	71	70	130				
sec-Butylbenzene	3.63	0.50	5	0	73	70	130				
tert-Butylbenzene	3.79	0.50	5	0	76	70	130				
Carbon tetrachloride	4.05	0.50	5	0	81	70	130				
Chlorobenzene	4.82	0.50	5	0	96	70	130				
Chlorodibromomethane	5.21	0.50	5	0	104	70	130				
Chloroethane	4.64	0.50	5	0	93	70	130				
Chloroform	4.06	0.50	5	0	81	80	120				
Chloromethane	5.31	0.50	5	0	106	70	130				
1,2-Dibromo-3-chloropropane	4.76	1.0	5	0	95	70	130				
1,2-Dibromoethane	5.47	0.50	5	0	109	70	130				
2-Chlorotoluene	4.55	0.50	5	0	91	70	130				
Dibromomethane	5.22	0.50	5	0	104	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: **SV5972.I_200622B: 2**

SampType: **Continuing Calibration Verification Standar**

Lab ID: **CCV062220**

Method: **SW8260B**

Analysis Date: **06/22/20 11:06**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	4.68	0.50	5	0	94	70	130				
4-Chlorotoluene	4.21	0.50	5	0	84	70	130				
1,3-Dichlorobenzene	4.49	0.50	5	0	90	70	130				
1,4-Dichlorobenzene	4.55	0.50	5	0	91	70	130				
Dichlorodifluoromethane	5.01	0.50	5	0	100	70	130				
1,1-Dichloroethane	4.21	0.50	5	0	84	70	130				
1,2-Dichloroethane	4.09	0.50	5	0	82	70	130				
1,1-Dichloroethene	4.30	0.50	5	0	86	80	120				
cis-1,2-Dichloroethene	4.46	0.50	5	0	89	70	130				
trans-1,2-Dichloroethene	4.40	0.50	5	0	88	70	130				
1,2-Dichloropropane	4.77	0.50	5	0	95	80	120				
1,3-Dichloropropane	4.98	0.50	5	0	100	70	130				
2,2-Dichloropropane	4.21	0.50	5	0	84	70	130				
1,1-Dichloropropene	3.92	0.50	5	0	78	70	130				
cis-1,3-Dichloropropene	4.97	0.50	5	0	99	70	130				
trans-1,3-Dichloropropene	5.02	0.50	5	0	100	70	130				
Ethylbenzene	4.49	0.50	5	0	90	80	120				
Hexachlorobutadiene	4.72	0.50	5	0	94	70	130				
Isopropylbenzene	4.02	0.50	5	0	80	70	130				
p-Isopropyltoluene	3.89	0.50	5	0	78	70	130				
Methyl tert-butyl ether (MTBE)	4.55	0.50	5	0	91	70	130				
Methylene chloride	4.21	0.50	5	0	84	70	130				
Naphthalene	5.19	0.50	5	0	104	70	130				
n-Propylbenzene	4.14	0.50	5	0	83	70	130				
Styrene	4.97	0.50	5	0	99	70	130				
1,1,1,2-Tetrachloroethane	5.01	0.50	5	0	100	70	130				
1,1,2,2-Tetrachloroethane	4.90	0.50	5	0	98	70	130				
Tetrachloroethene	4.66	0.50	5	0	93	70	130				
Toluene	4.71	0.50	5	0	94	80	120				
1,2,3-Trichlorobenzene	5.57	0.50	5	0	111	70	130				
1,2,4-Trichlorobenzene	5.22	0.50	5	0	104	70	130				
1,1,1-Trichloroethane	3.81	0.50	5	0	76	70	130				
1,1,2-Trichloroethane	5.16	0.50	5	0	103	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 2		SampType: Continuing Calibration Verification Standar			Lab ID: CCV062220			Method: SW8260B			
Analysis Date: 06/22/20 11:06		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	4.58	0.50	5	0	92	70	130				
Trichlorofluoromethane	4.14	0.50	5	0	83	70	130				
1,2,3-Trichloropropane	5.13	0.50	5	0	103	70	130				
1,2,4-Trimethylbenzene	4.15	0.50	5	0	83	70	130				
1,3,5-Trimethylbenzene	3.99	0.50	5	0	80	70	130				
Vinyl chloride	4.96	0.50	5	0	99	80	120				
m+p-Xylenes	9.13	0.50	10	0	91	70	130				
o-Xylene	4.55	0.50	5	0	91	70	130				
Xylenes, Total	13.7	0.50	15	0	91	70	130				
Surr: 1,2-Dichloroethane-d4	9.60	0.50	10	0	96	70	130				
Surr: Dibromofluoromethane	10.1	0.50	10	0	101	77	126				
Surr: p-Bromofluorobenzene	9.03	0.50	10	0	90	76	127				
Surr: Toluene-d8	10.5	0.50	10	0	105	79	122				

