SECOND HALF 2011 SEMI-ANNUAL GROUNDWATER MONITORING AND SAMPLING REPORT

Bee-Jay Scales Site
116 N 1st Street
Sunnyside, WA 98944

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1.0 Introduction

This document summarizes the results of the second half 2011 (2H11) semi-annual groundwater monitoring and sampling event conducted by Stantec Consulting Corporation (Stantec; formerly SECOR International Incorporated) on behalf of Chevron Environmental Management Company (CEMC) and Atlantic Richfield Company (ARC) for the Bee-Jay Scales Site in Sunnyside, Washington (the Site).

This project is being implemented in accordance with the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) and was previously implemented under Agreed Order No. DE 02TCPCR-3932 (Agreed Order). Per a letter from Ecology dated November 3, 2009, the substantive requirements of the Agreed Order have been completed.

The Site is located in the city of Sunnyside, within Yakima County, and is composed of two property parcels: Parcel No. 22102522014 and Parcel No. 22102522015. Parcel No. 22102522014 is located at 116 North 1st Street, and is owned by Bee-Jay Scales, Inc. Parcel No. 22102522015 is located at 301 Warehouse Avenue, and is owned by Hickenbottom & Sons, Inc. The Site location is shown on Figure 1-1. The Site layout, including monitoring well locations, building locations, and additional Site features, is shown on Figure 1-2. The Site is divided into six main study areas as follows:

- Area 1 - Liquid Fertilizer Plant and Truck Wash Area
- Area 2 - Dry Fertilizer Area
- Area 3 - Drum Storage Area
- Area 4 - Suspected Historic Washdown Area
- Area 5 - North Area
- Area 6 - Hickenbottom Property

Fieldwork for the 2H11 semi-annual groundwater monitoring and sampling at the Site was completed between September 12 and 14, 2011. A brief summary of sampling activities and results is presented in the following sections.

2.0 Summary of Sampling Activities

Groundwater samples were collected from 11 monitoring wells this event: MW-1, MW-3, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, and MW-13. Well MW-5 was not gauged or sampled as there was a biological hazard (wasp nest) adjacent to the well and it was not deemed safe. Monitoring well locations are shown on Figure 1-2.

2.1 GROUNDWATER ELEVATION MEASUREMENT

Before sampling activities commenced, an electronic water level indicator was used to measure the depth to groundwater and total well depth from the surveyed point on the rim of each well's top of casing (TOC). Results were recorded on the Groundwater Field Log (Appendix A). Cumulative groundwater elevation data from the third quarter 2005 (3Q05) event through the 2H11 event are summarized in Table 2-1.

Groundwater contours were generated for the 2H11 groundwater monitoring event as illustrated on Figure 2-1. Depth to groundwater ranged from 6.05 feet below the TOC elevation in MW-11 to 11.75 feet below the TOC elevation in MW-1. The groundwater elevation ranged from 732.44 feet above mean sea level (MSL) at off-property well MW-13 to 736.05 feet above MSL in the southwestern portion of the Site at MW-11.

The groundwater flow direction is generally to the northeast in the northern portion of the Site (near MW-1 and MW-7) and to the southeast in the southern portion of the Site and off-property, with a groundwater flow divide observed at the southern edge of Area 5. The calculated groundwater gradient ranged from approximately 0.003 to 0.014 feet per foot, with an average hydraulic gradient of approximately 0.008 feet per foot. The lower hydraulic gradient was observed in Area 5, and the higher hydraulic gradient was observed near Area 3. This is generally consistent with the flow direction and gradient observed during the previous groundwater monitoring events.

2.2 SAMPLING ACTIVITIES

Groundwater samples were collected from each of the monitoring wells using low-flow sampling procedures. During well purging, water levels and indicator field parameters were recorded on the Groundwater Sampling Field Data Sheet (Appendix A) every 3 to 5 minutes. Purging was considered complete and sampling began when indicator field parameters stabilized. Stabilization was considered to be achieved when three consecutive readings were within the following limits:

- Dissolved oxygen (DO) (10%)
- Conductivity (3%)
- Temperature (3%)
- pH (± 0.1 unit)

- Oxidation-reduction potential (ORP) (± 10 millivolts)

All measurements were obtained using a multi-meter with flow-through cell. Field instruments were calibrated in accordance with the manufacturer's directions prior to use. Purge volumes for each well were recorded on the Groundwater Sampling Field Data Sheet.

After collection of the samples, the pump tubing was dedicated to the well for re-sampling (by hanging the tubing inside the well) or containerized and properly disposed. Any non-dedicated sampling equipment (including water level indicator) that came into contact with the ground surface or groundwater was decontaminated between sampling points.

Purge water from the 2H11 event was collected and transferred to a 55-gallon drum that is stored on-site. Due to the low-flow sampling procedures utilized, only a small volume of purge water (generally less than 12 gallons) is generated per event. The drum will be disposed of during a future event, and disposal documentation will be included in the report at that time. In accordance with State of Washington and federal regulations, all drums will be removed from the property by a licensed waste hauler.

2.3 ANALYTICAL PROGRAM

Groundwater samples collected from the groundwater monitoring wells were tested for the following analytes in accordance with the protocols listed below, with the exception of well MW-5, which was not sampled during the 2H11 event as there was a biological hazard (wasp nest) adjacent to the well and it was not deemed safe. Analytical results for routine groundwater sampling are summarized in Section 3.1.1.

Well ID	Analytes (Method)	No. of Containers	Sample Container(s) (Preservative)
MW-1	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
MW-3	Arsenic (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
MW-4	Arsenic, Iron, Manganese (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - $Na_2S_2O_3$

Well ID	Analytes (Method)	No. of Containers	Sample Container(s) (Preservative)
MW-5	Iron (EPA 6010B)*	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
MW-6	Arsenic (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)*	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
MW-7	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
MW-8	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
MW-9	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - $Na_2S_2O_3$
MW-10	Arsenic (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)*	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	TPH-Gx (ECY 97-602 NWTPH-Gx Mod.)	3	40 ml glass vials (HCl)
MW-11	Arsenic (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)*	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	TPH-Gx (ECY 97-602 NWTPH-Gx Mod.)	3	40 ml glass vials (HCl)

Well ID	Analytes (Method)	No. of Containers	Sample Container(s) (Preservative)
MW-12	Arsenic, Iron (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Chloride (300.0), Sulfate (EPA 300.0)	1	500 ml plastic (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - $Na_2S_2O_3$
MW-13	Iron (EPA 6010B)	1	500 ml plastic (HNO_3)
	pH (SM20 4500 H/B)	1	250 ml plastic (no preservative)
	Sulfate (EPA 300.0)	2	40 ml glass vial (no preservative)
	Alkalinity (SM20 2320 B)	1	500 ml plastic (no preservative)
	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H_2SO_4)
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H_2SO_4)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - $Na_2S_2O_3$

* Indicates constituents analyzed during Second Half semi-annual sampling events only.

In addition, groundwater samples were collected from wells MW-4, MW-9, MW-12, and MW-13 and submitted to ZymaX Forensics for isotope analysis in an attempt to differentiate between nitrate sources. Samples were analyzed for both nitrogen (15N/14N) and oxygen (18O/16O) isotopes. Isotope analysis results are summarized in Section 3.1.2.

2.4 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

The following quality assurance/quality control (QA/QC) samples were collected during the groundwater sampling activities: duplicates, equipment blanks, and trip blanks.

One duplicate sample was collected to evaluate the laboratory's performance by comparing the analytical results of two samples collected at the same location. Two equipment blanks were collected to evaluate for cross-contamination due to inadequate decontamination of sampling equipment. As volatiles were part of the analytical program, trip blanks were required and were analyzed for volatile organic compounds (VOCs) only.

QA/QC results are discussed in Section 3.2.

3.0 Presentation of Results

3.1 GROUNDWATER SAMPLING RESULTS

3.1.1 Routine Groundwater Sampling Results

Analytical laboratory reports are included in Appendix B. Table 3-1 summarizes all detected concentrations in each groundwater sample.

Site-specific cleanup levels (CULs) for groundwater are defined in Table 2 of the *Revised Feasibility Study Report*, dated October 16, 2009, which was prepared as part of the Agreed Order. The CULs were developed from a combination of primary maximum contaminant levels (MCLs), standard MTCA Method A CULs, and standard and modified MTCA Method B CULs. Primary MCLs are set as the CUL for constituents for which they have been developed. If no MCL has been established, modified MTCA Method B CULs are generally used. In cases where modified MTCA Method B CULs have not been developed (TPH-Gx and manganese), standard MTCA Method A or Method B CULs are used.

The groundwater analytical data were compared to the site-specific CULs for applicable constituents. Concentrations of detected constituents exceeding or equal to CULs are shown at each well location on Figure 3-1. Also shown on this figure are the constituent concentrations measured at each well location during the three previous semi-annual groundwater sampling events. Concentrations of nitrate are shown at all wells on Figure 3-1, though nitrate concentrations at some wells are below the CUL.

The following is a summary of detected constituents that exceeded CULs during the 2H11 groundwater sampling event:

- Nitrate concentrations ranging from 10 milligrams per liter (mg/l) at MW-3 to 790 mg/l at MW-12 were detected in groundwater samples from six wells (MW-3, MW-4, MW-8, MW-9, MW-12, and MW-13) equal to or above the CUL of 10 mg/l;

- Nitrite concentrations of 1.2 mg/l and 2.8 mg/l were detected in groundwater samples from wells MW-3 and MW-4, respectively, above the CUL of 1 mg/l;

- 1,2-Dichloropropane concentrations of 0.02 mg/l, 0.047 mg/l, and 1.9 mg/l were detected in the groundwater samples from MW-9, MW-4, and MW-12, respectively, above the CUL of 0.005 mg/l;

- 1,2,3-Trichloropropane concentrations of 0.02 mg/l, 0.041 mg/l, and 0.18 mg/l were detected in the groundwater samples from MW-9, MW-4, and MW-12, respectively, above the CUL of 0.00001 mg/l;

- Dinoseb concentrations ranging from 0.022 mg/l to 2.1 mg/l were detected in the groundwater samples from four wells (MW-4, MW-9, MW-12, and MW-13) above the CUL of 0.007 mg/l;

- A 2,4-dichlorophenoxyacetic acid (2,4-D) concentration of 0.64 mg/l was detected in the groundwater sample from MW-12 above the CUL of 0.07 mg/l;

- A benzene concentration of 0.023 mg/l was detected in the groundwater sample from MW-12 above the CUL of 0.005 mg/l;

- Arsenic concentrations ranging from 0.0202 mg/l to 0.167 mg/l were detected in the groundwater samples from five wells (MW-3, MW-6, MW-10, MW-11, and MW-12) above the CUL of 0.01 mg/l; and

- A chlorobenzene concentration of 0.3 mg/l was detected in the groundwater sample from MW-12 above the CUL of 0.1 mg/l.

Alkalinity, ammonia, chloride, pH, and sulfate were analyzed, but do not present a human health risk and no CULs are established. All detected concentrations of ammonia, chloride, and sulfate are included in Table 3-1 and on Figure 3-1.

Ammonia was detected in groundwater samples collected from MW-3, MW-4, MW-8, MW-9, and MW-12 at concentrations ranging from 2 mg/l (at MW-8) to 352 mg/l (at MW-4). Chloride was detected in the groundwater sample collected from MW-12 at a concentration of 491 mg/l. Sulfate was detected in groundwater samples collected from MW-4, MW-6, MW-8, MW-9, MW-10, MW-11, MW-12, and MW-13 at concentrations ranging from 37.8 mg/l (at MW-10) to 1,280 mg/l (at MW-12).

Alkalinity and pH were analyzed for remedial design purposes. Laboratory-measured pH values ranged from 7 (at MW-12) to 8.3 (at MW-3). When titrating for total alkalinity, there are two "equivalence points" where pH changes rapidly with small additions of acid; they are located at pH 8.3 and 4.5, and both were reported by the analytical laboratory. At pH 8.3, bicarbonate is the predominant carbonate species; at pH 4.5, all carbonate and bicarbonate ions have been converted to carbonic acid. Alkalinity to pH 8.3 was detected in well MW-3 at 4 mg/l as $CaCO_3$. Alkalinity to pH 4.5 was detected in nine wells ranging from 218 mg/l as $CaCO_3$ (at MW-6) to 602 mg/l as $CaCO_3$ (at MW-12).

3.1.2 Isotope Analysis Results

Isotope analysis results are summarized in Table 3-2, and the laboratory analytical report is included in Appendix C.

The nitrogen isotope ratio (i.e., $^{15}N/^{14}N$, also expressed as $\delta^{15}N$) values ranged from 2.7 parts per thousand deviation from the reference standard ($^{o}/_{oo}$) in well MW-13 to 6.7 $^{o}/_{oo}$ in well MW-4. The oxygen isotope ratio (i.e., $^{18}O/^{16}O$, also expressed as $\delta^{18}O$) values ranged from 0.7 $^{o}/_{oo}$ in well MW-9 to 10.0 $^{o}/_{oo}$ in well MW-12.

Results are discussed in detail in Appendix D, and the summary of findings is included below:

- Most probable source of nitrate is through oxidation of historically discharged ammonium (NH_4)-based fertilizers;
- Isotopic composition of select samples can be accounted for through microbial mediated nitrification reactions; and
- Other sources of nitrate may exist; however, differentiating these sources was not possible given the fairly limited dataset.
- Evidence for natural denitrification was also assessed; however, there was no evidence that this process was readily occurring at the site under ambient conditions. In the event denitrification is used as a corrective action strategy, artificial or induced, denitrification through application/injection of a reducing agent should be considered.

3.2 QUALITY ASSURANCE/QUALITY CONTROL SAMPLE RESULTS

One duplicate sample (MW01-091311-1 from MW-1) was collected. The relative percent difference (RPD) was evaluated using Equation 1 and results are summarized in Table 3-3.

Equation 1 $$RPD = \left[\frac{|S - D|}{(S + D) \div 2}\right] \times 100$$

Where: RPD = Relative Percent Difference
S = First Sample Value (original)
D = Second Sample Value (duplicate)

The average RPD was 1.18%, indicating acceptable precision by the analytical laboratory for each given method and analytical batch.

Five trip blanks (TB-1 through TB-5) and two equipment blanks (MW04-091411-2 and MW08-091311-2) were submitted for analysis. Dinoseb was detected at a concentration of 0.003 mg/l in MW04-091411-2, which is the equipment blank following sample collection at well MW-4. Methylene chloride was detected at a concentration of 0.005 mg/l in TB-4. The concentrations are low and are not expected to have an impact on sample results, but care will be taken during future sampling events to make sure proper decontamination procedures and sample handling are implemented.

4.0 Conclusions

As shown in Figure 3-1, the results of the 2H11 groundwater monitoring and sampling event are generally within historical limits and consistent with what was observed in previous sampling events. Exceptions are discussed below. General results and trends relative to all historical sampling events (discussed by area of the Site) are summarized below:

- Area 1: Concentrations of nitrate and sulfate at MW-8 were generally consistent with previous data, while ammonia was a historical low. Concentrations remained generally consistent with previous data at MW-4 for 1,2-dichloropropane, 1,2,3-trichloropropane, ammonia, nitrate, nitrite, and sulfate, while dinoseb was a historical high.

- Area 2: Concentrations of arsenic, nitrate, and sulfate at MW-6 were generally consistent with previous data. MW-5 was not sampled during the 2H11 event due to a biological hazard.

- Area 3: The concentrations of arsenic, nitrate, and sulfate at MW-10 were generally consistent with previous data, while benzene was not detected. The concentrations of arsenic, nitrate, and sulfate at MW-11 were generally consistent with previous data.

- Area 4: No monitoring wells are located in Area 4.

- Area 5: Concentrations of nitrate in the wells located in the northern portion of the property (MW-1 and MW-7) were below the nitrate CUL, indicating they are not affected by the identified nitrate source areas (Areas 1 and 6).

- Area 6: The concentrations of ammonia, arsenic, nitrate, and nitrite at MW-3 were generally consistent with previous data. Concentrations of 1,2,3-trichloropropane, 1,2-dichloropropane, 2,4-D, ammonia, arsenic, chlorobenzene, dinoseb, and nitrate were generally consistent with previous data at MW-12, while concentrations of benzene, chloride, and sulfate were historical highs.

- Off-Property: Concentrations of 1,2-dichloropropane, 1,2,3-trichloropropane, dinoseb, nitrate, and sulfate at MW-9 were generally consistent with previous data, while the ammonia concentration was a historical high. The concentrations of dinoseb and sulfate at MW-13 were historical highs, while nitrate was a historical low.

Overall, concentrations were generally consistent with previous data. A historical low for nitrate was observed off-property at well MW-13 for the second sampling event in a row. A historical low for ammonia was observed in Area 1 at well MW-8, while a historical high for ammonia was observed off-property at well MW-9. Historical highs for dinoseb were observed in Area 1 at well MW-4 and off-property at well MW-13, and historical highs for sulfate were observed in Area 6 at well MW-12 and off-property at well MW-13. Historical highs for benzene and chloride were also observed in Area 6 at well MW-12. However, it should be noted that none of the

historical highs or lows were of great significance as all changes were less than an order of magnitude.

Hydrographs were prepared for each well using groundwater elevations and concentrations for selected key constituents (those included on Figure 3-1) and are included in Appendix E. Generally, constituent concentration trends are shown to be relatively stable. Semi-annual groundwater sampling will continue at the Site to determine any further trends.