Associated samples: **B20061230-001A, B20061230-002A**

Run ID :Run Order: SV5972.I_200622B: 3		SampType: Laboratory Control Sample			Lab ID: LCS062220			Method: SW8260B			
Analysis Date: 06/22/20 11:57		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.35	0.50	5	0	87	71	133				
Bromobenzene	4.80	0.50	5	0	96	78	133				
Bromochloromethane	4.97	0.50	5	0	99	68	131				
Bromodichloromethane	4.25	0.50	5	0	85	67	138				
Bromoform	4.95	0.50	5	0	99	64	136				
Bromomethane	4.64	0.50	5	0	93	60	138				
n-Butylbenzene	3.20	0.50	5	0	64	72	135				S
sec-Butylbenzene	3.66	0.50	5	0	73	73	135				
tert-Butylbenzene	3.76	0.50	5	0	75	69	137				
Carbon tetrachloride	3.72	0.50	5	0	74	61	144				
Chlorobenzene	4.80	0.50	5	0	96	78	136				
Chlorodibromomethane	5.26	0.50	5	0	105	72	136				
Chloroethane	4.61	0.50	5	0	92	64	136				
Chloroform	3.83	0.50	5	0	77	69	133				
Chloromethane	4.95	0.50	5	0	99	63	149				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 3	SampType: Laboratory Control Sample				Lab ID: LCS062220			Method: SW8260B			
Analysis Date: 06/22/20 11:57	Units: ug/L				Prep Info: Prep Date:		Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	4.86	1.0	5	0	97	63	125				
1,2-Dibromoethane	5.33	0.50	5	0	107	75	131				
2-Chlorotoluene	4.56	0.50	5	0	91	74	135				
Dibromomethane	5.01	0.50	5	0	100	72	133				
1,2-Dichlorobenzene	4.58	0.50	5	0	92	78	129				
4-Chlorotoluene	4.13	0.50	5	0	83	79	135				
1,3-Dichlorobenzene	4.48	0.50	5	0	90	79	132				
1,4-Dichlorobenzene	4.52	0.50	5	0	90	78	131				
Dichlorodifluoromethane	5.32	0.50	5	0	106	55	141				
1,1-Dichloroethane	4.12	0.50	5	0	82	72	130				
1,2-Dichloroethane	4.13	0.50	5	0	83	57	146				
1,1-Dichloroethene	4.46	0.50	5	0	89	66	142				
cis-1,2-Dichloroethene	4.48	0.50	5	0	90	74	133				
trans-1,2-Dichloroethene	4.55	0.50	5	0	91	76	138				
1,2-Dichloropropane	4.74	0.50	5	0	95	72	135				
1,3-Dichloropropane	4.79	0.50	5	0	96	75	134				
2,2-Dichloropropane	4.04	0.50	5	0	81	42	167				
1,1-Dichloropropene	3.81	0.50	5	0	76	72	140				
cis-1,3-Dichloropropene	4.91	0.50	5	0	98	75	132				
trans-1,3-Dichloropropene	4.94	0.50	5	0	99	77	145				
Ethylbenzene	4.32	0.50	5	0	86	78	131				
Hexachlorobutadiene	4.79	0.50	5	0	96	65	141				
Isopropylbenzene	3.90	0.50	5	0	78	72	135				
p-Isopropyltoluene	3.78	0.50	5	0	76	71	134				
Methyl tert-butyl ether (MTBE)	4.49	0.50	5	0	90	58	151				
Methylene chloride	4.16	0.50	5	0	83	73	126				
Naphthalene	5.14	0.50	5	0	103	55	139				
n-Propylbenzene	4.00	0.50	5	0	80	70	139				
Styrene	4.93	0.50	5	0	99	76	134				
1,1,1,2-Tetrachloroethane	4.88	0.50	5	0	98	75	135				
1,1,2,2-Tetrachloroethane	4.91	0.50	5	0	98	72	132				
Tetrachloroethene	4.46	0.50	5	0	89	78	137				
Toluene	4.58	0.50	5	0	92	78	134				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 3		SampType: Laboratory Control Sample			Lab ID: LCS062220			Method: SW8260B			
Analysis Date: 06/22/20 11:57		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	5.54	0.50	5	0	111	42	152				
1,2,4-Trichlorobenzene	5.15	0.50	5	0	103	58	142				
1,1,1-Trichloroethane	3.81	0.50	5	0	76	64	141				
1,1,2-Trichloroethane	5.29	0.50	5	0	106	72	133				
Trichloroethene	4.52	0.50	5	0	90	75	138				
Trichlorofluoromethane	4.01	0.50	5	0	80	58	139				
1,2,3-Trichloropropane	4.86	0.50	5	0	97	67	133				
1,2,4-Trimethylbenzene	3.85	0.50	5	0	77	71	129				
1,3,5-Trimethylbenzene	3.84	0.50	5	0	77	68	135				
Vinyl chloride	4.88	0.50	5	0	98	66	140				
m+p-Xylenes	9.03	0.50	10	0	90	78	133				
o-Xylene	4.70	0.50	5	0	94	79	136				
Xylenes, Total	13.7	0.50	15	0	91	78	136				
Surr: 1,2-Dichloroethane-d4	9.79	0.50	10	0	98	70	130				
Surr: Dibromofluoromethane	10.4	0.50	10	0	104	77	126				
Surr: p-Bromofluorobenzene	8.95	0.50	10	0	90	76	127				
Surr: Toluene-d8	10.5	0.50	10	0	105	79	122				

Associated samples: **B20061230-001A, B20061230-002A**

Run ID :Run Order: SV5972.I_200622B: 6		SampType: Method Blank			Lab ID: MBLK062220			Method: SW8260B			
Analysis Date: 06/22/20 12:49		Units: ug/L			Prep Info: Prep Date:			Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.50									
Bromobenzene	ND	0.50									
Bromochloromethane	ND	0.50									
Bromodichloromethane	ND	0.50									
Bromoform	ND	0.50									
Bromomethane	ND	0.50									
n-Butylbenzene	ND	0.50									
sec-Butylbenzene	ND	0.50									
tert-Butylbenzene	ND	0.50									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: **SV5972.I_200622B: 6**

SampType: **Method Blank**

Lab ID: **MBLK062220**

Method: **SW8260B**

Analysis Date: **06/22/20 12:49**

Units: **ug/L**

Prep Info: Prep Date:

Prep Method:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorodibromomethane	ND	0.50									
Chloroethane	ND	0.50									
Chloroform	ND	0.50									
Chloromethane	ND	0.50									
1,2-Dibromo-3-chloropropane	ND	1.0									
1,2-Dibromoethane	ND	0.50									
2-Chlorotoluene	ND	0.50									
Dibromomethane	ND	0.50									
1,2-Dichlorobenzene	ND	0.50									
4-Chlorotoluene	ND	0.50									
1,3-Dichlorobenzene	ND	0.50									
1,4-Dichlorobenzene	ND	0.50									
Dichlorodifluoromethane	ND	0.50									
1,1-Dichloroethane	ND	0.50									
1,2-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	0.50									
cis-1,2-Dichloroethene	ND	0.50									
trans-1,2-Dichloroethene	ND	0.50									
1,2-Dichloropropane	ND	0.50									
1,3-Dichloropropane	ND	0.50									
2,2-Dichloropropane	ND	0.50									
1,1-Dichloropropene	ND	0.50									
cis-1,3-Dichloropropene	ND	0.50									
trans-1,3-Dichloropropene	ND	0.50									
Ethylbenzene	ND	0.50									
Hexachlorobutadiene	ND	0.50									
Isopropylbenzene	ND	0.50									
p-Isopropyltoluene	ND	0.50									
Methyl tert-butyl ether (MTBE)	ND	0.50									
Methylene chloride	ND	0.50									
Naphthalene	ND	0.50									
n-Propylbenzene	ND	0.50									
Styrene	ND	0.50									