Results of the isotope analysis in wells MW-4, MW-9, MW-12, and MW-13 indicated:

- Most probable source of nitrate is through oxidation of historically discharged NH_4-based fertilizers;
- Isotopic composition of select samples can be accounted for through microbial mediated nitrification reactions;
- Other sources of nitrate may exist; however, differentiating these sources was not possible given the fairly limited dataset; and
- Evidence for natural denitrification was also assessed; however, there was no evidence that this process was readily occurring at the Site under ambient conditions. In the event denitrification is used as a corrective action strategy, artificial or induced, denitrification through application/injection of a reducing agent should be considered.

The limited isotope analysis dataset could not be used to definitively differentiate between multiple, isotopically distinct, sources of nitrate.

5.0 Limitations and Certification

This report was prepared in accordance with the scope of work outlined in Stantec's contract and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of CEMC and ARC for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Stantec. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third party information, but Stantec cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Stantec.

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Tables

Table 2-1
Cumulative Groundwater Elevations
Bee-Jay Scales Site, Sunnyside, Washington

Well ID	Quarter/ Half[1]	Date	TOC Elevation (feet above MSL)	Depth to GW (feet below TOC)	GW Elevation (feet above MSL)
MW-1	3Q05	9/28/2005	745.86	11.67	734.19
	4Q05	1/11/2006	745.86	10.74	735.12
	1Q06	3/28/2006	745.86	11.12	734.74
	2Q06	6/26/2006	745.86	11.29	734.57
	3Q06	9/18/2006	745.86	11.87	733.99
	4Q06	12/18/2006	745.86	11.39	734.47
	1Q07	3/19/2007	745.86	11.35	734.51
	2Q07	6/25/2007	745.86	11.68	734.18
	3Q07	9/18/2007	745.86	11.81	734.05
	4Q07	12/17/2007	745.86	11.18	734.68
	1Q08	3/11/2008	745.86	11.30	734.56
	2Q08	6/16/2008	745.86	11.70	734.16
	3Q08	9/8/2008	745.86	11.94	733.92
	1H09	3/10/2009	745.86	11.47	734.39
	2H09	9/14/2009	745.86	12.25	733.61
	1H10	3/9/2010	745.86	11.04	734.82
	2H10	8/30/2010	745.86	11.78	734.08
	1H11	3/8/2011	745.86	11.21	734.65
	2H11	9/12/2011	745.86	11.75	734.11
MW-3	3Q05	9/28/2005	740.92	7.23	733.69
	4Q05	1/11/2006	740.92	5.31	735.61
	1Q06	3/28/2006	740.92	6.68	734.24
	2Q06	6/26/2006	740.92	6.72	734.20
	3Q06	9/18/2006	740.92	7.50	733.42
	4Q06	12/18/2006	740.92	6.40	734.52
	1Q07	3/19/2007	740.92	6.93	733.99
	2Q07	6/25/2007	740.92	7.18	733.74
	3Q07	9/18/2007	740.92	7.35	733.57
	4Q07	12/17/2007	740.92	6.49	734.43
	1Q08	3/11/2008	740.92	6.85	734.07
	2Q08	6/16/2008	740.92	7.11	733.81
	3Q08	9/8/2008	740.92	7.60	733.32
	1H09	3/10/2009	740.92	6.71	734.21
	2H09	9/14/2009	740.92	7.86	733.06
	1H10	3/9/2010	740.92	6.52	734.40
	2H10	8/30/2010	740.92	7.40	733.52
	1H11	3/8/2011	740.92	6.78	734.14
	2H11	9/12/2011	740.92	7.30	733.62
MW-4	3Q05	9/28/2005	741.88	8.30	733.58
	4Q05	1/11/2006	741.88	7.03	734.85
	1Q06	3/28/2006	741.88	7.83	734.05
	2Q06	6/26/2006	741.88	9.15	732.73
	3Q06	9/18/2006	741.88	8.52	733.36
	4Q06	12/18/2006	741.88	7.80	734.08
	1Q07	3/19/2007	741.88	8.07	733.81
	2Q07	6/25/2007	741.88	8.31	733.57
	3Q07	9/18/2007	741.88	8.45	733.43
	4Q07	12/17/2007	741.88	7.68	734.20
	1Q08	3/11/2008	741.88	8.04	733.84
	2Q08	6/16/2008	741.88	8.32	733.56
	3Q08	9/8/2008	741.88	8.82	733.06
	1H09	3/10/2009	741.88	8.04	733.84
	2H09	9/14/2009	741.88	8.96	732.92
	1H10	3/9/2010	741.88	7.71	734.17
	2H10	8/30/2010	741.88	8.54	733.34
	1H11	3/8/2011	741.88	7.94	733.94
	2H11	9/12/2011	741.88	8.45	733.43

Table 2-1
Cumulative Groundwater Elevations
Bee-Jay Scales Site, Sunnyside, Washington

Well ID	Quarter/ Half[1]	Date	TOC Elevation (feet above MSL)	Depth to GW (feet below TOC)	GW Elevation (feet above MSL)
MW-5	3Q05	9/28/2005	741.93	7.82	734.11
	4Q05	1/11/2006	741.93	6.50	735.43
	1Q06	3/28/2006	741.93	7.36	734.57
	2Q06	6/26/2006	741.93	7.46	734.47
	3Q06	9/18/2006	741.93	8.03	733.90
	4Q06	12/18/2006	741.93	7.34	734.59
	1Q07	3/19/2007	741.93	7.62	734.31
	2Q07	6/25/2007	741.93	7.99	733.94
	3Q07	9/18/2007	741.93	7.97	733.96
	4Q07	12/17/2007	741.93	7.21	734.72
	1Q08	3/11/2008	741.93	7.67	734.26
	2Q08	6/16/2008	741.93	7.90	734.03
	3Q08	9/8/2008	741.93	8.15	733.78
	1H09	3/10/2009	741.93	7.70	734.23
	2H09	9/14/2009	741.93	8.45	733.48
	1H10	3/9/2010	741.93	7.30	734.63
	2H10	8/30/2010	741.93	8.04	733.89
	1H11	3/8/2011	741.93	7.50	734.43
	2H11[7]	9/12/2011	741.93	NA	NA
MW-6	3Q05	9/28/2005	741.73	6.71	735.02
	4Q05	1/11/2006	741.73	5.51	736.22
	1Q06	3/28/2006	741.73	6.37	735.36
	2Q06	6/26/2006	741.73	6.51	735.22
	3Q06	9/18/2006	741.73	6.95	734.78
	4Q06	12/18/2006	741.73	6.26	735.47
	1Q07	3/19/2007	741.73	6.62	735.11
	2Q07	6/25/2007	741.73	7.60	734.13
	3Q07	9/18/2007	741.73	6.90	734.83
	4Q07	12/17/2007	741.73	6.18	735.55
	1Q08	3/11/2008	741.73	6.76	734.97
	2Q08	6/16/2008	741.73	6.98	734.75
	3Q08	9/8/2008	741.73	7.15	734.58
	1H09	3/10/2009	741.73	6.85	734.88
	2H09	9/14/2009	741.73	7.48	734.25
	1H10	3/9/2010	741.73	6.32	735.41
	2H10	8/30/2010	741.73	6.95	734.78
	1H11	3/8/2011	741.73	6.48	735.25
	2H11	9/12/2011	741.73	6.81	734.92
MW-7	3Q05	9/28/2005	744.68	10.65	734.03
	4Q05	1/11/2006	744.68	9.76	734.92
	1Q06	3/28/2006	744.68	10.22	734.46
	2Q06	6/26/2006	744.68	10.39	734.29
	3Q06	9/18/2006	744.68	10.85	733.83
	4Q06	12/18/2006	744.68	10.45	734.23
	1Q07	3/19/2007	744.68	10.39	734.29
	2Q07	6/25/2007	744.68	10.69	733.99
	3Q07	9/18/2007	744.68	10.79	733.89
	4Q07	12/17/2007	744.68	10.22	734.46
	1Q08	3/11/2008	744.68	10.42	734.26
	2Q08	6/16/2008	744.68	10.75	733.93
	3Q08	9/8/2008	744.68	10.91	733.77
	1H09	3/10/2009	744.68	10.50	734.18
	2H09	9/14/2009	744.68	11.25	733.43
	1H10	3/9/2010	744.68	10.15	734.53
	2H10	8/30/2010	744.68	10.78	733.90
	1H11	3/8/2011	744.68	10.30	734.38
	2H11	9/12/2011	744.68	10.78	733.90

Table 2-1
Cumulative Groundwater Elevations
Bee-Jay Scales Site, Sunnyside, Washington

Well ID	Quarter/ Half[1]	Date	TOC Elevation (feet above MSL)	Depth to GW (feet below TOC)	GW Elevation (feet above MSL)
MW-8	3Q05	9/28/2005	741.32	7.04	734.28
	4Q05	1/11/2006	741.32	5.58	735.74
	1Q06	3/28/2006	741.32	6.48	734.84
	2Q06	6/26/2006	741.32	6.59	734.73
	3Q06	9/18/2006	741.32	7.28	734.04
	4Q06	12/18/2006	741.32	6.38	734.94
	1Q07	3/19/2007	741.32	6.67	734.65
	2Q07	6/25/2007	741.32	7.03	734.29
	3Q07	9/18/2007	741.32	7.15	734.17
	4Q07	12/17/2007	741.32	6.28	735.04
	1Q08	3/11/2008	741.32	6.65	734.67
	2Q08	6/16/2008	741.32	7.01	734.31
	3Q08	9/8/2008	741.32	7.39	733.93
	1H09	3/10/2009	741.32	6.61	734.71
	2H09	9/14/2009	741.32	7.79	733.53
	1H10	3/9/2010	741.32	6.45	734.87
	2H10	8/30/2010	741.32	7.20	734.12
	1H11	3/8/2011	741.32	6.52	734.80
	2H11	9/12/2011	741.32	7.18	734.14
MW-9	3Q05	9/28/2005	741.09	8.31	732.78
	4Q05	1/11/2006	741.09	7.04	734.05
	1Q06	3/28/2006	741.09	7.91	733.18
	2Q06	6/26/2006	741.09	8.45	732.64
	3Q06	9/18/2006	741.09	8.45	732.64
	4Q06	12/18/2006	741.09	7.86	733.23
	1Q07	3/19/2007	741.09	8.15	732.94
	2Q07	6/25/2007	741.09	8.65	732.44
	3Q07	9/18/2007	741.09	8.40	732.69
	4Q07	12/17/2007	741.09	7.78	733.31
	1Q08	3/11/2008	741.09	8.11	732.98
	2Q08	6/16/2008	741.09	8.34	732.75
	3Q08[3]	9/10/2008	741.09	8.61	732.48
	1H09[5]	3/12/2009	741.09	8.15	732.94
	2H09	9/14/2009	741.09	8.74	732.35
	1H10	3/9/2010	741.09	7.75	733.34
	2H10	8/30/2010	741.09	8.50	732.59
	1H11	3/8/2011	741.09	8.00	733.09
	2H11	9/12/2011	741.09	8.34	732.75
MW-10	3Q05	9/28/2005	742.38	6.48	735.90
	4Q05	1/11/2006	742.38	5.46	736.92
	1Q06	3/28/2006	742.38	6.21	736.17
	2Q06	6/26/2006	742.38	6.35	736.03
	3Q06	9/18/2006	742.38	6.75	735.63
	4Q06	12/18/2006	742.38	6.45	735.93
	1Q07	3/19/2007	742.38	6.43	735.95
	2Q07	6/25/2007	742.38	6.88	735.50
	3Q07	9/18/2007	742.38	6.70	735.68
	4Q07	12/17/2007	742.38	6.06	736.32
	1Q08	3/11/2008	742.38	6.59	735.79
	2Q08	6/16/2008	742.38	6.81	735.57
	3Q08	9/8/2008	742.38	6.95	735.43
	1H09	3/10/2009	742.38	6.72	735.66
	2H09	9/14/2009	742.38	7.30	735.08
	1H10	3/9/2010	742.38	6.09	736.29
	2H10	8/30/2010	742.38	6.74	735.64
	1H11	3/8/2011	742.38	6.31	736.07
	2H11	9/12/2011	742.38	6.54	735.84

Table 2-1
Cumulative Groundwater Elevations
Bee-Jay Scales Site, Sunnyside, Washington

Well ID	Quarter/ Half[1]	Date	TOC Elevation (feet above MSL)	Depth to GW (feet below TOC)	GW Elevation (feet above MSL)
MW-11	3Q05	9/28/2005	742.10	6.01	736.09
	4Q05	1/11/2006	742.10	5.03	737.07
	1Q06	3/28/2006	742.10	5.85	736.25
	2Q06	6/26/2006	742.10	5.99	736.11
	3Q06	9/18/2006	742.10	6.30	735.80
	4Q06	12/18/2006	742.10	5.72	736.38
	1Q07	3/19/2007	742.10	6.07	736.03
	2Q07	6/25/2007	742.10	6.50	735.60
	3Q07	9/18/2007	742.10	6.21	735.89
	4Q07	12/17/2007	742.10	5.71	736.39
	1Q08	3/11/2008	742.10	6.29	735.81
	2Q08	6/16/2008	742.10	6.41	735.69
	3Q08	9/8/2008	742.10	6.47	735.63
	1H09	3/10/2009	742.10	6.40	735.70
	2H09	9/14/2009	742.10	6.80	735.30
	1H10	3/9/2010	742.10	5.83	736.27
	2H10	8/30/2010	742.10	6.20	735.90
	1H11	3/8/2011	742.10	5.95	736.15
	2H11	9/12/2011	742.10	6.05	736.05
MW-12	3Q05	9/28/2005	741.82	8.85	732.97
	4Q05	1/11/2006	741.82	7.55	734.27
	1Q06	3/28/2006	741.82	8.36	733.46
	2Q06	6/26/2006	741.82	8.36	733.46
	3Q06	9/18/2006	741.82	9.05	732.77
	4Q06[2]	12/18/2006	741.82	8.45	733.37
	1Q07	3/19/2007	741.82	8.59	733.23
	2Q07	6/25/2007	741.82	8.80	733.02
	3Q07	9/18/2007	741.82	8.95	732.87
	4Q07	12/17/2007	741.82	8.27	733.55
	1Q08	3/11/2008	741.82	8.49	733.33
	2Q08	6/16/2008	741.82	8.78	733.04
	3Q08	9/8/2008	741.82	9.09	732.73
	1H09	3/10/2009	741.82	8.54	733.28
	2H09	9/14/2009	741.82	9.32	732.50
	1H10	3/9/2010	741.82	8.21	733.61
	2H10	8/30/2010	741.82	8.98	732.84
	1H11	3/8/2011	741.82	8.50	733.32
	2H11	9/12/2011	741.82	8.85	732.97
MW-13	2Q07	6/25/2007	742.20	9.89	732.31
	3Q07	9/18/2007	742.20	9.85	732.35
	4Q07	12/17/2007	742.20	9.48	732.72
	1Q08	3/11/2008	742.20	9.61	732.59
	2Q08	6/16/2008	742.20	9.80	732.40
	3Q08[4]	9/8/2008	742.20	NA	NA
	1H09[6]	3/12/2009	742.20	9.76	732.44
	2H09[6]	9/17/2009	742.20	10.10	732.10
	1H10	3/9/2010	742.20	9.51	732.69
	2H10	8/30/2010	742.20	9.85	732.35
	1H11	3/8/2011	742.20	9.61	732.59
	2H11	9/12/2011	742.20	9.76	732.44

Notes: GW = groundwater; MSL = mean sea level; NA = not accessible; TOC = top of casing

[1] Sampling frequency was reduced from quarterly to semi-annually following the 3Q08 event.
[2] Depth to GW during 4Q06 taken just prior to sampling, as well was covered by a drum during gauging.
[3] Depth to GW during 3Q08 taken just prior to sampling, as well was covered by boxes during gauging.
[4] Depth to GW during 3Q08 could not be measured as well could not be opened.
[5] Depth to GW during 1H09 taken just prior to sampling, as well was covered by boxes during gauging.
[6] Depth to GW during 1H09 and 2H09 taken just prior to sampling, as well could not be opened during gauging.
[7] Depth to GW during 2H11 could not be measured as there was a biological hazard (wasp nest) adjacent to well.