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 6		SampType: Method Blank			Lab ID: MBLK062220				Method: SW8260B		
Analysis Date: 06/22/20 12:49		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.50									
1,1,2,2-Tetrachloroethane	ND	0.50									
Tetrachloroethene	ND	0.50									
Toluene	ND	0.50									
1,2,3-Trichlorobenzene	ND	0.50									
1,2,4-Trichlorobenzene	ND	0.50									
1,1,1-Trichloroethane	ND	0.50									
1,1,2-Trichloroethane	ND	0.50									
Trichloroethene	ND	0.50									
Trichlorofluoromethane	ND	0.50									
1,2,3-Trichloropropane	ND	0.50									
1,2,4-Trimethylbenzene	ND	0.50									
1,3,5-Trimethylbenzene	ND	0.50									
Vinyl chloride	ND	0.50									
m+p-Xylenes	ND	0.50									
o-Xylene	ND	0.50									
Xylenes, Total	ND	0.50									
Surr: 1,2-Dichloroethane-d4	9.66	0.50	10	0	97	70	130				
Surr: Dibromofluoromethane	10.3	0.50	10	0	102	77	126				
Surr: p-Bromofluorobenzene	9.32	0.50	10	0	93	76	127				
Surr: Toluene-d8	10.4	0.50	10	0	104	79	122				

Associated samples: **B20061230-001A, B20061230-002A**

Run ID :Run Order: SV5972.I_200622B: 8		SampType: Sample Matrix Spike			Lab ID: B20061230-001AMS				Method: SW8260B		
Analysis Date: 06/22/20 16:22		Units: ug/L			Prep Info: Prep Date:				Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.84	0.50	5	0	97	71	133				
Bromobenzene	5.22	0.50	5	0	104	78	133				
Bromochloromethane	5.24	0.50	5	0	105	68	131				
Bromodichloromethane	4.70	0.50	5	0	94	67	138				
Bromoform	5.50	0.50	5	0	110	64	136				
Bromomethane	4.43	0.50	5	0	89	60	138				
n-Butylbenzene	3.71	0.50	5	0	74	72	135				

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 8	SampType: Sample Matrix Spike				Lab ID: B20061230-001AMS			Method: SW8260B			
Analysis Date: 06/22/20 16:22	Units: ug/L		Prep Info:			Prep Date:		Prep Method:			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	4.16	0.50	5	0	83	73	135				
tert-Butylbenzene	4.33	0.50	5	0	87	69	137				
Carbon tetrachloride	4.26	0.50	5	0	85	61	144				
Chlorobenzene	5.29	0.50	5	0	106	78	136				
Chlorodibromomethane	5.62	0.50	5	0	112	72	136				
Chloroethane	5.04	0.50	5	0	101	64	136				
Chloroform	4.17	0.50	5	0	83	69	133				
Chloromethane	5.48	0.50	5	0	110	63	149				
1,2-Dibromo-3-chloropropane	4.97	1.0	5	0	99	63	125				
1,2-Dibromoethane	5.75	0.50	5	0	115	75	131				
2-Chlorotoluene	5.12	0.50	5	0	102	74	135				
Dibromomethane	5.48	0.50	5	0	110	72	133				
1,2-Dichlorobenzene	5.14	0.50	5	0	103	78	129				
4-Chlorotoluene	4.66	0.50	5	0	93	79	135				
1,3-Dichlorobenzene	5.04	0.50	5	0	101	79	132				
1,4-Dichlorobenzene	5.00	0.50	5	0	100	78	131				
Dichlorodifluoromethane	5.81	0.50	5	0	116	55	141				
1,1-Dichloroethane	4.60	0.50	5	0	92	72	130				
1,2-Dichloroethane	4.46	0.50	5	0	89	57	146				
1,1-Dichloroethene	4.86	0.50	5	0	97	66	142				
cis-1,2-Dichloroethene	5.11	0.50	5	0	102	74	133				
trans-1,2-Dichloroethene	5.08	0.50	5	0	102	76	138				
1,2-Dichloropropane	5.25	0.50	5	0	105	72	135				
1,3-Dichloropropane	5.20	0.50	5	0	104	75	134				
2,2-Dichloropropane	4.88	0.50	5	0	98	42	167				
1,1-Dichloropropene	4.29	0.50	5	0	86	72	140				
cis-1,3-Dichloropropene	5.42	0.50	5	0	108	75	132				
trans-1,3-Dichloropropene	5.34	0.50	5	0	107	77	145				
Ethylbenzene	4.86	0.50	5	0	97	78	131				
Hexachlorobutadiene	5.28	0.50	5	0	106	65	141				
Isopropylbenzene	4.60	0.50	5	0	92	72	135				
p-Isopropyltoluene	4.29	0.50	5	0	86	71	134				
Methyl tert-butyl ether (MTBE)	4.61	0.50	5	0	92	58	151				

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 8		SampType: Sample Matrix Spike			Lab ID: B20061230-001AMS			Method: SW8260B			
Analysis Date: 06/22/20 16:22		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	4.46	0.50	5	0	89	73	126				
Naphthalene	5.39	0.50	5	0	108	55	139				
n-Propylbenzene	4.62	0.50	5	0	92	70	139				
Styrene	5.36	0.50	5	0	107	76	134				
1,1,1,2-Tetrachloroethane	5.39	0.50	5	0	108	75	135				
1,1,2,2-Tetrachloroethane	5.32	0.50	5	0	106	72	132				
Tetrachloroethene	5.47	0.50	5	0.4014	101	78	137				
Toluene	5.25	0.50	5	0	105	78	134				
1,2,3-Trichlorobenzene	5.83	0.50	5	0	117	42	152				
1,2,4-Trichlorobenzene	5.69	0.50	5	0	114	58	142				
1,1,1-Trichloroethane	4.18	0.50	5	0	84	64	141				
1,1,2-Trichloroethane	5.63	0.50	5	0	112	72	133				
Trichloroethene	5.04	0.50	5	0	101	75	138				
Trichlorofluoromethane	4.24	0.50	5	0	85	58	139				
1,2,3-Trichloropropane	5.20	0.50	5	0	104	67	133				
1,2,4-Trimethylbenzene	4.41	0.50	5	0	88	71	129				
1,3,5-Trimethylbenzene	4.37	0.50	5	0	87	68	135				
Vinyl chloride	5.28	0.50	5	0	106	66	140				
m+p-Xylenes	10.1	0.50	10	0	101	78	133				
o-Xylene	5.13	0.50	5	0	103	79	136				
Xylenes, Total	15.2	0.50	15	0	101	78	136				
Surr: 1,2-Dichloroethane-d4	9.52	0.50	10	0	95	70	130				
Surr: Dibromofluoromethane	10.0	0.50	10	0	100	77	126				
Surr: p-Bromofluorobenzene	9.01	0.50	10	0	90	76	127				
Surr: Toluene-d8	10.5	0.50	10	0	105	79	122				