Table 3-1
Comparison of Second Half 2011 Detected Groundwater Concentrations to Cleanup Levels
Bee-Jay Scales Site, Sunnyside, Washington

Location ID	Date	Analyte	Analytical Results*	Units	MDL	Cleanup Level
MW-01	9/13/2011	Nitrate Nitrogen	4.3	mg/l	0.2	10
MW-03	9/14/2011	Alkalinity to pH 4.5	272	mg/l as CaCO3	0.46	NA
MW-03	9/14/2011	Alkalinity to pH 8.3	4	mg/l as CaCO3	0.46	NA
MW-03	9/14/2011	Ammonia-Nitrogen	70.4	mg/l	0.2	NA
MW-03	9/14/2011	Arsenic	**0.0426**	mg/l	0.0051	0.01
MW-03	9/14/2011	Nitrate Nitrogen	**10**	mg/l	0.4	10
MW-03	9/14/2011	Nitrite Nitrogen	**1.2**	mg/l	0.03	1
MW-03	9/14/2011	pH	8.3	Std. Units	0.01	NA
MW-04	9/14/2011	1,2,3-Trichloropropane	**0.041**	mg/l	0.001	0.00001
MW-04	9/14/2011	1,2-Dichloropropane	**0.047**	mg/l	0.001	0.005
MW-04	9/14/2011	Alkalinity to pH 4.5	424	mg/l as CaCO3	0.46	NA
MW-04	9/14/2011	Ammonia-Nitrogen	352	mg/l	1	NA
MW-04	9/14/2011	Dalapon	0.0049	mg/l	0.00024	NA
MW-04	9/14/2011	Dicamba	0.00066	mg/l	0.000076	0.48
MW-04	9/14/2011	Dinoseb	**0.81**	mg/l	0.047	0.007
MW-04	9/14/2011	Manganese	0.291	mg/l	0.00044	2.2
MW-04	9/14/2011	Nitrate Nitrogen	**648**	mg/l	20	10
MW-04	9/14/2011	Nitrite Nitrogen	**2.8**	mg/l	0.15	1
MW-04	9/14/2011	pH	7.7	Std. Units	0.01	NA
MW-04	9/14/2011	Sulfate	382	mg/l	30	NA
MW-06	9/13/2011	Alkalinity to pH 4.5	218	mg/l as CaCO3	0.46	NA
MW-06	9/13/2011	Arsenic	**0.0273**	mg/l	0.0051	0.01
MW-06	9/13/2011	Nitrate Nitrogen	3.6	mg/l	0.04	10
MW-06	9/13/2011	pH	8	Std. Units	0.01	NA
MW-06	9/13/2011	Sulfate	46.7	mg/l	6	NA
MW-07	9/13/2011	Nitrate Nitrogen	3.3	mg/l	0.04	10
MW-08	9/13/2011	Alkalinity to pH 4.5	254	mg/l as CaCO3	0.46	NA
MW-08	9/13/2011	Ammonia-Nitrogen	2	mg/l	0.05	NA
MW-08	9/13/2011	Nitrate Nitrogen	**149**	mg/l	2	10
MW-08	9/13/2011	pH	7.6	Std. Units	0.01	NA
MW-08	9/13/2011	Sulfate	197	mg/l	15	NA
MW-09	9/14/2011	1,2,3-Trichloropropane	**0.02**	mg/l	0.001	0.00001
MW-09	9/14/2011	1,2-Dichloropropane	**0.02**	mg/l	0.001	0.005
MW-09	9/14/2011	2,4-D	0.00056	mg/l	0.00015	0.07
MW-09	9/14/2011	Alkalinity to pH 4.5	577	mg/l as CaCO3	0.46	NA
MW-09	9/14/2011	Ammonia-Nitrogen	120	mg/l	0.5	NA
MW-09	9/14/2011	Dicamba	0.0013	mg/l	0.00015	0.48
MW-09	9/14/2011	Dinoseb	**0.53**	mg/l	0.048	0.007
MW-09	9/14/2011	Nitrate Nitrogen	**455**	mg/l	20	10
MW-09	9/14/2011	Pentachlorophenol	0.000086	mg/l	0.000026	0.001
MW-09	9/14/2011	pH	7.2	Std. Units	0.01	NA
MW-09	9/14/2011	Sulfate	250	mg/l	30	NA

Table 3-1
Comparison of Second Half 2011 Detected Groundwater Concentrations to Cleanup Levels
Bee-Jay Scales Site, Sunnyside, Washington

Location ID	Date	Analyte	Analytical Results*	Units	MDL	Cleanup Level
MW-10	9/13/2011	Alkalinity to pH 4.5	234	mg/l as CaCO3	0.46	NA
MW-10	9/13/2011	Arsenic	**0.0202**	mg/l	0.0051	0.01
MW-10	9/13/2011	Nitrate Nitrogen	3	mg/l	0.04	10
MW-10	9/13/2011	pH	8.1	Std. Units	0.01	NA
MW-10	9/13/2011	Sulfate	37.8	mg/l	6	NA
MW-11	9/13/2011	Alkalinity to pH 4.5	234	mg/l as CaCO3	0.46	NA
MW-11	9/13/2011	Arsenic	**0.0505**	mg/l	0.0051	0.01
MW-11	9/13/2011	Nitrate Nitrogen	5.6	mg/l	0.2	10
MW-11	9/13/2011	pH	7.6	Std. Units	0.01	NA
MW-11	9/13/2011	Sulfate	57.6	mg/l	6	NA
MW-12	9/14/2011	1,2,3-Trichloropropane	**0.18**	mg/l	0.001	0.00001
MW-12	9/14/2011	1,2-Dichloroethane	0.006	mg/l	0.001	NA
MW-12	9/14/2011	1,2-Dichloropropane	**1.9**	mg/l	0.01	0.005
MW-12	9/14/2011	2,4,5-T	0.00057	mg/l	0.00014	0.16
MW-12	9/14/2011	2,4-D	**0.64**	mg/l	0.076	0.07
MW-12	9/14/2011	Alkalinity to pH 4.5	602	mg/l as CaCO3	0.46	NA
MW-12	9/14/2011	Ammonia-Nitrogen	221	mg/l	1	NA
MW-12	9/14/2011	Arsenic	**0.167**	mg/l	0.0051	0.01
MW-12	9/14/2011	Benzene	**0.023**	mg/l	0.0005	0.005
MW-12	9/14/2011	Chloride	491	mg/l	40	NA
MW-12	9/14/2011	Chlorobenzene	**0.3**	mg/l	0.008	0.1
MW-12	9/14/2011	Dicamba	0.006	mg/l	0.00076	0.48
MW-12	9/14/2011	Dinoseb	**2.1**	mg/l	0.048	0.007
MW-12	9/14/2011	Nitrate Nitrogen	**790**	mg/l	10	10
MW-12	9/14/2011	o-Xylene	0.007	mg/l	0.0008	10
MW-12	9/14/2011	pH	7	Std. Units	0.01	NA
MW-12	9/14/2011	Sulfate	1,280	mg/l	60	NA
MW-13	9/14/2011	2,4-D	0.0062	mg/l	0.00015	0.07
MW-13	9/14/2011	Alkalinity to pH 4.5	246	mg/l as CaCO3	0.46	NA
MW-13	9/14/2011	Dinoseb	**0.022**	mg/l	0.0019	0.007
MW-13	9/14/2011	Nitrate Nitrogen	**71.2**	mg/l	4	10
MW-13	9/14/2011	pH	7.4	Std. Units	0.01	NA
MW-13	9/14/2011	Sulfate	349	mg/l	30	NA

Notes:
*Results in **bold** exceed or are equal to Cleanup Levels (CULs).
MDL = method detection limit
mg/l = milligrams per liter
NA = not applicable; no CUL designated
2,4-D = 2,4-Dichlorophenoxyacetic acid
2,4,5-TP = 2-(2,4,5-Trichlorophenoxy)propanoic acid; also known as Silvex

Table 3-2
Isotope Analysis Results
Bee-Jay Scales Site, Sunnyside, Washington

Location ID	Sample ID	$\delta^{15}N$ ($^{o}/_{oo}$)	$\delta^{18}O$ ($^{o}/_{oo}$)
MW-04	MW04-091411-0	6.7	1.0
MW-09	MW09-091411-0	5.2	0.7
MW-12	MW12-091411-0	3.5	10.0
MW-13	MW13-091411-0	2.7	2.1

$\delta^{15}N$ = Delta nitrogen-15

$\delta^{18}O$ = Delta oxygen-18

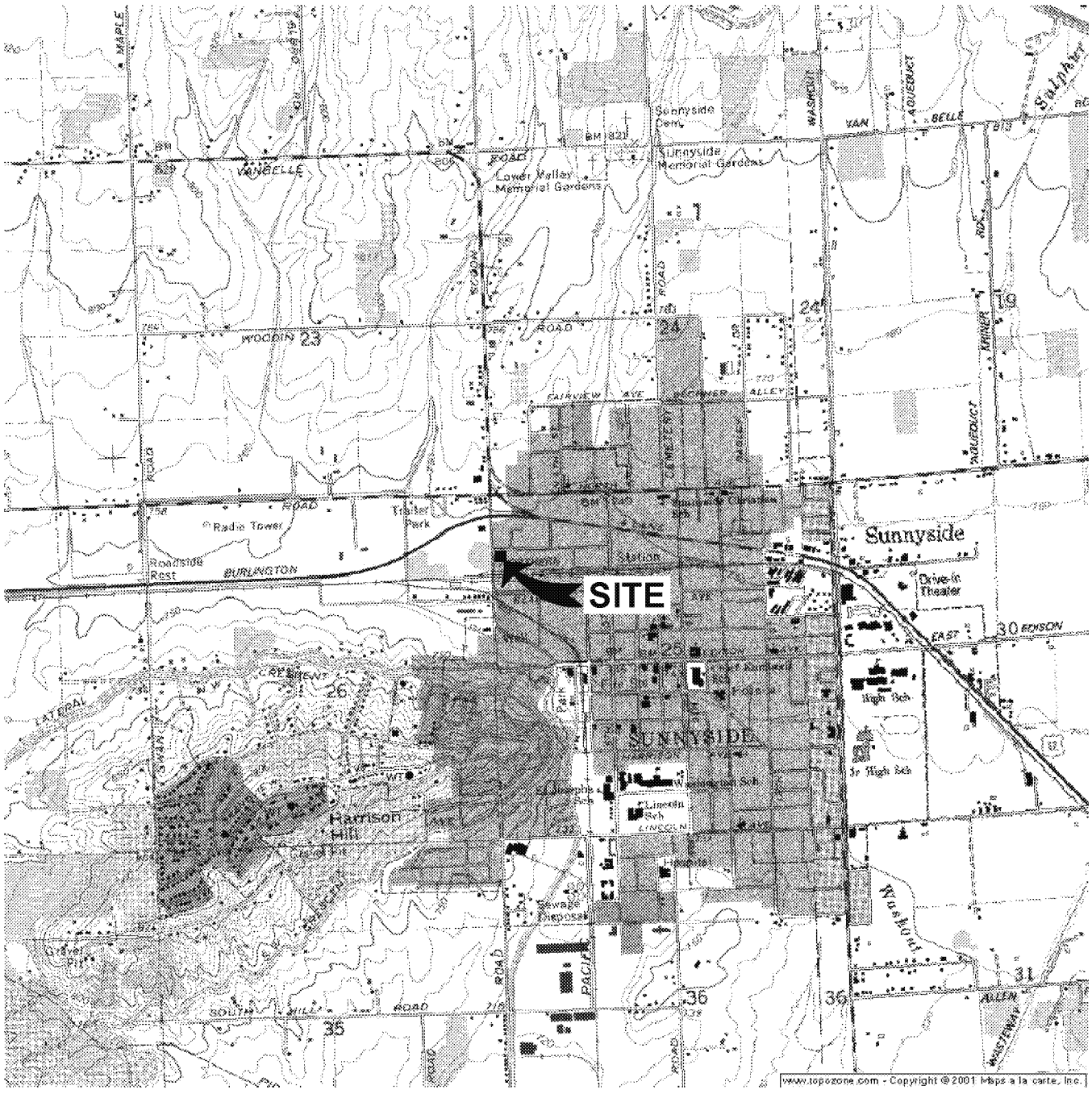
$^{o}/_{oo}$ = parts per thousand deviation from the reference standard

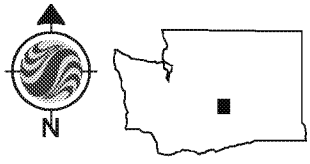
Table 3-3
Summary of Second Half 2011 Duplicate Relative Percent Difference
Bee-Jay Scales Site, Sunnyside, Washington

Location ID	Sample ID	Analyte	Less than MDL	Analytical Results	Units	RPD
MW-01	MW01-091311-0	Nitrate Nitrogen		4.3	mg/l	2.35%
MW-01	MW01-091311-1	Nitrate Nitrogen		4.2	mg/l	
MW-01	MW01-091311-0	Nitrite Nitrogen	<	0.05	mg/l	0.00%
MW-01	MW01-091311-1	Nitrite Nitrogen	<	0.05	mg/l	
AVERAGE						**1.18%**

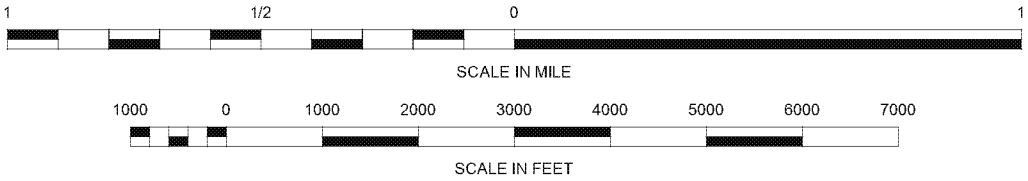
MDL = method detection limit
RPD = relative percent difference
mg/l = milligrams per liter