Associated samples: **B20061230-001A, B20061230-002A**

Run ID :Run Order: SV5972.I_200622B: 9		SampType: Sample Matrix Spike Duplicate			Lab ID: B20061230-001AMSD			Method: SW8260B			
Analysis Date: 06/22/20 16:48		Units: ug/L		Prep Info: Prep Date:			Prep Method:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.75	0.50	5	0	95	71	133	4.844	2.0	20	
Bromobenzene	5.08	0.50	5	0	102	78	133	5.225	2.7	20	
Bromochloromethane	5.04	0.50	5	0	101	68	131	5.242	3.9	20	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 9	SampType: Sample Matrix Spike Duplicate				Lab ID: B20061230-001AMSD				Method: SW8260B		
Analysis Date: 06/22/20 16:48	Units: ug/L		Prep Info:			Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	4.56	0.50	5	0	91	67	138	4.7	3.0	20	
Bromoform	5.30	0.50	5	0	106	64	136	5.504	3.7	20	
Bromomethane	4.59	0.50	5	0	92	60	138	4.427	3.6	20	
n-Butylbenzene	3.63	0.50	5	0	73	72	135	3.708	2.1	20	
sec-Butylbenzene	4.09	0.50	5	0	82	73	135	4.162	1.9	20	
tert-Butylbenzene	4.23	0.50	5	0	85	69	137	4.327	2.3	20	
Carbon tetrachloride	4.03	0.50	5	0	80	61	144	4.258	5.6	20	
Chlorobenzene	5.26	0.50	5	0	105	78	136	5.292	0.6	20	
Chlorodibromomethane	5.54	0.50	5	0	111	72	136	5.624	1.6	20	
Chloroethane	5.14	0.50	5	0	103	64	136	5.036	2.1	20	
Chloroform	4.16	0.50	5	0	83	69	133	4.174	0.2	20	
Chloromethane	5.33	0.50	5	0	107	63	149	5.479	2.7	20	
1,2-Dibromo-3-chloropropane	5.11	1.0	5	0	102	63	125	4.969	2.9	20	
1,2-Dibromoethane	5.64	0.50	5	0	113	75	131	5.748	2.0	20	
2-Chlorotoluene	4.94	0.50	5	0	99	74	135	5.121	3.6	20	
Dibromomethane	5.25	0.50	5	0	105	72	133	5.484	4.3	20	
1,2-Dichlorobenzene	5.15	0.50	5	0	103	78	129	5.143	0.1	20	
4-Chlorotoluene	4.51	0.50	5	0	90	79	135	4.664	3.4	20	
1,3-Dichlorobenzene	4.99	0.50	5	0	100	79	132	5.042	1.1	20	
1,4-Dichlorobenzene	4.97	0.50	5	0	99	78	131	5.003	0.7	20	
Dichlorodifluoromethane	5.66	0.50	5	0	113	55	141	5.806	2.6	20	
1,1-Dichloroethane	4.52	0.50	5	0	90	72	130	4.599	1.7	20	
1,2-Dichloroethane	4.36	0.50	5	0	87	57	146	4.464	2.3	20	
1,1-Dichloroethene	4.75	0.50	5	0	95	66	142	4.855	2.1	20	
cis-1,2-Dichloroethene	4.87	0.50	5	0	97	74	133	5.108	4.8	20	
trans-1,2-Dichloroethene	4.88	0.50	5	0	98	76	138	5.078	3.9	20	
1,2-Dichloropropane	4.99	0.50	5	0	100	72	135	5.255	5.2	20	
1,3-Dichloropropane	4.98	0.50	5	0	100	75	134	5.2	4.3	20	
2,2-Dichloropropane	4.66	0.50	5	0	93	42	167	4.878	4.6	20	
1,1-Dichloropropene	4.14	0.50	5	0	83	72	140	4.286	3.4	20	
cis-1,3-Dichloropropene	5.27	0.50	5	0	105	75	132	5.419	2.8	20	
trans-1,3-Dichloropropene	5.27	0.50	5	0	105	77	145	5.341	1.3	20	
Ethylbenzene	4.85	0.50	5	0	97	78	131	4.856	0.2	20	

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limit

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than four times the spike amount



ANALYTICAL QC SUMMARY REPORT

Client: Tasman Geosciences Inc

Prepared by Billings, MT Branch

Work Order: B20061230

BatchID: R344267

Date: 25-Jun-20

Run ID :Run Order: SV5972.I_200622B: 9	SampType: Sample Matrix Spike Duplicate				Lab ID: B20061230-001AMSD				Method: SW8260B		
Analysis Date: 06/22/20 16:48	Units: ug/L		Prep Info:			Prep Date:			Prep Method:		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	5.84	0.50	5	0	117	65	141	5.276	10	20	
Isopropylbenzene	4.43	0.50	5	0	89	72	135	4.601	3.8	20	
p-Isopropyltoluene	4.22	0.50	5	0	84	71	134	4.295	1.7	20	
Methyl tert-butyl ether (MTBE)	4.68	0.50	5	0	94	58	151	4.606	1.7	20	
Methylene chloride	4.36	0.50	5	0	87	73	126	4.463	2.4	20	
Naphthalene	5.61	0.50	5	0	112	55	139	5.389	4.0	20	
n-Propylbenzene	4.46	0.50	5	0	89	70	139	4.621	3.4	20	
Styrene	5.26	0.50	5	0	105	76	134	5.355	1.7	20	
1,1,1,2-Tetrachloroethane	5.30	0.50	5	0	106	75	135	5.395	1.8	20	
1,1,2,2-Tetrachloroethane	5.04	0.50	5	0	101	72	132	5.324	5.5	20	
Tetrachloroethene	5.38	0.50	5	0.4014	100	78	137	5.466	1.6	20	
Toluene	5.15	0.50	5	0	103	78	134	5.252	1.9	20	
1,2,3-Trichlorobenzene	6.00	0.50	5	0	120	42	152	5.827	2.8	20	
1,2,4-Trichlorobenzene	5.70	0.50	5	0	114	58	142	5.692	0.1	20	
1,1,1-Trichloroethane	4.03	0.50	5	0	81	64	141	4.181	3.8	20	
1,1,2-Trichloroethane	5.43	0.50	5	0	109	72	133	5.625	3.5	20	
Trichloroethene	4.90	0.50	5	0	98	75	138	5.035	2.7	20	
Trichlorofluoromethane	4.14	0.50	5	0	83	58	139	4.24	2.3	20	
1,2,3-Trichloropropane	5.10	0.50	5	0	102	67	133	5.199	2.0	20	
1,2,4-Trimethylbenzene	4.24	0.50	5	0	85	71	129	4.409	3.9	20	
1,3,5-Trimethylbenzene	4.24	0.50	5	0	85	68	135	4.374	3.0	20	
Vinyl chloride	5.27	0.50	5	0	105	66	140	5.282	0.3	20	
m+p-Xylenes	9.89	0.50	10	0	99	78	133	10.07	1.8	20	
o-Xylene	5.12	0.50	5	0	102	79	136	5.126	0.1	20	
Xylenes, Total	15.0	0.50	15	0	100	78	136	15.2			
Surr: 1,2-Dichloroethane-d4	9.65	0.50	10	0	97	70	130	0			
Surr: Dibromofluoromethane	9.98	0.50	10	0	100	77	126	0			
Surr: p-Bromofluorobenzene	8.79	0.50	10	0	88	76	127	0			
Surr: Toluene-d8	10.5	0.50	10	0	105	79	122	0			

Associated samples: **B20061230-001A, B20061230-002A**

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limit N - Analyte concentration was not sufficiently high to calculate RPD
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits A - Analyte concentration greater than four times the spike amount



Work Order Receipt Checklist

Tasman Geosciences Inc

B20061230

Login completed by: Tabitha Edwards

Date Received: 6/12/2020

Reviewed by: BL2000\lcardreau

Received by: gda

Reviewed Date: 6/16/2020

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	3.0°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

PLEASE PRINT (Provide as much information as possible.)