Figures



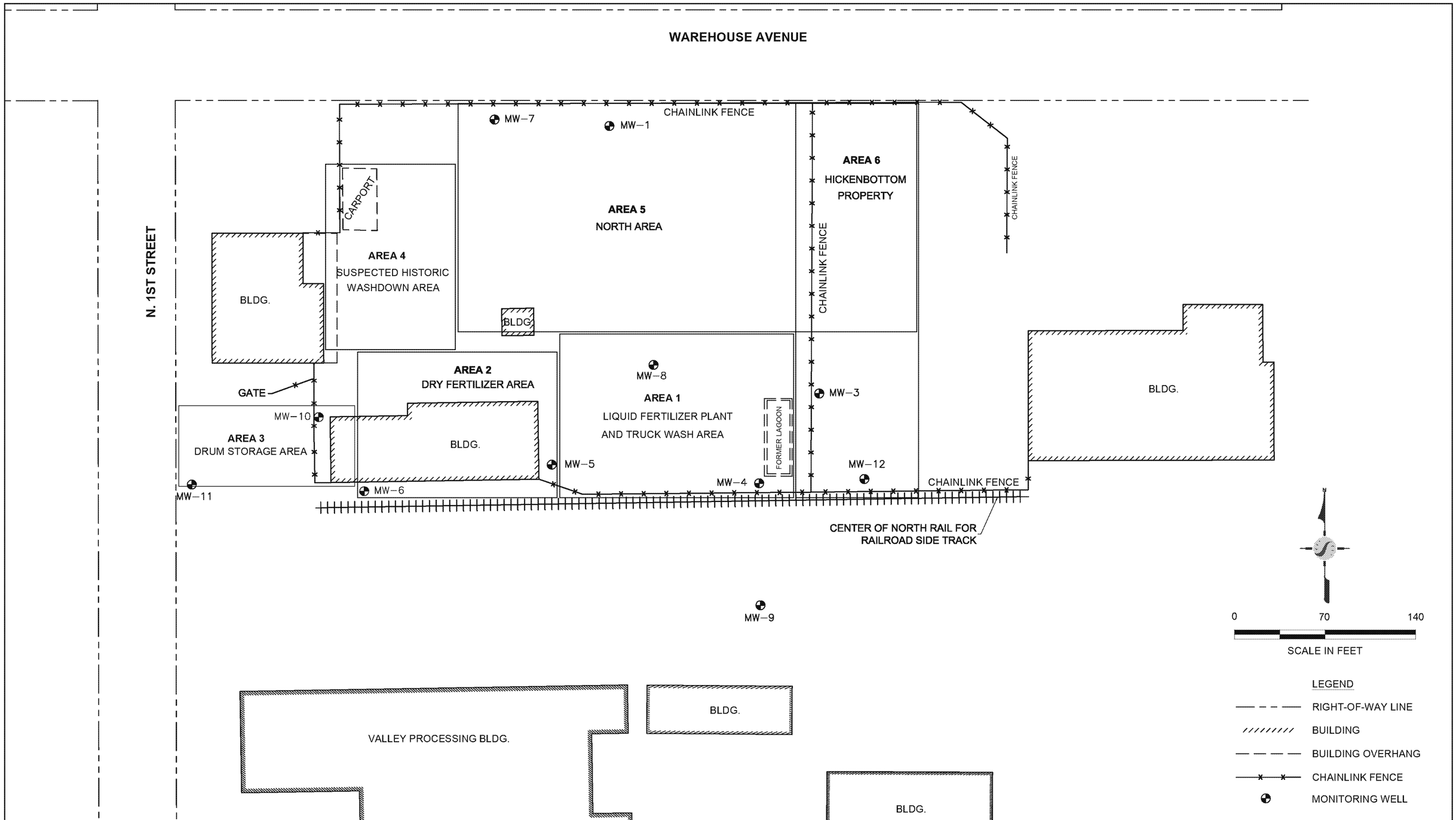


WASHINGTON



SOURCE: USGS 7.5 MINUTE QUADRANGLE; SUNNYSIDE, WASHINGTON; 1975

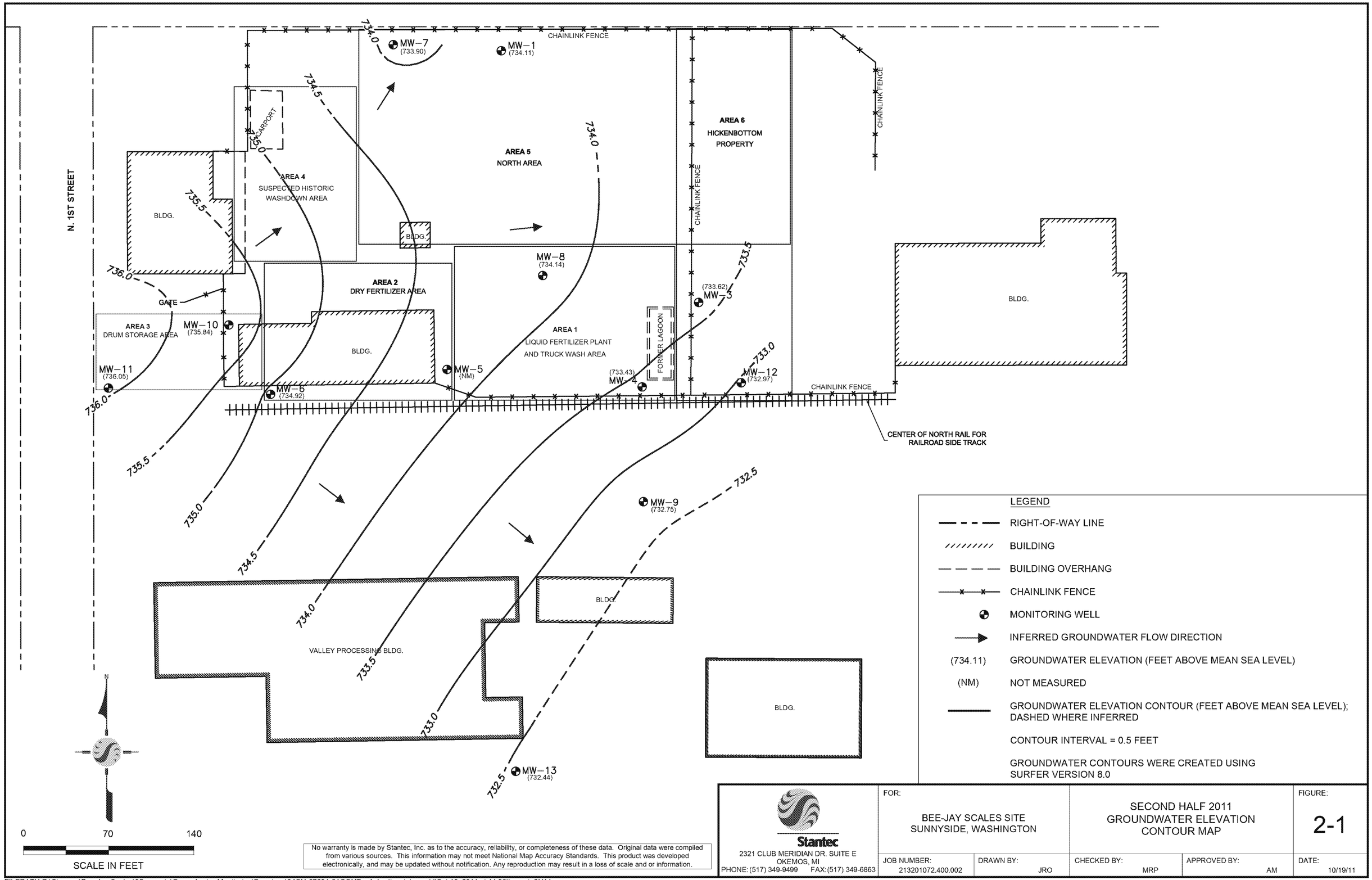
Stantec 2321 CLUB MERIDIAN DR. SUITE E OKEMOS, MI PHONE: (517) 349-9499 FAX: (517) 349-6863	FOR: BEE-JAY SCALES SITE SUNNYSIDE, WASHINGTON		SITE LOCATION MAP		FIGURE: 1-1
	JOB NUMBER: 213201072.200.003	DRAWN BY: KAM	CHECKED BY: MRP	APPROVED BY: ASM	DATE: 07/10/2008



Stantec
2321 CLUB MERIDIAN DR. SUITE E
OKEMOS, MI
PHONE:(517) 349-9499 FAX:(517) 349-6863

FOR:			FIGURE:
BEE-JAY SCALES SITE SUNNYSIDE, WASHINGTON	GENERAL SITE LAYOUT AND MONITORING WELL LOCATIONS		1-2

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
213201072.200.003	KAM	MRP	ASM	7/10/2008



LEGEND

- RIGHT-OF-WAY LINE
- BUILDING
- BUILDING OVERHANG
- CHAINLINK FENCE
- MONITORING WELL
- INFERRED GROUNDWATER FLOW DIRECTION
- (734.11) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- (NM) NOT MEASURED
- GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL); DASHED WHERE INFERRED

CONTOUR INTERVAL = 0.5 FEET

GROUNDWATER CONTOURS WERE CREATED USING SURFER VERSION 8.0

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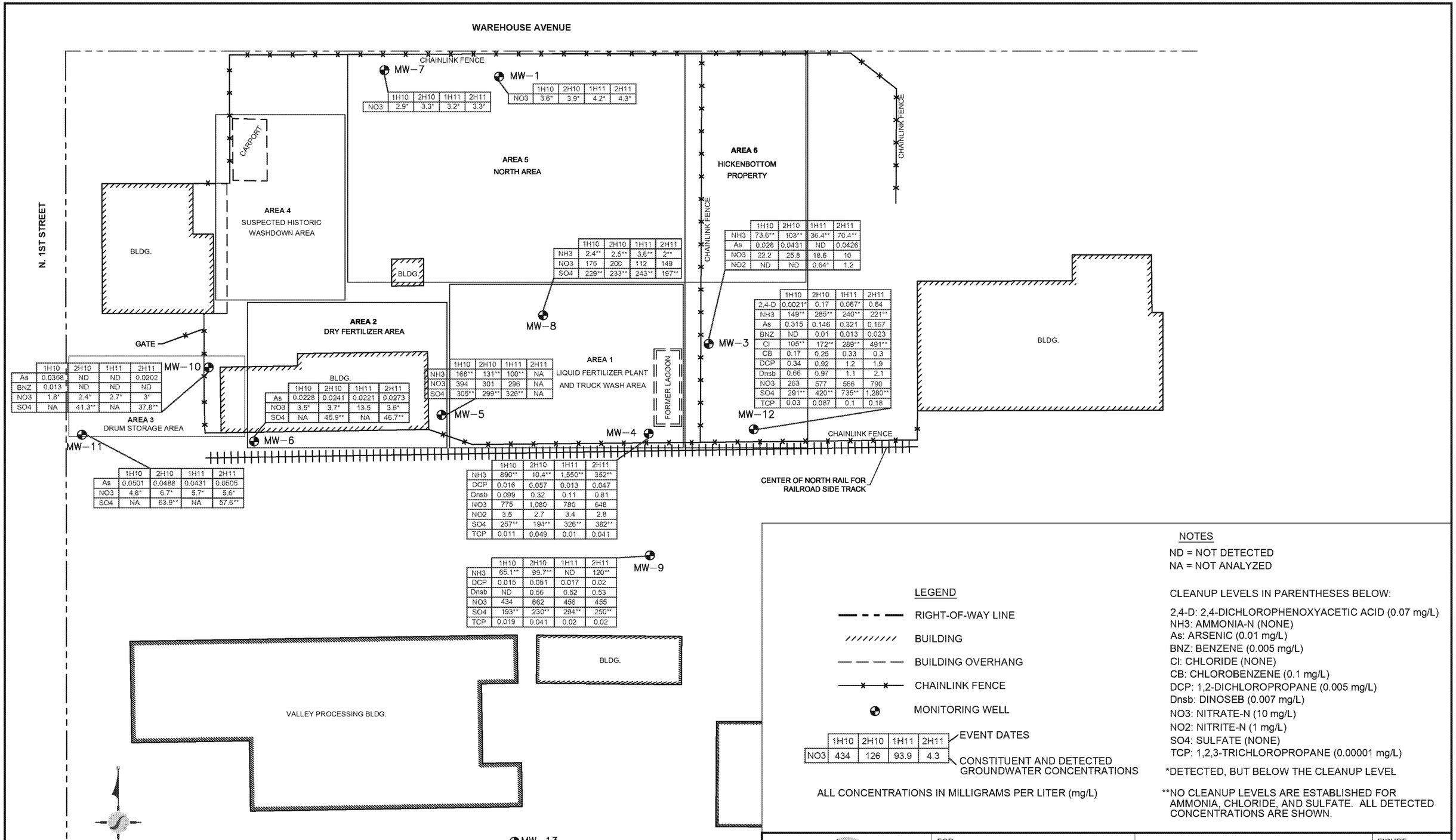
OKEMOS, MI
PHONE: (517) 349-9499 FAX: (517) 349-6863

FOR:			FIGURE:
BEE-JAY SCALES SITE SUNNYSIDE, WASHINGTON	SECOND HALF 2011 GROUNDWATER ELEVATION CONTOUR MAP		2-1
JOB NUMBER: 213201072.400.002	DRAWN BY: JRO	CHECKED BY: MRP	APPROVED BY: AM	DATE: 10/19/11

FILEPATH:P:\Chevron\Bee-Jay Scales\05_reports\Groundwater Monitoring\Drawings\24CH-67201-21CONT_v4.dwg|jopalekopsahl|Oct 19, 2011 at 14:03|Layout: 2H11



	1H10	2H10	1H11	2H11
NO3	2.9*	3.3*	3.2*	3.3*

	1H10	2H10	1H11	2H11
NO3	3.6*	3.9*	4.2*	4.3*

	1H10	2H10	1H11	2H11
NH3	2.4**	2.5**	3.6**	2**
NO3	175	200	112	149
SO4	229**	233**	243**	197**

	1H10	2H10	1H11	2H11
NH3	73.6**	103**	36.4**	70.4**
As	0.028	0.0431	ND	0.0426
NO3	22.2	25.8	18.6	10
NO2	ND	ND	0.64*	1.2

	1H10	2H10	1H11	2H11
2,4-D	0.0021*	0.17	0.067*	0.64
NH3	149**	285**	240**	221**
As	0.315	0.146	0.321	0.167
BNZ	ND	0.01	0.013	0.023
Cl	105**	172**	289**	491**
CB	0.17	0.25	0.33	0.3
DCP	0.34	0.92	1.2	1.9
Dnsb	0.66	0.97	1.1	2.1
NO3	263	577	566	790
SO4	291**	420**	735**	1,280**
TCP	0.03	0.087	0.1	0.18

	1H10	2H10	1H11	2H11
As	0.0358	ND	ND	0.0202
BNZ	0.013	ND	ND	ND
NO3	1.8*	2.4*	2.7*	3*
SO4	NA	41.3**	NA	37.8**

	1H10	2H10	1H11	2H11
As	0.0228	0.0241	0.0221	0.0273
NO3	3.5*	3.7*	13.5	3.6*
SO4	NA	45.9**	NA	46.7**

	1H10	2H10	1H11	2H11
NH3	168**	131**	100**	NA
NO3	394	301	296	NA
SO4	305**	299**	326**	NA

	1H10	2H10	1H11	2H11
As	0.0501	0.0488	0.0431	0.0505
NO3	4.8*	6.7*	5.7*	5.6*
SO4	NA	63.9**	NA	57.6**

	1H10	2H10	1H11	2H11
NH3	890**	10.4**	1,550**	352**
DCP	0.016	0.057	0.013	0.047
Dnsb	0.099	0.32	0.11	0.81
NO3	775	1,080	780	648
NO2	3.5	2.7	3.4	2.8
SO4	257**	194**	326**	382**
TCP	0.011	0.049	0.01	0.041

	1H10	2H10	1H11	2H11
NH3	65.1**	99.7**	ND	120**
DCP	0.015	0.051	0.017	0.02
Dnsb	ND	0.56	0.52	0.53
NO3	434	662	456	455
SO4	193**	230**	294**	250**
TCP	0.019	0.041	0.02	0.02

	1H10	2H10	1H11	2H11
Dnsb	0.0016*	0.0027*	0.0015*	0.022
NO3	134	126	93.9	71.2
SO4	215**	213**	268**	349**

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LEGEND

RIGHT-OF-WAY LINE

BUILDING

BUILDING OVERHANG

CHAINLINK FENCE

MONITORING WELL

	1H10	2H10	1H11	2H11
NO3	434	126	93.9	4.3

EVENT DATES

CONSTITUENT AND DETECTED GROUNDWATER CONCENTRATIONS

ALL CONCENTRATIONS IN MILLIGRAMS PER LITER (mg/L)

NOTES

ND = NOT DETECTED
NA = NOT ANALYZED

CLEANUP LEVELS IN PARENTHESES BELOW:

2,4-D: 2,4-DICHLOROPHENOXYACETIC ACID (0.07 mg/L)
NH3: AMMONIA-N (NONE)
As: ARSENIC (0.01 mg/L)
BNZ: BENZENE (0.005 mg/L)
Cl: CHLORIDE (NONE)
CB: CHLOROBENZENE (0.1 mg/L)
DCP: 1,2-DICHLOROPROPANE (0.005 mg/L)
Dnsb: DINOSEB (0.007 mg/L)
NO3: NITRATE-N (10 mg/L)
NO2: NITRITE-N (1 mg/L)
SO4: SULFATE (NONE)
TCP: 1,2,3-TRICHLOROPROPANE (0.00001 mg/L)

*DETECTED, BUT BELOW THE CLEANUP LEVEL

**NO CLEANUP LEVELS ARE ESTABLISHED FOR AMMONIA, CHLORIDE, AND SULFATE. ALL DETECTED CONCENTRATIONS ARE SHOWN.

Stantec
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FOR:
BEE-JAY SCALES SITE
SUNNYSIDE, WASHINGTON

SECOND HALF 2011 DETECTED GROUNDWATER CONCENTRATIONS ABOVE CLEANUP LEVELS

FIGURE: 3-1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
213201072.400.002	JRO	MRP	AM	10/19/11

FILEPATH:P:\Chevron\Bee-Jay Scales\05_reports\Groundwater Monitoring\Drawings\24CH-67201-31CONC.dwg|jopalekopsahl|Oct 19, 2011 at 14:22|Layout: 2H11 GW CONC

Appendix A

Field Forms

Groundwater Field Log

	Order*	Well ID	Date	Time	Top of Casing Elevation (feet AMSL)	Depth to Water (feet)	Total Well Depth (feet)	
✓	1	MW-1	9/12/2011	1408	745.86	11.75	22.88	
✓	2	MW-7	9/12/2011	1414	744.68	10.78	16.12	
Tues 9/13 ✓	3	MW-6	9/12/2011	1425	741.73	6.81	16.30	
✓	4	MW-10	9/12/2011	1437	742.38	6.54	18.30	
✓	5	MW-11	9/12/2011	1446	742.10	6.05	18.20	
SKIP	6	MW-5			741.93		16.13	WASP RIVE IN TAIL LIGHT
✓	7	MW-8	9/12/2011	1500	741.32	7.18	17.37	
✓	8	MW-3	9/12/2011	1514	740.92	7.30	19.00	
Wed 9/14 ✓	*I 9	MW-12	9/12/2011	1525	741.82	8.85	17.65	under pallette
✓	*I 10	MW-13	9/14/2011	1057	742.20	9.76	18.90	Broken MW lid
✓	*I 11	MW-9	9/12/2011	1539	741.09	8.34	17.86	
✓	*I 12	• MW-4	9/12/2011	1551	741.88	8.45	17.00	

*Gauging/sampling should be conducted in the order of "clean" to "impacted"; therefore, list may be adjusted based on encountered concentrations.

• EQ BLANK
• ISOTOPE SAMPLES

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-13-11 WELL NO. MW-1

FACILITY NAME: Bee Jay Scales TEMPERATURE: 60 °F or °C

FIELD PERSONNEL: J. Dauphinais D. Hanson WEATHER: Partly Cloudy, calm

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 11.75 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 22.88 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 11.13 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water_____ =	_____PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water_____ =	_____PV (Gal)

PURGING METHOD: Low Flow DURATION: 15 minutes

JD 9-13-11

1 Min = 15 sec. x 4

OBSERVATIONS:

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	L/M
0.50	857	--	8.47	-267.3	7.06	58.03	566	12.02	0.08
02×3.78 =	900	--	1.62	-268.5	6.90	58.11	473	12.01	0.08
x 11 x3 = 0	903	--	1.23	-285.8	7.24	58.09	464	12.01	0.08
0.063	906	--	1.15	-298.9	7.35	58.30	462	12.02	0.08
0.063	909	--	1.10	-300.5	7.42	58.32	442	12.02	0.08
0.063	912	--	1.06	-302.9	7.55	58.28	448	12.02	0.08
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.33 gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 12.02

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW01-091311-0	0930	40ml /2	No preservative/H_2SO_4
MW01-091311-1	0936	40ml /2	H_2SO_4/No preservative

COMMENTS:

Duplicate taken, Screen interval for sample collect was located in the bottom 4 feet of the well.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:

Original Water Column: 11.13 x 0.80 = (8.90)

Collect sample when Depth to Water measures **Less than or equal to:** 13.95

Signature: [signature]

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: BEE-JAY 213201072 DATE: 9/14/2011 WELL NO. MW-3

FACILITY NAME: Bee-Jay Scales TEMPERATURE: 58 °F or °C

FIELD PERSONNEL: Justin Dauphinais, D. Hanson WEATHER: Pt. Cloudy Sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 7.30 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 19.00 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 11.70 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water ____ =	____ PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water ____ =	____ PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

OBSERVATIONS:

25ml/1000 15ml/1000

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	
								DH9-(4-11) x 4	L/m
0.016	0857	--	4.00	-180.8	8.45	57.71°F	692	67.82	0.0
0.080	0900	--	2.66	-202.10	8.47	57.97°F	686	78.14	0.1
0.080	0903	--	1.94	-221.8	8.46	58.04°F	678	78.47	0.1
0.080	0906	--	1.72	-212.2	8.46	58.29°F	678	76.65	0.1
0.080	0909	--	1.46	-217.8	8.45	58.43°F	676	7.66	0.1
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.33 Gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 7.66

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW03-091411-0	0915	(2) 500 ml Plastic (1) 500 ml glass (1) 250 ml plastic (2) 40 ml vials	HNO_3, H_2SO_4, no preservat

COMMENTS:

WELL MAINTENANCE - ADDED MISSING BOLT to LID. Sample collected at the bottom 4 feet of well screen.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:

Original Water Column: 11.70 x 0.80 = (9.36)

Collect sample when Depth to Water measures

Less than or equal to: 9.64

Signature: Dietrie Hanson

ED_002369M_00001947-00031

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9/14/11 WELL NO. MW-4

FACILITY NAME: Bee-Jay Scales TEMPERATURE: 80 °F or °C

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Sunny, Hazy.

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 8.45 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 17.00 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 8.55 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water ____ =	____ PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water ____ =	____ PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

25/1000 = 0.025

OBSERVATIONS:

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL 4m	
0.026	1229	--	4.09	-186.2	7.98	60.28	5929	8.66	0.10
0.050	1232	--	1.23	-217.9	7.99	60.84	5948	8.70	0.10
0.050	1235	--	0.90	-229.1	8.00	61.04	5969	8.76	0.10
0.050	1238	--	0.83	-250.6	7.98	61.07	5984	8.80	0.10
0.050	1241	--	0.72	-258.6	7.97	61.43	6020	8.86	0.10
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.34 Gallons.

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 8.86

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW04-091411-0	1245	(2) 500 ml plastic (1) 250 ml plastic (8) 40 ml vocs (1) 500 ml glass	$Na_2S_2O_3$, none HNO_3, H_2SO_4, HCl,
MW04-091411-2	1255	(2) 1000 ml glass (same)	(same)

COMMENTS:

Needs a bolt and monument fixed. Sample collected at the bottom 4 feet. Field equipment sample collected.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Original Water Column: 8.55 x 0.80 = 6.84 Total Depth of Well: 17.00

Collect sample when Depth to Water measures **Less than or equal to**: 10.16

Signature: Dietrie Hanson

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-13-11 WELL NO. MW-6

FACILITY NAME: Bee Jay Scales TEMPERATURE: 70 °F or °C

FIELD PERSONNEL: J. Dauphinais D. Hanson WEATHER: Pt. Cloudy, Calm

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 6.81 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 16.30 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 9.49 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water	=	PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water	=	PV (Gal)

PURGING METHOD: Low Flow DURATION: 12 minutes

OBSERVATIONS:

0.025 x 4
0.0257 4

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	4M
0.026	1038	--	4.00	-245.6	8.02	59.66°F	456	6.95	0.10
0.08	1041	--	1.31	-269.8	7.92	59.62°F	447	6.98	0.10
0.08	1044	--	1.08	-277.0	7.61	59.40°F	441	6.98	0.10
0.08	1047	--	0.88	-259.1	7.74	59.34°F	436	7.00	0.10
0.08	1050	--	0.76	-296.8	7.85	59.18°F	431	7.00	0.10
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.35 gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum on-site

SAMPLES COLLECTED: Depth to Water at time of sample collection: 7.00

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW06-091311-0	1055	(1) 500ml plastic (2) 250 ml plastic (4) 40 ml glass vog.	H_2SO_4, none, HNO_3,

COMMENTS: NONE. Screen interval sampled in bottom 4 feet of well.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:

Original Water Column: 9.49 x 0.80 = -(7.59)

Collect sample when Depth to Water measures

Less than or equal to: 8.71

Signature: Dettrie Hanson

ED_002369M_00001947-00033

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-13-11 WELL NO. MW-7

FACILITY NAME: Bee Jay Scales TEMPERATURE: 65 °F or °C

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Partly Cloudy, Calm

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 10.78 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 16.12 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 5.34 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water _____ = _____ PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water _____ = _____ PV (Gal)

PURGING METHOD: Low Flow DURATION: 18 minutes

OBSERVATIONS:

15 sec measured x4 0.02 x4 = 0.

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	L/M
0.08	0952	--	7.50	-82.4	7.75	58.83°F	385	10.94	0.08
0.063	0955	--	5.74	-112.7	7.67	58.56°F	384	11.00	0.08
0.063	0958	--	5.37	-127.7	7.49	58.46°F	383	11.04	0.08
0.063	1001	--	5.18	-148.3	7.56	58.39°F	382	11.05	0.08
0.063	1004	--	5.12	-171.3	7.66	58.36°F	382	11.05	0.08
0.063	1007	--	4.99	-187.7	7.72	58.37°F	382	11.05	0.08
0.063	1010	--	5.01	-194.9	7.73	58.32°F	381	11.05	0.08
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.458 GAL

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 11.05

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW07-091311-0	1015	40 mL/2	No preservative/H_2SO_4

COMMENTS: NONE Screen interval sampled in the bottom 4 feet of the well

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:
Original Water Column: 5.34 x 0.80 = -(4.27)
Collect sample when Depth to Water measures
Less than or equal to: 11.85 ultimate on DTW

Signature: Dietrie Hanson

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9/13/2011 WELL NO. MW-8

FACILITY NAME: Bee-Jay Scales TEMPERATURE: 92 (°F or °C)

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Sunny. Clear Blue Skies

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 7.18 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 17.37 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 10.19 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water	=	PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water	=	PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

OBSERVATIONS: 0.03x4 30mLx4

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL
0.032	1444	--	2.06	-228.8	7.88	62.53°F	1688	7.31 0.12
0.095	1447	--	1.19	-252.8	7.83	61.96°F	1679	7.33 0.12
0.095	1450	--	1.11	-264.3	7.81	61.87°F	1674	7.33 0.12
0.095	1453	--	1.01	-245.1	7.80	61.51°F	1660	7.37 0.12
0.095	1456	--	0.98	-263.5	7.79	61.65°F	1661	7.38 0.12
		--						
		--						
		--						

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.41 Gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 7.38

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW08-091311-0	1500	(1) 500mL plastic (1) 500mL glass (1) 250mL plastic (4) 40mL glass	H_2SO_4, none
MW08-091311-2	1505	(1) 500mL plastic (1) 500mL glass (1) 250mL plastic (4) 40mL glass	H_2SO_4, none

COMMENTS:

NO EQUIPMENT DUPLICATE, Sample collected at bottom 4 feet of well screen.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:

Original Water Column: 10.19 x 0.80 = -(8.15)

Collect sample when Depth to Water measures **Less than or equal to:** 9.22

Signature: Keithie Hanson

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9/14/11 WELL NO. MW-9

FACILITY NAME: Bee-Jay Scales TEMPERATURE: 75 °F or °C

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Sunny. Pt. Cloudy.

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 8.34 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 17.86 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 9.52 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water _____ = _____ PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water _____ = _____ PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

OBSERVATIONS:

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	30/1000= 4m
0.032	1143	--	7.00	-200.6	7.32	62.15°F	4007	8.52	0.12
0.095	1146	--	2.52	-211.1	7.27	62.67°F	4027	8.50	0.12
0.095	1149	--	1.38	-240.4	7.23	62.94°F	4044	8.55	0.12
0.095	1152	--	1.22	-233.5	7.21	63.04°F	4055	8.56	0.12
0.095	1155	--	1.07	-234.6	7.19	63.24	4061	8.56	0.12
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.41 Gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 8.56

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW09-091411-0	1200	(7) 40ml vocas (2) 1,000ml glass (1) 500ml glass (1) 500ml glass (1) 250ml plastic (1) 250ml poly for isotope	none H_2SO_4, HCl, $Na_2S_2O_3$,

COMMENTS:

Need to retap or rethread bolts on well lid. Sample collected at bottom 4 feet.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:
Original Water Column: 9.52 x 0.80 = -(7.62)
Collect sample when Depth to Water measures
Less than or equal to: 10.24

Signature: Deitrie Hanson

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-13-11 WELL NO. MW-10

FACILITY NAME: Bee Jay Scales TEMPERATURE: 72 °F or °C

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Pt. Cloudy Sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 6.54 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 18.30 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 11.76 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water ____ = ____	PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water ____ = ____	PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

OBSERVATIONS:

0.025 x4=0.

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	LIN
0.026	1117	--	4.33	-276.6	8.34	61.15°F	454	6.71	0.10
0.08	1120	--	1.02	-291.7	8.33	61.00°F	451	6.65	0.10
0.08	1123	--	0.88	-292.8	8.16	61.06°F	450	6.65	0.10
0.08	1126	--	0.74	-304.3	8.31	60.95°F	447	6.66	0.10
0.08	1129	--	0.72	-289.00	8.30	61.03°F	448	6.66	0.10
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.35 gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum on-site

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.66

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW10-091311-0	1133	Ten (10) 40 ml glass voas (2) 500 ml plastic, (1) 250 ml plastic	HNO_3, H_2SO_4, No preservative

COMMENTS:

NONE. Sample collected at bottom 4 feet of screen.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:

Original Water Column: 11.76 x 0.80 = --(9.408)

Collect sample when Depth to Water measures **Less than or equal to:**

18.30 - 9.408 = 8.892

Signature: Dietrie Hanson

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-13-11 WELL NO. MW-11

FACILITY NAME: BeeJay Scales TEMPERATURE: 80 °F or °C

FIELD PERSONNEL: J. Dauphinais D. Hanson WEATHER:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 6.05 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 18.20 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 12.15 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water	=	PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water	=	PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 15 minutes

OBSERVATIONS:

Cum. PV (Gal)	Time	Turbidity	DO JD 9-13-11	ORP	pH JD 9-13-11	Temp.	Conduct.	SWL	L/M
0.032	1212	--	5.18	-232.9	8.04	67.28°F	562	6.10	0.12
0.095	1215	--	2.70	-214.6	7.87	68.13°F	566	6.10	0.12
0.095	1218	--	2.00	-253.3	7.80	67.92°F	567	6.04	0.12
0.095	1221	--	1.65	-264.8	7.74	68.12°F	569	6.07	0.12
0.095	1224	--	1.46	-264.5	7.74	68.00°F	569	6.07	0.12
0.095	1227	--	1.35	-261.7	7.74	67.81°F	568	6.07	0.12
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.51 Gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.07

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW11-091311-0	1230	(2) 500ml plastic, (1) 250ml (7) 40ml VOAs	HNO_3, H_2SO_4, No preservative

COMMENTS: None, Sample collected at bottom 4' feet of screen.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Original Water Column: 12.15 x 0.80 = Total Depth of Well: (9.72)

Collect sample when Depth to Water measures **Less than or equal to:** 8.48

Signature: Dustin Hanson

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Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-14-11 WELL NO. MW-12

FACILITY NAME: Bee-Jay Scales TEMPERATURE: 65 °F or °C

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Pt. Cloudy

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 8.85 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 17.65 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 8.80 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water	=	PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water	=	PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

OBSERVATIONS:

25/1000 x 4 = 0.10
20/1000 x 4 = 0.

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	L/m
0.026	0938	--	3.49	-191.3	6.85	57.90°F	7706	9.01	0.10
0.080	0941	--	2.17	-207.8	6.85	58.11°F	7782	9.07	0.10
0.063	0944	--	2.31	-218.5	6.85	58.15°F	7832	9.12	0.08
0.063	0947	--	2.03	-217.8	6.84	58.64°F	7862	9.17	0.08
0.063	0950	--	1.70	-227.7	6.86	58.89	7835	9.22	0.08
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.30 Gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 9.22

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW12-091411-0	0955	(2) 500 mL plastic (1) 500 mL glass (7) 40 mL voas (2) 1000 mL glass (1) 250 mL plastic (1) 250 poly isotope	None, H_2SO_4, HCl, $Na_2S_2O_3$

COMMENTS:

SCREENED BOTTOM HALF OF WELL. Bottom 4 feet.
WATER IS YELLOW TINTED

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:

Original Water Column: 8.80 x 0.80 = -(7.04)

Collect sample when Depth to Water measures **Less than or equal to**: 10.61

Signature: Dottie Hanson

Stantec Consulting Corporation

GROUNDWATER SAMPLING FIELD DATA SHEET

Stantec Project No.: 213201072 DATE: 9-14-2011 WELL NO. MW-13

FACILITY NAME: Bee-Jay Scales TEMPERATURE: 72 °F or °C

FIELD PERSONNEL: J. Dauphinais, D. Hanson WEATHER: Pt. Cloudy. High clouds. Sunny.

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 9.76 FT. or IN.

B. Thickness of Free Product, if present: — Inches — FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 18.90 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 9.14 FT. or IN.

E. **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 (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water ____ =	____ PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water ____ =	____ PV (Gal)

PURGING METHOD: LOW FLOW DURATION: 12 minutes

25/1000 x 4 =

OBSERVATIONS:

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	LJM
0.026	1058	--	2.00	-243.0	7.68	62.86°F	1364	9.95	0.1
0.050	1101	--	0.80	-260.5	7.59	63.92°F	1331	9.93	0.1
0.050	1104	--	0.70	-245.8	7.54	64.85°F	1317	9.92	0.1
0.050	1107	--	0.64	-244.6	7.51	65.54°F	1302	9.92	0.1
0.050	1110	--	0.67	-256.0	7.50	65.40°F	1252	9.92	0.1
		--							
		--							
		--							

TOTAL VOLUME OF WATER PURGED FROM WELL: 0.34 Gallons

PURGE WATER STORED/DISPOSED OF WHERE/HOW: 55 gallon drum

SAMPLES COLLECTED: Depth to Water at time of sample collection: 9.92

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW13-091411-0	1115	(2) 500ml plastic (1) 500ml glass (4) 40ml vial (2) 1000ml glass (1) 250ml plastic	no preservative / HNO_3, H_2SO_4, $Na_2S_2O_3$

COMMENTS:

Took well lid off MW-7 and put it onto MW-13. Took broken lid off MW-13, duct taped it and put it onto MW-7. Need to replace it. Sample at bottom 4 feet.

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Original Water Column: 9.14 x 0.80 = Total Depth of Well: -(7.31)

Collect sample when Depth to Water measures **Less than or equal to:** 11.59

Signature: Deitrie Hanson

ED_002369M_00001947-00040

Appendix B

Analytical Laboratory Reports

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

September 26, 2011

Project: Bee Jay Scales Site

Submittal Date: 09/14/2011
Group Number: 1266152
PO Number: 213201072.400.002
Release Number: BEE-JAY SCALES
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LLI) #
MW01-091311-0 Grab Water Sample	6404461
MW01-091311-1 Grab Water Sample	6404462
MW07-091311-0 Grab Water Sample	6404463
MW06-091311-0 Grab Water Sample	6404464
MW10-091311-0 Grab Water Sample	6404465
MW11-091311-0 Grab Water Sample	6404466
TB-1 Water Sample	6404467

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO STANTEC International, Inc. Attn: Marisa Patterson

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300 Ext. 1522

Respectfully Submitted,

Robert Heisey

Robert Heisey
Senior Specialist

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW01-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404461
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 09:30 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 353.2**		mg/l	mg/l	
00220	Nitrate Nitrogen	14797-55-8	4.3	0.50	5
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00220	Nitrate Nitrogen	EPA 353.2	1	11258106101B	09/15/2011 10:15	K Robert Caulfeild-James	5
00219	Nitrite Nitrogen	EPA 353.2	1	11257105101B	09/14/2011 20:32	Joseph E McKenzie	1

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Analysis Report

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Sample Description: MW01-091311-1 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404462
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 09:36 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 353.2**		mg/l	mg/l	
00220	Nitrate Nitrogen	14797-55-8	4.2	0.50	5
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00220	Nitrate Nitrogen	EPA 353.2	1	11258106101B	09/15/2011 09:40	K Robert Caulfeild-James	5
00219	Nitrite Nitrogen	EPA 353.2	1	11257105101B	09/14/2011 20:36	Joseph E McKenzie	1

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Analysis Report

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Sample Description: MW07-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404463
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 10:15 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 353.2**		mg/l	mg/l	
00220	Nitrate Nitrogen	14797-55-8	3.3	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00220	Nitrate Nitrogen	EPA 353.2	1	11258106101B	09/15/2011 09:35	K Robert Caulfeild-James	1
00219	Nitrite Nitrogen	EPA 353.2	1	11257105101B	09/14/2011 20:37	Joseph E McKenzie	1

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Analysis Report

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Sample Description: MW06-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404464
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 10:55 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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M06--

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010B**		**mg/l**	**mg/l**	
07035	Arsenic		7440-38-2	0.0273	0.0200	1
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate		14808-79-8	46.7	20.0	20
		EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen		14797-55-8	3.6	0.10	1
00219	Nitrite Nitrogen		14797-65-0	< 0.050	0.050	1
		SM20 2320 B		**mg/l as CaCO3**	**mg/l as CaCO3**	
00202	Alkalinity to pH 4.5		n.a.	218	2.0	1
00201	Alkalinity to pH 8.3		n.a.	< 2.0	2.0	1
		SM20 4500 H/B		**Std. Units**	**Std. Units**	
00200	pH		n.a.	8.0	0.010	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 19:22	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00228	Sulfate	EPA 300.0	1	11263196903B	09/21/2011 10:12	Ashley M Adams	20
00220	Nitrate Nitrogen	EPA 353.2	1	11258106101B	09/15/2011 09:23	K Robert Caulfeild-James	1
00219	Nitrite Nitrogen	EPA 353.2	1	11257105101B	09/14/2011 20:39	Joseph E McKenzie	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11258020201B	09/15/2011 09:51	Hannah M Royer	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11258020201B	09/15/2011 09:51	Hannah M Royer	1
00200	pH	SM20 4500 H/B	1	11258020002A	09/15/2011 14:35	Michele L Graham	1