Company Name: Tasman Geosciences
 Project Name, PWS, Permit, Etc.: Lockwood Solvent site
 Sample Origin State: MT
 EPA/State Compliance: Yes No
 Report Mail Address (Required): 917 1st Ave N. Ste. 3
Billings, MT 59101
 Contact Name: Laura Heaton Phone/Fax: 406-259-1033 Cell: _____
 Sampler: (Please Print) R. Paulson
 No Hard Copy Email: LHeaton@tasmangeo
 Invoice Contact & Phone: Laura Heaton 406-259-1033
 Purchase Order: _____ Quote/Bottle Order: _____

Invoice Address (Required):
 No Hard Copy Email: same as above
 Special Report/Formats:
 DW EDD/EDT (Electronic Data)
 POTW/WWTP LEVEL IV
 State: _____ NELAC
 Other: _____
 Format: GeoDOTC

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)		Collection Date	Collection Time	MATRIX	Number of Containers Sample Type: A W S V B O DW Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water	ANALYSIS REQUESTED	SEE ATTACHED	Standard Turnaround (TAT)	R U S H	Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page	Comments:	Shipped by:	Cooler ID(s):	Receipt Temp _____ °C	On Ice: Y N	Custody Seal On Bottle Y N On Cooler Y N	Intact Y N	Signature Match Y N
1	<u>IDW00 1LM</u>	<u>0936</u>	<u>6-12-20</u>	<u>W</u>														
2	<u>TB 9/17/19 B-JDR</u>	<u>SHR0215</u>	<u>W</u>	<u>6/12/2020</u>														
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Custody Record MUST be Signed

Relinquished by (print): R.K. Paulson Date/Time: 6-12-20/0955 Signature: _____
 Received by (print): _____ Date/Time: _____ Signature: _____
 Relinquished by (print): _____ Date/Time: _____ Signature: _____
 Received by (print): _____ Date/Time: _____ Signature: _____
 Sample Disposal: Return to Client: Lab Disposal: _____
 Received by Laboratory: Gabbie Aschim Date/Time: 6-12-2020/09:55 Signature: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

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Tasman Geosciences
GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NAME: LSGPS DATE: 6/12/2020 WELL NO. IDW
 PROJECT NUMBER: _____ TEMPERATURE: 62 °F
 FIELD PERSONNEL: R. Paulson WEATHER: Pt. Cloudy 6mph NW

FIELD MEASUREMENTS:

- A. ~~LNAPL Level below top of casing/piezometer: _____ FT. LNAPL Thickness: _____ FT.~~
 B. ~~Static Water Level (SWL) below top of casing/piezometer: _____ FT.~~
 C. ~~DNAPL Level below top of casing/piezometer: _____ FT. DNAPL Thickness: _____ FT.~~
 D. ~~Total Depth of well (TD) from top of casing/piezometer: _____ FT.~~
 E. ~~Height of Water Column in casing (h = TD - SWL): _____ FT.~~
 F. **Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:**

		<u>3 Well Vols.</u>	<u>5 Well Vols.</u>				
2" diameter	=	0.5 gals/ft	0.82 gals/ft	x	feet of water _____	=	_____ PV (gallons)
4" diameter	=	2.0 gals/ft	3.25 gals/ft	x	feet of water _____	=	_____ PV (gallons)
6" diameter	=	4.4 gals/ft	7.35 gals/ft	x	feet of water _____	=	_____ PV (gallons)

PURGING METHOD: ~~Peristaltic Pump~~ Grab Sample DURATION: N/A minutes

OBSERVATIONS:

Time	Volume Removed (gal)	Color	Sheen	Temp (°C)	pH	Conduct (uS/cm)	ORP (mV)	DO (mg/L)

Total Volume of Water Purged From Well: ~ N/A gallons
 Purge Water Stored/Disposed of Where/How: ~~Poly tank~~ Holding tank

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s) <u>IDW001LM</u>	Time <u>0936</u>	Number/Size of Container(s) <u>3-40ml VOAs</u>	Preservative <u>HCl</u>	Analysis <u>8260B</u>

COMMENTS: Tubing set at ~ N/A ft below TOC. Purge water sample from tank containing water from semi-Annual/OS/UR event, replacement monitoring & EB wells approx 800 gallons
R# 550

Casing Capacities:
 1-inch hole.....0.041 gal/lin.ft.
 2-inch hole.....0.16 gal/lin ft.
 4-inch hole.....0.65 gal/lin ft.

Signature: [Signature]