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Analysis Report

Sample Description: MW10-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404465
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 11:33 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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--M10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: MW10-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404465
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 11:33 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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--M10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		ug/l	ug/l	
08273	NWTPH-Gx water C7-C12	n.a.	< 250	250	1
Metals	**SW-846 6010B**		mg/l	mg/l	
07035	Arsenic	7440-38-2	0.0202	0.0200	1
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00228	Sulfate	14808-79-8	37.8	20.0	20
	EPA 353.2		mg/l	mg/l	
00220	Nitrate Nitrogen	14797-55-8	3.0	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM20 2320 B		mg/l as CaCO3	mg/l as CaCO3	
00202	Alkalinity to pH 4.5	n.a.	234	2.0	1
00201	Alkalinity to pH 8.3	n.a.	< 2.0	2.0	1
	SM20 4500 H/B		Std. Units	Std. Units	
00200	pH	n.a.	8.1	0.010	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112621AA	09/19/2011 10:35	Nicholas R Rossi	1

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Analysis Report

Sample Description: MW10-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404465
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 11:33 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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--M10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112621AA	09/19/2011 10:35	Nicholas R Rossi	1
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	11263B20A	09/21/2011 21:21	Laura M Krieger	1
01146	GC VOA Water Prep	SW-846 5030B	1	11263B20A	09/21/2011 21:21	Laura M Krieger	1
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 19:26	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00228	Sulfate	EPA 300.0	1	11263196903B	09/21/2011 10:25	Ashley M Adams	20
00220	Nitrate Nitrogen	EPA 353.2	1	11258106101B	09/15/2011 09:24	K Robert Caulfeild-James	1
00219	Nitrite Nitrogen	EPA 353.2	1	11257105101B	09/14/2011 20:40	Joseph E McKenzie	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11258020201B	09/15/2011 09:51	Hannah M Royer	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11258020201B	09/15/2011 09:51	Hannah M Royer	1
00200	pH	SM20 4500 H/B	1	11258020002A	09/15/2011 14:35	Michele L Graham	1

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Analysis Report

Sample Description: MW11-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404466
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 12:30 by JD

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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--M11

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Volatiles		**ECY 97-602 NWTPH-Gx**		ug/l	ug/l	
08273	NWTPH-Gx water C7-C12		n.a.	< 250	250	1
Metals		**SW-846 6010B**		mg/l	mg/l	
07035	Arsenic		7440-38-2	0.0505	0.0200	1
Wet Chemistry		**EPA 300.0**		mg/l	mg/l	
00228	Sulfate		14808-79-8	57.6	20.0	20
		EPA 353.2		mg/l	mg/l	
00220	Nitrate Nitrogen		14797-55-8	5.6	0.50	5
00219	Nitrite Nitrogen		14797-65-0	< 0.050	0.050	1
		SM20 2320 B		mg/l as CaCO3	mg/l as CaCO3	
00202	Alkalinity to pH 4.5		n.a.	234	2.0	1
00201	Alkalinity to pH 8.3		n.a.	< 2.0	2.0	1
		SM20 4500 H/B		Std. Units	Std. Units	
00200	pH		n.a.	7.6	0.010	1

General Sample Comments

State of Washington Lab Certification No. C259

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Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08273	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	11263B20A	09/21/2011 21:43	Laura M Krieger	1
01146	GC VOA Water Prep	SW-846 5030B	1	11263B20A	09/21/2011 21:43	Laura M Krieger	1
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 19:30	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00228	Sulfate	EPA 300.0	1	11263196903B	09/21/2011 10:39	Ashley M Adams	20
00220	Nitrate Nitrogen	EPA 353.2	1	11258106101B	09/15/2011 09:42	K Robert Caulfeild-James	5
00219	Nitrite Nitrogen	EPA 353.2	1	11257105101B	09/14/2011 20:41	Joseph E McKenzie	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11258020201B	09/15/2011 09:51	Hannah M Royer	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11258020201B	09/15/2011 09:51	Hannah M Royer	1
00200	pH	SM20 4500 H/B	1	11258020002A	09/15/2011 14:35	Michele L Graham	1

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Analysis Report

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Sample Description: TB-1 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404467
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

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TB-1M

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: TB-1 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6404467
LLI Group # 1266152
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011

Submitted: 09/14/2011 09:05
Reported: 09/26/2011 11:25

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

TB-1M

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112632AA	09/20/2011 20:58	Frank A Valla, Jr	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112632AA	09/20/2011 20:58	Frank A Valla, Jr	1

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: Y112621AA	Sample number(s): 6404465							
Acetone	< 20	20.	ug/l	97		49-234		
Acrylonitrile	< 20	20.	ug/l	102		67-120		
Benzene	< 5	5.	ug/l	98		79-120		
Bromobenzene	< 5	5.	ug/l	97		80-120		
Bromochloromethane	< 5	5.	ug/l	95		80-120		
Bromodichloromethane	< 5	5.	ug/l	85		80-120		
Bromoform	< 5	5.	ug/l	75		61-120		
Bromomethane	< 5	5.	ug/l	69		44-120		
2-Butanone	< 10	10.	ug/l	110		66-151		
n-Butylbenzene	< 5	5.	ug/l	97		74-120		
sec-Butylbenzene	< 5	5.	ug/l	102		78-120		
tert-Butylbenzene	< 5	5.	ug/l	95		80-120		
Carbon Disulfide	< 5	5.	ug/l	76		62-120		
Carbon Tetrachloride	< 5	5.	ug/l	84		75-123		
Chlorobenzene	< 5	5.	ug/l	96		80-120		
Chloroethane	< 5	5.	ug/l	68		49-129		
Chloroform	< 5	5.	ug/l	94		77-122		
Chloromethane	< 5	5.	ug/l	80		60-129		
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	90		56-126		
Dibromochloromethane	< 5	5.	ug/l	83		80-120		
1,2-Dibromoethane	< 5	5.	ug/l	98		80-120		
Dibromomethane	< 5	5.	ug/l	94		80-120		
trans-1,4-Dichloro-2-butene	< 50	50.	ug/l	93		36-144		
1,2-Dichlorobenzene	< 5	5.	ug/l	96		80-120		
1,3-Dichlorobenzene	< 5	5.	ug/l	98		80-120		
1,4-Dichlorobenzene	< 5	5.	ug/l	97		80-120		
Dichlorodifluoromethane	< 5	5.	ug/l	58		47-120		
1,1-Dichloroethane	< 5	5.	ug/l	97		79-120		
1,2-Dichloroethane	< 5	5.	ug/l	95		70-130		
1,1-Dichloroethene	< 5	5.	ug/l	85		74-123		
cis-1,2-Dichloroethene	< 5	5.	ug/l	96		80-120		
trans-1,2-Dichloroethene	< 5	5.	ug/l	94		80-120		
1,2-Dichloropropane	< 5	5.	ug/l	96		78-120		
cis-1,3-Dichloropropene	< 5	5.	ug/l	91		80-120		
trans-1,3-Dichloropropene	< 5	5.	ug/l	85		79-120		
Ethyl ether	< 5	5.	ug/l	89		23-144		
Ethylbenzene	< 5	5.	ug/l	96		79-120		
2-Hexanone	< 10	10.	ug/l	102		65-136		
Isopropylbenzene	< 5	5.	ug/l	98		77-120		
p-Isopropyltoluene	< 5	5.	ug/l	99		80-120		
Methyl Iodide	< 5	5.	ug/l	87		71-122		
Methyl Tertiary Butyl Ether	< 5	5.	ug/l	97		76-120		
4-Methyl-2-pentanone	< 10	10.	ug/l	101		70-121		
Methylene Chloride	< 5	5.	ug/l	90		80-120		
2-Methylnaphthalene	< 5	5.	ug/l	84		36-120		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Naphthalene	< 5	5.	ug/l	94		62-120		
n-Propylbenzene	< 5	5.	ug/l	96		80-120		
Styrene	< 5	5.	ug/l	92		80-120		
1,1,1,2-Tetrachloroethane	< 5	5.	ug/l	89		80-120		
1,1,2,2-Tetrachloroethane	< 5	5.	ug/l	98		71-120		
Tetrachloroethene	< 5	5.	ug/l	93		80-121		
Tetrahydrofuran	< 10	10.	ug/l	99		64-139		
Toluene	< 5	5.	ug/l	95		79-120		
1,2,3-Trichlorobenzene	< 5	5.	ug/l	94		65-120		
1,2,4-Trichlorobenzene	< 5	5.	ug/l	91		67-120		
1,1,1-Trichloroethane	< 5	5.	ug/l	85		75-127		
1,1,2-Trichloroethane	< 5	5.	ug/l	94		80-120		
Trichloroethene	< 5	5.	ug/l	94		80-120		
Trichlorofluoromethane	< 5	5.	ug/l	74		64-129		
1,2,3-Trichloropropane	< 5	5.	ug/l	101		80-120		
1,2,4-Trimethylbenzene	< 5	5.	ug/l	98		74-120		
1,3,5-Trimethylbenzene	< 5	5.	ug/l	100		75-120		
Vinyl Chloride	< 5	5.	ug/l	72		65-125		
m+p-Xylene	< 5	5.	ug/l	96		80-120		
o-Xylene	< 5	5.	ug/l	94		80-120		
Batch number: Y112632AA	Sample number(s): 6404467							
Acetone	< 20	20.	ug/l	83		49-234		
Acrylonitrile	< 20	20.	ug/l	101		67-120		
Benzene	< 5	5.	ug/l	101		79-120		
Bromobenzene	< 5	5.	ug/l	98		80-120		
Bromochloromethane	< 5	5.	ug/l	98		80-120		
Bromodichloromethane	< 5	5.	ug/l	86		80-120		
Bromoform	< 5	5.	ug/l	72		61-120		
Bromomethane	< 5	5.	ug/l	70		44-120		
2-Butanone	< 10	10.	ug/l	108		66-151		
n-Butylbenzene	< 5	5.	ug/l	95		74-120		
sec-Butylbenzene	< 5	5.	ug/l	101		78-120		
tert-Butylbenzene	< 5	5.	ug/l	94		80-120		
Carbon Disulfide	< 5	5.	ug/l	70		62-120		
Carbon Tetrachloride	< 5	5.	ug/l	90		75-123		
Chlorobenzene	< 5	5.	ug/l	97		80-120		
Chloroethane	< 5	5.	ug/l	64		49-129		
Chloroform	< 5	5.	ug/l	98		77-122		
Chloromethane	< 5	5.	ug/l	77		60-129		
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	83		56-126		
Dibromochloromethane	< 5	5.	ug/l	81		80-120		
1,2-Dibromoethane	< 5	5.	ug/l	98		80-120		
Dibromomethane	< 5	5.	ug/l	95		80-120		
trans-1,4-Dichloro-2-butene	< 50	50.	ug/l	84		36-144		
1,2-Dichlorobenzene	< 5	5.	ug/l	95		80-120		
1,3-Dichlorobenzene	< 5	5.	ug/l	97		80-120		
1,4-Dichlorobenzene	< 5	5.	ug/l	96		80-120		
Dichlorodifluoromethane	< 5	5.	ug/l	66		47-120		
1,1-Dichloroethane	< 5	5.	ug/l	99		79-120		
1,2-Dichloroethane	< 5	5.	ug/l	102		70-130		
1,1-Dichloroethene	< 5	5.	ug/l	84		74-123		
cis-1,2-Dichloroethene	< 5	5.	ug/l	96		80-120		
trans-1,2-Dichloroethene	< 5	5.	ug/l	95		80-120		
1,2-Dichloropropane	< 5	5.	ug/l	96		78-120		
cis-1,3-Dichloropropene	< 5	5.	ug/l	89		80-120		
trans-1,3-Dichloropropene	< 5	5.	ug/l	82		79-120		
Ethyl ether	< 5	5.	ug/l	81		23-144		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Ethylbenzene	< 5	5.	ug/l	97		79-120		
2-Hexanone	< 10	10.	ug/l	98		65-136		
Isopropylbenzene	< 5	5.	ug/l	98		77-120		
p-Isopropyltoluene	< 5	5.	ug/l	98		80-120		
Methyl Iodide	< 5	5.	ug/l	87		71-122		
Methyl Tertiary Butyl Ether	< 5	5.	ug/l	97		76-120		
4-Methyl-2-pentanone	< 10	10.	ug/l	100		70-121		
Methylene Chloride	< 5	5.	ug/l	88		80-120		
2-Methylnaphthalene	< 5	5.	ug/l	85		36-120		
Naphthalene	< 5	5.	ug/l	91		62-120		
n-Propylbenzene	< 5	5.	ug/l	94		80-120		
Styrene	< 5	5.	ug/l	92		80-120		
1,1,1,2-Tetrachloroethane	< 5	5.	ug/l	89		80-120		
1,1,2,2-Tetrachloroethane	< 5	5.	ug/l	93		71-120		
Tetrachloroethene	< 5	5.	ug/l	97		80-121		
Tetrahydrofuran	< 10	10.	ug/l	100		64-139		
Toluene	< 5	5.	ug/l	95		79-120		
1,2,3-Trichlorobenzene	< 5	5.	ug/l	97		65-120		
1,2,4-Trichlorobenzene	< 5	5.	ug/l	91		67-120		
1,1,1-Trichloroethane	< 5	5.	ug/l	95		75-127		
1,1,2-Trichloroethane	< 5	5.	ug/l	96		80-120		
Trichloroethene	< 5	5.	ug/l	96		80-120		
Trichlorofluoromethane	< 5	5.	ug/l	82		64-129		
1,2,3-Trichloropropane	< 5	5.	ug/l	99		80-120		
1,2,4-Trimethylbenzene	< 5	5.	ug/l	97		74-120		
1,3,5-Trimethylbenzene	< 5	5.	ug/l	98		75-120		
Vinyl Chloride	< 5	5.	ug/l	67		65-125		
m+p-Xylene	< 5	5.	ug/l	96		80-120		
o-Xylene	< 5	5.	ug/l	93		80-120		
Batch number: 11263B20A	Sample number(s): 6404465-6404466							
NWTPH-Gx water C7-C12	< 250	250.	ug/l	100	100	75-135	0	30
Batch number: 112585705005	Sample number(s): 6404464-6404466							
Arsenic	< 0.0200	0.0200	mg/l	105		89-115		
Batch number: 11257105101B	Sample number(s): 6404461-6404466							
Nitrite Nitrogen	< 0.050	0.050	mg/l	90		90-110		
Batch number: 11258106101B	Sample number(s): 6404461-6404466							
Nitrate Nitrogen	< 0.10	0.10	mg/l	102		90-110		
Batch number: 11263196903B	Sample number(s): 6404464-6404466							
Sulfate	< 1.0	1.0	mg/l	94		90-110		
Batch number: 11258020002A	Sample number(s): 6404464-6404466							
pH				100		99-101		
Batch number: 11258020201B	Sample number(s): 6404464-6404466							
Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	98		98-103		

Sample Matrix Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM
Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: Y112621AA	Sample number(s): 6404465 UNSPK: 6404465								
Acetone	86	87	52-139	1	30				
Acrylonitrile	100	100	60-123	1	30				
Benzene	108	106	80-126	2	30				
Bromobenzene	100	101	82-115	1	30				
Bromochloromethane	96	97	83-123	1	30				
Bromodichloromethane	87	87	78-125	1	30				
Bromoform	68	69	60-121	2	30				
Bromomethane	70	69	38-149	1	30				
2-Butanone	105	105	57-138	0	30				
n-Butylbenzene	102	104	73-128	2	30				
sec-Butylbenzene	108	110	79-125	1	30				
tert-Butylbenzene	101	102	81-121	1	30				
Carbon Disulfide	73	73	67-135	1	30				
Carbon Tetrachloride	94	95	81-138	1	30				
Chlorobenzene	100	100	87-124	0	30				
Chloroethane	65	68	51-145	4	30				
Chloroform	98	98	81-134	0	30				
Chloromethane	78	76	67-154	2	30				
1,2-Dibromo-3-chloropropane	86	87	54-134	2	30				
Dibromochloromethane	81	81	74-116	0	30				
1,2-Dibromoethane	100	99	77-116	1	30				
Dibromomethane	95	95	83-119	0	30				
trans-1,4-Dichloro-2-butene	56	60	27-147	6	30				
1,2-Dichlorobenzene	98	98	84-119	1	30				
1,3-Dichlorobenzene	100	101	86-121	1	30				
1,4-Dichlorobenzene	99	100	85-121	1	30				
Dichlorodifluoromethane	69	67	52-129	2	30				
1,1-Dichloroethane	104	105	84-129	1	30				
1,2-Dichloroethane	98	98	66-141	0	30				
1,1-Dichloroethene	98	99	85-142	1	30				
cis-1,2-Dichloroethene	101	102	85-125	0	30				
trans-1,2-Dichloroethene	103	103	87-126	0	30				
1,2-Dichloropropane	99	98	83-124	1	30				
cis-1,3-Dichloropropene	84	84	75-125	0	30				
trans-1,3-Dichloropropene	78	78	74-119	0	30				
Ethyl ether	86	86	40-141	0	30				
Ethylbenzene	104	102	71-134	1	30				
2-Hexanone	99	98	55-127	1	30				
Isopropylbenzene	104	104	75-128	0	30				
p-Isopropyltoluene	104	106	76-123	1	30				
Methyl Iodide	94	95	74-129	1	30				
Methyl Tertiary Butyl Ether	98	99	72-126	1	30				
4-Methyl-2-pentanone	101	101	63-123	0	30				
Methylene Chloride	96	95	79-120	1	30				
2-Methylnaphthalene	85	89	30-126	5	30				
Naphthalene	95	96	52-125	0	30				
n-Propylbenzene	101	102	74-134	1	30				
Styrene	94	93	78-125	1	30				
1,1,1,2-Tetrachloroethane	91	91	82-119	0	30				
1,1,2,2-Tetrachloroethane	96	98	72-128	3	30				
Tetrachloroethene	100	100	80-128	0	30				
Tetrahydrofuran	92	93	58-141	0	30				
Toluene	101	101	80-125	1	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
1,2,3-Trichlorobenzene	94	96	69-119	2	30				
1,2,4-Trichlorobenzene	91	92	70-124	2	30				
1,1,1-Trichloroethane	97	97	80-143	0	30				
1,1,2-Trichloroethane	96	96	77-124	1	30				
Trichloroethene	102	102	88-133	1	30				
Trichlorofluoromethane	88	87	73-152	1	30				
1,2,3-Trichloropropane	99	101	76-118	3	30				
1,2,4-Trimethylbenzene	107	105	72-130	2	30				
1,3,5-Trimethylbenzene	104	105	72-131	1	30				
Vinyl Chloride	76	75	66-133	2	30				
m+p-Xylene	101	99	79-125	2	30				
o-Xylene	99	97	79-125	1	30				
Batch number: Y112632AA	Sample number(s): 6404467 UNSPK: P407472								
Acetone	78	78	52-139	0	30				
Acrylonitrile	93	92	60-123	1	30				
Benzene	100	100	80-126	0	30				
Bromobenzene	96	97	82-115	1	30				
Bromochloromethane	95	95	83-123	0	30				
Bromodichloromethane	86	85	78-125	1	30				
Bromoform	67	67	60-121	1	30				
Bromomethane	66	66	38-149	0	30				
2-Butanone	102	100	57-138	1	30				
n-Butylbenzene	99	97	73-128	2	30				
sec-Butylbenzene	105	105	79-125	0	30				
tert-Butylbenzene	97	98	81-121	1	30				
Carbon Disulfide	73	81	67-135	11	30				
Carbon Tetrachloride	95	94	81-138	1	30				
Chlorobenzene	96	97	87-124	1	30				
Chloroethane	66	70	51-145	6	30				
Chloroform	98	97	81-134	1	30				
Chloromethane	69	74	67-154	7	30				
1,2-Dibromo-3-chloropropane	82	82	54-134	1	30				
Dibromochloromethane	77	79	74-116	3	30				
1,2-Dibromoethane	94	96	77-116	2	30				
Dibromomethane	92	92	83-119	0	30				
trans-1,4-Dichloro-2-butene	24*	0*	27-147	200*	30				
1,2-Dichlorobenzene	95	95	84-119	1	30				
1,3-Dichlorobenzene	97	98	86-121	1	30				
1,4-Dichlorobenzene	96	97	85-121	1	30				
Dichlorodifluoromethane	70	69	52-129	1	30				
1,1-Dichloroethane	113	84	84-129	6	30				
1,2-Dichloroethane	102	100	66-141	1	30				
1,1-Dichloroethene	91	89	85-142	2	30				
cis-1,2-Dichloroethene	98	97	85-125	1	30				
trans-1,2-Dichloroethene	98	98	87-126	1	30				
1,2-Dichloropropane	94	94	83-124	0	30				
cis-1,3-Dichloropropene	76	75	75-125	1	30				
trans-1,3-Dichloropropene	69*	69*	74-119	0	30				
Ethyl ether	76	77	40-141	1	30				
Ethylbenzene	97	98	71-134	1	30				
2-Hexanone	94	96	55-127	2	30				
Isopropylbenzene	100	101	75-128	1	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
p-Isopropyltoluene	101	101	76-123	0	30				
Methyl Iodide	89	89	74-129	1	30				
Methyl Tertiary Butyl Ether	95	94	72-126	1	30				
4-Methyl-2-pentanone	98	96	63-123	2	30				
Methylene Chloride	92	89	79-120	3	30				
2-Methylnaphthalene	84	82	30-126	2	30				
Naphthalene	89	89	52-125	0	30				
n-Propylbenzene	96	96	74-134	0	30				
Styrene	89	89	78-125	0	30				
1,1,1,2-Tetrachloroethane	88	88	82-119	0	30				
1,1,2,2-Tetrachloroethane	91	91	72-128	0	30				
Tetrachloroethene	97	99	80-128	1	30				
Tetrahydrofuran	90	94	58-141	5	30				
Toluene	95	97	80-125	1	30				
1,2,3-Trichlorobenzene	94	93	69-119	2	30				
1,2,4-Trichlorobenzene	89	90	70-124	1	30				
1,1,1-Trichloroethane	98	95	80-143	3	30				
1,1,2-Trichloroethane	92	94	77-124	2	30				
Trichloroethene	99	99	88-133	1	30				
Trichlorofluoromethane	88	90	73-152	2	30				
1,2,3-Trichloropropane	96	96	76-118	1	30				
1,2,4-Trimethylbenzene	98	98	72-130	0	30				
1,3,5-Trimethylbenzene	99	100	72-131	1	30				
Vinyl Chloride	75	66	66-133	7	30				
m+p-Xylene	96	97	79-125	1	30				
o-Xylene	93	94	79-125	1	30				
Batch number: 112585705005	Sample number(s): 6404464-6404466 UNSPK: P401775 BKG: P401775								
Arsenic	102	103	75-125	1	20	< 0.0200	< 0.0200	200* (1)	20
Batch number: 11257105101B	Sample number(s): 6404461-6404466 UNSPK: P404453 BKG: P404453								
Nitrite Nitrogen	104		90-110			< 0.050	< 0.050	0 (1)	20
Batch number: 11258106101B	Sample number(s): 6404461-6404466 UNSPK: P404443 BKG: P404443								
Nitrate Nitrogen	106		90-110			< 5.0	< 5.0	0 (1)	2
Batch number: 11263196903B	Sample number(s): 6404464-6404466 UNSPK: P406966 BKG: P406966								
Sulfate	132*		90-110			44.1	45.1	2 (1)	20
Batch number: 11258020002A	Sample number(s): 6404464-6404466 BKG: P404331								
pH						8.3	8.3	0	3
Batch number: 11258020201B	Sample number(s): 6404464-6404466 UNSPK: P401250 BKG: 6404464								
Alkalinity to pH 4.5	99	91	73-121	3	5	218	224	3	5
Alkalinity to pH 8.3						< 2.0	< 2.0	0 (1)	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266152
Reported: 09/26/11 at 11:25 AM

Surrogate Quality Control

Analysis Name: 8260 Ext. Water Master
Batch number: Y112621AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6404465	95	100	99	97
Blank	96	100	100	98
LCS	98	104	101	99
MS	98	102	100	98
MSD	98	100	100	98
Limits:	80-116	77-113	80-113	78-113

Analysis Name: 8260 Ext. Water Master
Batch number: Y112632AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6404467	97	100	99	96
Blank	97	101	100	96
LCS	100	103	100	99
MS	100	104	100	98
MSD	99	102	100	99
Limits:	80-116	77-113	80-113	78-113

Analysis Name: NWTPH-Gx water C7-C12
Batch number: 11263B20A

	Trifluorotoluene-F
6404465	97
6404466	92
Blank	92
LCS	121
LCSD	123
Limits:	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11342 Sample #: 6404461-67 ~~SCR#~~ gr# 1266152 015276

Facility #: Bee Jay Scales
Site Address: 116 N. 1st Street
Chevron PM: Caryl Weekley Lead Consultant: Stantec
Consultant/Office: Stantec / Okemos, MI
Consultant Prj. Mgr.: Marisa Patterson
Consultant Phone #: (517)-202-0459 Fax #: (517)349-6863
Sampler: Justin Dauphinais
Service Order #: ☐ Non SAR:

Matrix: ☐ Potable ☐ NPDES; Soil; Water; Oil ☐ Air ☐

Analyses Requested / Preservation Codes

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	~~8260 full scan~~ VOC's 8260B	Oxygenates	NW TPH G (Mod ECY 97-602)	TPH D ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method	~~VOC~~ Alkalinity (SM20 2320B)	NWTPH H HCID ☐ quantification	Nitrate-N, Nitrite-N (353.2)	Arsenic (EPA 6010B)	pH (SM 20 4500H+B)	Sulfate (300.0)
										H		H					S	N		
MW01-091311-0	9-13-11	0930	X			X		2									X			
MW01-091311-1	9-13-11	0936	X			X		2									X			
MW07-091311-0	9-13-11	1015	X			X		2									X			
MW06-091311-0	9-13-11	1055	X			X		7							X		X	X	X	X
MW1D-091311-0	9-13-11	1133	X			X		13		X		X			X		X	X	X	X
MW11-091311-0	9-13-11	1230	X			X		10				X			X		X	X	X	X
TB-1	9-13-11	—	X			X		2		X										

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	9-13-11	1400	[signature]		
Relinquished by:	Date	Time	Received by:	Date	Time
[signature]			[signature]		
Relinquished by:	Date	Time	Received by:	Date	Time
[signature]			[signature]		
Relinquished by Commercial Carrier: UPS FedEx Other _____			Received by: [signature]	9/14/11	0905

Temperature Upon Receipt 1.4 C° Custody Seals Intact? Yes No

Lancaster Laboratories

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

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

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

September 27, 2011

Project: Bee Jay Scales Site

Submittal Date: 09/15/2011
Group Number: 1266541
PO Number: 213201072.400.002
Release Number: BEE-JAY SCALES
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LLI) #
MW03-091411-0 Grab Water Sample	6406528
MW12-091411-0 Grab Water Sample	6406529
MW13-091411-0 Grab Water Sample	6406530
MW09-091411-0 Grab Water Sample	6406531
MW04-091411-0 Grab Water Sample	6406532
MW04-091411-2 Grab Water Sample	6406533
TB-2 Water Sample	6406534
TB-3 Water Sample	6406535
TB-4 Water Sample	6406536
TB-5 Water Sample	6406537
MW08-091311-0 Grab Water Sample	6406538
MW08-091311-2 Grab Water Sample	6406539

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO STANTEC International, Inc. Attn: Marisa Patterson

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Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300 Ext. 1522

Respectfully Submitted,

Lawrence M. Taylor
Senior Specialist

Lancaster Laboratories
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Analysis Report

Sample Description: MW03-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406528
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 09:15 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS03

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Metals		**SW-846 6010B**		**mg/l**	**mg/l**	
07035	Arsenic		7440-38-2	0.0426	0.0200	1
Wet Chemistry		**EPA 353.2**		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen		14797-55-8	10.0	1.0	10
00219	Nitrite Nitrogen		14797-65-0	1.2	0.10	2
		SM20 2320 B		**mg/l as CaCO3**	**mg/l as CaCO3**	
00202	Alkalinity to pH 4.5		n.a.	272	2.0	1
00201	Alkalinity to pH 8.3		n.a.	4.0	2.0	1
		SM20 4500 H/B		**Std. Units**	**Std. Units**	
00200	pH		n.a.	8.3	0.010	1
		SM20 4500 NH3 D		**mg/l**	**mg/l**	
10695	Ammonia-Nitrogen		7664-41-7	70.4	0.60	4

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 18:56	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00220	Nitrate Nitrogen	EPA 353.2	1	11263106101B	09/20/2011 20:39	Joseph E McKenzie	10
00219	Nitrite Nitrogen	EPA 353.2	1	11258105101B	09/15/2011 17:19	Venia B McFadden	2
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	4

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Analysis Report

Sample Description: MW12-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406529
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 09:55 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	23	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	300	50	10
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	6	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	1,900	50	10
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: MW12-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406529
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 09:55 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	180	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	7	5	1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	640	240	500
10407	Dalapon	75-99-0	< 1.2	1.2	1
10407	2,4-DB	94-82-6	< 6.9	6.9	10
10407	Dicamba	1918-00-9	6.0	2.9	10
10407	Dinoseb	88-85-7	2,100	240	500
10407	2,4-DP (Dichlorprop)	120-36-5	< 0.48	0.48	1
10407	MCPA	94-74-6	< 950	950	1
10407	MCPP	93-65-2	< 190	190	1
10407	Pentachlorophenol	87-86-5	< 0.048	0.048	1
10407	2,4,5-T	93-76-5	0.57	0.48	10
10407	2,4,5-TP	93-72-1	< 0.048	0.048	1
	Reporting limits were raised due to interference from the sample matrix.				
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
07035	Arsenic	7440-38-2	0.167	0.0200	1
01754	Iron	7439-89-6	< 0.200	0.200	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	491	80.0	200
00228	Sulfate	14808-79-8	1,280	200	200
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	790	25.0	250
	The result for Nitrate as NO3 = 3500. mg/l				
00219	Nitrite Nitrogen	14797-65-0	< 0.50	0.50	10
	Reporting limits were raised due to interference from the sample matrix.				
	SM20 2320 B		**mg/l as CaCO3**	**mg/l as CaCO3**	
00202	Alkalinity to pH 4.5	n.a.	602	2.0	1
00201	Alkalinity to pH 8.3	n.a.	< 2.0	2.0	1
	SM20 4500 H/B		**Std. Units**	**Std. Units**	
00200	pH	n.a.	7.0	0.010	1

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Analysis Report

Sample Description: MW12-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406529
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 09:55 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**SM20 4500 NH3 D**		mg/l	mg/l	
10695	Ammonia-Nitrogen	7664-41-7	221	3.0	20

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 15:15	Nicholas R Rossi	1
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 21:46	Nicholas R Rossi	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 15:15	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	Y112661AA	09/23/2011 21:46	Nicholas R Rossi	10
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/23/2011 04:45	Anita M Dale	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/24/2011 12:22	Anita M Dale	10
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/26/2011 09:18	Anita M Dale	500
00816	Water Sample Herbicide Extract	SW-846 8151A	1	112630020A	09/21/2011 11:00	Olivia I Santiago	1
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 19:00	John P Hook	1
01754	Iron	SW-846 6010B	1	112585705005	09/21/2011 19:00	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00224	Chloride	EPA 300.0	1	11265196901A	09/22/2011 10:31	Ashley M Adams	200
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 10:31	Ashley M Adams	200
00220	Nitrate Nitrogen	EPA 353.2	1	11262106101A	09/19/2011 13:00	K Robert Caulfeild-James	250
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102A	09/15/2011 17:01	Venia B McFadden	10
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	20

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Analysis Report

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Sample Description: MW13-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406530
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 11:15 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Herbicides	**SW-846 8151A**		ug/l	ug/l	
10407	2,4-D	94-75-7	6.2	0.48	1
10407	Dalapon	75-99-0	< 1.2	1.2	1
10407	2,4-DB	94-82-6	< 0.95	0.95	1
10407	Dicamba	1918-00-9	< 0.29	0.29	1
10407	Dinoseb	88-85-7	22	9.5	20
10407	2,4-DP (Dichlorprop)	120-36-5	< 0.48	0.48	1
10407	MCPA	94-74-6	< 950	950	1
10407	MCPP	93-65-2	< 190	190	1
10407	Pentachlorophenol	87-86-5	< 0.048	0.048	1
10407	2,4,5-T	93-76-5	< 0.048	0.048	1
10407	2,4,5-TP	93-72-1	< 0.048	0.048	1
Metals	**SW-846 6010B**		mg/l	mg/l	
01754	Iron	7439-89-6	< 0.200	0.200	1
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00228	Sulfate	14808-79-8	349	100	100
	EPA 353.2		mg/l	mg/l	
00220	Nitrate Nitrogen	14797-55-8	71.2	10.0	100
	The result for Nitrate as NO3 = 315. mg/l				
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM20 2320 B		mg/l as CaCO3	mg/l as CaCO3	
00202	Alkalinity to pH 4.5	n.a.	246	2.0	1
00201	Alkalinity to pH 8.3	n.a.	< 2.0	2.0	1
	SM20 4500 H/B		Std. Units	Std. Units	
00200	pH	n.a.	7.4	0.010	1
	SM20 4500 NH3 D		mg/l	mg/l	
10695	Ammonia-Nitrogen	7664-41-7	< 0.15	0.15	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/23/2011 05:12	Anita M Dale	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/24/2011 13:43	Anita M Dale	20

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Analysis Report

Sample Description: MW13-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406530
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 11:15 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS13

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00816	Water Sample Herbicide Extract	SW-846 8151A	1	112630020A	09/21/2011 11:00	Olivia I Santiago	1
01754	Iron	SW-846 6010B	1	112585705005	09/21/2011 19:11	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 11:37	Ashley M Adams	100
00220	Nitrate Nitrogen	EPA 353.2	1	11262106101A	09/19/2011 13:01	K Robert Caulfeild-James	100
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102A	09/15/2011 17:02	Venia B McFadden	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	1

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Analysis Report

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Sample Description: MW09-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406531
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:00 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	20	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: MW09-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406531
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:00 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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Suite E
Okemos MI 48864

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	20	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	0.56	0.48	1
10407	Dalapon	75-99-0	< 1.2	1.2	1
10407	2,4-DB	94-82-6	< 0.95	0.95	1
10407	Dicamba	1918-00-9	1.3	0.57	2
10407	Dinoseb	88-85-7	530	240	500
10407	2,4-DP (Dichlorprop)	120-36-5	< 0.48	0.48	1
10407	MCPA	94-74-6	< 950	950	1
10407	MCPP	93-65-2	< 190	190	1
10407	Pentachlorophenol	87-86-5	0.086	0.048	1
10407	2,4,5-T	93-76-5	< 0.048	0.048	1
10407	2,4,5-TP	93-72-1	< 0.048	0.048	1
	Reporting limits were raised due to interference from the sample matrix.				
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	250	100	100
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	455	50.0	500
	The result for Nitrate as NO3 = 2020. mg/l				
00219	Nitrite Nitrogen	14797-65-0	< 0.50	0.50	10
	Reporting limits were raised due to interference from the sample matrix.				
	SM20 2320 B		**mg/l as CaCO3**	**mg/l as CaCO3**	
00202	Alkalinity to pH 4.5	n.a.	577	2.0	1
00201	Alkalinity to pH 8.3	n.a.	< 2.0	2.0	1
	SM20 4500 H/B		**Std. Units**	**Std. Units**	
00200	pH	n.a.	7.2	0.010	1
	SM20 4500 NH3 D		**mg/l**	**mg/l**	
10695	Ammonia-Nitrogen	7664-41-7	120	1.5	10

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Analysis Report

Sample Description: MW09-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406531
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:00 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 15:56	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 15:56	Nicholas R Rossi	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/23/2011 05:39	Anita M Dale	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/26/2011 18:44	Anita M Dale	2
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/27/2011 07:11	Anita M Dale	500
00816	Water Sample Herbicide Extract	SW-846 8151A	1	112630020A	09/21/2011 11:00	Olivia I Santiago	1
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 11:50	Ashley M Adams	100
00220	Nitrate Nitrogen	EPA 353.2	1	11262106101A	09/19/2011 13:02	K Robert Caulfeild-James	500
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102A	09/15/2011 17:03	Venia B McFadden	10
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	10

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Analysis Report

Sample Description: MW04-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406532
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:45 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
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Okemos MI 48864

BJS04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	47	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: MW04-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406532
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:45 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	41	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	< 0.47	0.47	1
10407	Dalapon	75-99-0	4.9	1.2	1
10407	2,4-DB	94-82-6	< 0.95	0.95	1
10407	Dicamba	1918-00-9	0.66	0.28	1
10407	Dinoseb	88-85-7	810	240	500
10407	2,4-DP (Dichlorprop)	120-36-5	< 0.47	0.47	1
10407	MCPA	94-74-6	< 950	950	1
10407	MCPP	93-65-2	< 190	190	1
10407	Pentachlorophenol	87-86-5	< 0.21	0.21	1
10407	2,4,5-T	93-76-5	< 0.047	0.047	1
10407	2,4,5-TP	93-72-1	< 0.047	0.047	1
	Reporting limits were raised due to interference from the sample matrix.				
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
07035	Arsenic	7440-38-2	< 0.0200	0.0200	1
01754	Iron	7439-89-6	< 0.200	0.200	1
07058	Manganese	7439-96-5	0.291	0.0050	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	382	100	100
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	648	50.0	500
	The result for Nitrate as NO3 = 2880. mg/l				
00219	Nitrite Nitrogen	14797-65-0	2.8	0.50	10
	SM20 2320 B		**mg/l as CaCO3**	**mg/l as CaCO3**	
00202	Alkalinity to pH 4.5	n.a.	424	2.0	1
00201	Alkalinity to pH 8.3	n.a.	< 2.0	2.0	1
	SM20 4500 H/B		**Std. Units**	**Std. Units**	
00200	pH	n.a.	7.7	0.010	1

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Analysis Report

Sample Description: MW04-091411-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406532
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:45 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry		**SM20 4500 NH3 D**	**mg/l**	**mg/l**	
10695	Ammonia-Nitrogen	7664-41-7	352	3.0	20

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 16:17	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 16:17	Nicholas R Rossi	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/23/2011 06:06	Anita M Dale	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/26/2011 10:12	Anita M Dale	500
00816	Water Sample Herbicide Extract	SW-846 8151A	1	112630020A	09/21/2011 11:00	Olivia I Santiago	1
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 19:15	John P Hook	1
01754	Iron	SW-846 6010B	1	112585705005	09/21/2011 19:15	John P Hook	1
07058	Manganese	SW-846 6010B	1	112585705005	09/21/2011 19:15	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 12:03	Ashley M Adams	100
00220	Nitrate Nitrogen	EPA 353.2	1	11262106101A	09/19/2011 13:03	K Robert Caulfeild-James	500
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102A	09/15/2011 17:04	Venia B McFadden	10
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	20

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Analysis Report

Sample Description: MW04-091411-2 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406533
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:55 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJS42

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: MW04-091411-2 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406533
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:55 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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2321 Club Meridian Drive
Suite E
Okemos MI 48864

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1
Herbicides	**SW-846 8151A**		**ug/l**	**ug/l**	
10407	2,4-D	94-75-7	< 0.48	0.48	1
10407	Dalapon	75-99-0	< 1.2	1.2	1
10407	2,4-DB	94-82-6	< 0.95	0.95	1
10407	Dicamba	1918-00-9	< 0.29	0.29	1
10407	Dinoseb	88-85-7	3.0	0.48	1
10407	2,4-DP (Dichlorprop)	120-36-5	< 0.48	0.48	1
10407	MCPA	94-74-6	< 950	950	1
10407	MCPP	93-65-2	< 190	190	1
10407	Pentachlorophenol	87-86-5	< 0.048	0.048	1
10407	2,4,5-T	93-76-5	< 0.048	0.048	1
10407	2,4,5-TP	93-72-1	< 0.048	0.048	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
07035	Arsenic	7440-38-2	< 0.0200	0.0200	1
01754	Iron	7439-89-6	< 0.200	0.200	1
07058	Manganese	7439-96-5	< 0.0050	0.0050	1
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	< 5.0	5.0	5
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM20 2320 B		**mg/l as CaCO3**	**mg/l as CaCO3**	
00202	Alkalinity to pH 4.5	n.a.	< 2.0	2.0	1
00201	Alkalinity to pH 8.3	n.a.	< 2.0	2.0	1
	SM20 4500 H/B		**Std. Units**	**Std. Units**	
00200	pH	n.a.	6.1	0.010	1
	SM20 4500 NH3 D		**mg/l**	**mg/l**	
10695	Ammonia-Nitrogen	7664-41-7	< 0.15	0.15	1

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Analysis Report

Sample Description: MW04-091411-2 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406533
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011 12:55 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
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Suite E
Okemos MI 48864

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 16:37	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 16:37	Nicholas R Rossi	1
10407	Herb water 8151A Master	SW-846 8151A	1	112630020A	09/23/2011 06:33	Anita M Dale	1
00816	Water Sample Herbicide Extract	SW-846 8151A	1	112630020A	09/21/2011 11:00	Olivia I Santiago	1
07035	Arsenic	SW-846 6010B	1	112585705005	09/21/2011 19:19	John P Hook	1
01754	Iron	SW-846 6010B	1	112585705005	09/21/2011 19:19	John P Hook	1
07058	Manganese	SW-846 6010B	1	112585705005	09/21/2011 19:19	John P Hook	1
05705	WW/TL SW 846 ICP Digest (tot)	SW-846 3010A	1	112585705005	09/16/2011 13:23	James L Mertz	1
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 12:16	Ashley M Adams	5
00220	Nitrate Nitrogen	EPA 353.2	1	11263106101B	09/20/2011 20:43	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102B	09/15/2011 17:11	Venia B McFadden	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	1

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Analysis Report

Sample Description: TB-2 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406534
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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Suite E
Okemos MI 48864

BJST2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: TB-2 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406534
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJST2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 16:58	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 16:58	Nicholas R Rossi	1

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Analysis Report

Sample Description: TB-3 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406535
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJST3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: TB-3 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406535
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJST3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 17:18	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 17:18	Nicholas R Rossi	1

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Analysis Report

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Sample Description: TB-4 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406536
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJST4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: TB-4 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406536
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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Suite E
Okemos MI 48864

BJST4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 17:39	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 17:39	Nicholas R Rossi	1

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Analysis Report

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Sample Description: TB-5 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406537
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

STANTEC International, Inc.
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Okemos MI 48864

BJST5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10904	Acetone	67-64-1	< 20	20	1
10904	Acrylonitrile	107-13-1	< 20	20	1
10904	Benzene	71-43-2	< 5	5	1
10904	Bromobenzene	108-86-1	< 5	5	1
10904	Bromochloromethane	74-97-5	< 5	5	1
10904	Bromodichloromethane	75-27-4	< 5	5	1
10904	Bromoform	75-25-2	< 5	5	1
10904	Bromomethane	74-83-9	< 5	5	1
10904	2-Butanone	78-93-3	< 10	10	1
10904	n-Butylbenzene	104-51-8	< 5	5	1
10904	sec-Butylbenzene	135-98-8	< 5	5	1
10904	tert-Butylbenzene	98-06-6	< 5	5	1
10904	Carbon Disulfide	75-15-0	< 5	5	1
10904	Carbon Tetrachloride	56-23-5	< 5	5	1
10904	Chlorobenzene	108-90-7	< 5	5	1
10904	Chloroethane	75-00-3	< 5	5	1
10904	Chloroform	67-66-3	< 5	5	1
10904	Chloromethane	74-87-3	< 5	5	1
10904	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10904	Dibromochloromethane	124-48-1	< 5	5	1
10904	1,2-Dibromoethane	106-93-4	< 5	5	1
10904	Dibromomethane	74-95-3	< 5	5	1
10904	trans-1,4-Dichloro-2-butene	110-57-6	< 50	50	1
10904	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10904	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10904	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10904	Dichlorodifluoromethane	75-71-8	< 5	5	1
10904	1,1-Dichloroethane	75-34-3	< 5	5	1
10904	1,2-Dichloroethane	107-06-2	< 5	5	1
10904	1,1-Dichloroethene	75-35-4	< 5	5	1
10904	cis-1,2-Dichloroethene	156-59-2	< 5	5	1
10904	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10904	1,2-Dichloropropane	78-87-5	< 5	5	1
10904	cis-1,3-Dichloropropene	10061-01-5	< 5	5	1
10904	trans-1,3-Dichloropropene	10061-02-6	< 5	5	1
10904	Ethyl ether	60-29-7	< 5	5	1
10904	Ethylbenzene	100-41-4	< 5	5	1
10904	2-Hexanone	591-78-6	< 10	10	1
10904	Isopropylbenzene	98-82-8	< 5	5	1
10904	p-Isopropyltoluene	99-87-6	< 5	5	1
10904	Methyl Iodide	74-88-4	< 5	5	1
10904	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	1
10904	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10904	Methylene Chloride	75-09-2	< 5	5	1
10904	2-Methylnaphthalene	91-57-6	< 5	5	1
10904	Naphthalene	91-20-3	< 5	5	1
10904	n-Propylbenzene	103-65-1	< 5	5	1
10904	Styrene	100-42-5	< 5	5	1
10904	1,1,1,2-Tetrachloroethane	630-20-6	< 5	5	1
10904	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	1
10904	Tetrachloroethene	127-18-4	< 5	5	1

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Analysis Report

Sample Description: TB-5 Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406537
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/14/2011

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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2321 Club Meridian Drive
Suite E
Okemos MI 48864

BJST5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	
10904	Tetrahydrofuran	109-99-9	< 10	10	1
10904	Toluene	108-88-3	< 5	5	1
10904	1,2,3-Trichlorobenzene	87-61-6	< 5	5	1
10904	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10904	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10904	1,1,2-Trichloroethane	79-00-5	< 5	5	1
10904	Trichloroethene	79-01-6	< 5	5	1
10904	Trichlorofluoromethane	75-69-4	< 5	5	1
10904	1,2,3-Trichloropropane	96-18-4	< 5	5	1
10904	1,2,4-Trimethylbenzene	95-63-6	< 5	5	1
10904	1,3,5-Trimethylbenzene	108-67-8	< 5	5	1
10904	Vinyl Chloride	75-01-4	< 5	5	1
10904	m+p-Xylene	179601-23-1	< 5	5	1
10904	o-Xylene	95-47-6	< 5	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10904	8260 Ext. Water Master	SW-846 8260B	1	Y112661AA	09/23/2011 18:00	Nicholas R Rossi	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	Y112661AA	09/23/2011 18:00	Nicholas R Rossi	1

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Analysis Report

Sample Description: MW08-091311-0 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406538
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 15:00 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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Okemos MI 48864

BJS08

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry		**EPA 300.0**		mg/l	mg/l	
00228	Sulfate		14808-79-8	197	50.0	50
		EPA 353.2		mg/l	mg/l	
00220	Nitrate Nitrogen		14797-55-8	149	5.0	50
00219	Nitrite Nitrogen		14797-65-0	< 0.050	0.050	1
		SM20 2320 B		mg/l as CaCO3	mg/l as CaCO3	
00202	Alkalinity to pH 4.5		n.a.	254	2.0	1
00201	Alkalinity to pH 8.3		n.a.	< 2.0	2.0	1
		SM20 4500 H/B		Std. Units	Std. Units	
00200	pH		n.a.	7.6	0.010	1
		SM20 4500 NH3 D		mg/l	mg/l	
10695	Ammonia-Nitrogen		7664-41-7	2.0	0.15	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 12:30	Ashley M Adams	50
00220	Nitrate Nitrogen	EPA 353.2	1	11263106101B	09/21/2011 19:55	Venia B McFadden	50
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102B	09/15/2011 17:14	Venia B McFadden	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	1

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Analysis Report

Sample Description: MW08-091311-2 Grab Water Sample
Bee Jay Scales Site

LLI Sample # WW 6406539
LLI Group # 1266541
Account # 11842

Project Name: Bee Jay Scales Site

Collected: 09/13/2011 15:05 by JD

Submitted: 09/15/2011 09:20
Reported: 09/27/2011 16:09

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Okemos MI 48864

BJS82

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry		**EPA 300.0**		mg/l	mg/l	
00228	Sulfate		14808-79-8	< 5.0	5.0	5
		EPA 353.2		mg/l	mg/l	
00220	Nitrate Nitrogen		14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen		14797-65-0	< 0.050	0.050	1
		SM20 2320 B		mg/l as CaCO3	mg/l as CaCO3	
00202	Alkalinity to pH 4.5		n.a.	< 2.0	2.0	1
00201	Alkalinity to pH 8.3		n.a.	< 2.0	2.0	1
		SM20 4500 H/B		Std. Units	Std. Units	
00200	pH		n.a.	5.9	0.010	1
		SM20 4500 NH3 D		mg/l	mg/l	
10695	Ammonia-Nitrogen		7664-41-7	< 0.15	0.15	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00228	Sulfate	EPA 300.0	1	11265196901A	09/22/2011 12:43	Ashley M Adams	5
00220	Nitrate Nitrogen	EPA 353.2	1	11263106101B	09/20/2011 20:45	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	11258105102B	09/15/2011 17:16	Venia B McFadden	1
00202	Alkalinity to pH 4.5	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00201	Alkalinity to pH 8.3	SM20 2320 B	1	11263020201A	09/20/2011 06:27	Susan A Engle	1
00200	pH	SM20 4500 H/B	1	11259020002A	09/16/2011 14:15	Michele L Graham	1
10695	Ammonia-Nitrogen	SM20 4500 NH3 D	1	11270106951A	09/27/2011 14:10	Michelle L Lalli	1

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266541
Reported: 09/27/11 at 04:09 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: Y112661AA	Sample number(s): 6406529,6406531-6406537							
Acetone	< 20	20.	ug/l	141	130	49-234	8	30
Acrylonitrile	< 20	20.	ug/l	106	107	67-120	0	30
Benzene	< 5	5.	ug/l	103	102	79-120	1	30
Bromobenzene	< 5	5.	ug/l	99	98	80-120	1	30
Bromochloromethane	< 5	5.	ug/l	95	93	80-120	2	30
Bromodichloromethane	< 5	5.	ug/l	85	84	80-120	1	30
Bromoform	< 5	5.	ug/l	75	74	61-120	2	30
Bromomethane	< 5	5.	ug/l	70	68	44-120	4	30
2-Butanone	< 10	10.	ug/l	145	140	66-151	3	30
n-Butylbenzene	< 5	5.	ug/l	103	102	74-120	1	30
sec-Butylbenzene	< 5	5.	ug/l	109	107	78-120	2	30
tert-Butylbenzene	< 5	5.	ug/l	99	98	80-120	2	30
Carbon Disulfide	< 5	5.	ug/l	77	76	62-120	2	30
Carbon Tetrachloride	< 5	5.	ug/l	84	81	75-123	3	30
Chlorobenzene	< 5	5.	ug/l	99	97	80-120	2	30
Chloroethane	< 5	5.	ug/l	65	60	49-129	7	30
Chloroform	< 5	5.	ug/l	95	94	77-122	1	30
Chloromethane	< 5	5.	ug/l	77	74	60-129	3	30
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	91	95	56-126	5	30
Dibromochloromethane	< 5	5.	ug/l	84	80	80-120	4	30
1,2-Dibromoethane	< 5	5.	ug/l	101	100	80-120	1	30
Dibromomethane	< 5	5.	ug/l	94	92	80-120	1	30
trans-1,4-Dichloro-2-butene	< 50	50.	ug/l	100	103	36-144	4	30
1,2-Dichlorobenzene	< 5	5.	ug/l	98	97	80-120	1	30
1,3-Dichlorobenzene	< 5	5.	ug/l	101	99	80-120	2	30
1,4-Dichlorobenzene	< 5	5.	ug/l	100	98	80-120	2	30
Dichlorodifluoromethane	< 5	5.	ug/l	68	63	47-120	8	30
1,1-Dichloroethane	< 5	5.	ug/l	100	99	79-120	1	30
1,2-Dichloroethane	< 5	5.	ug/l	96	97	70-130	0	30
1,1-Dichloroethene	< 5	5.	ug/l	90	88	74-123	3	30
cis-1,2-Dichloroethene	< 5	5.	ug/l	99	98	80-120	1	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	99	98	80-120	1	30
1,2-Dichloropropane	< 5	5.	ug/l	97	98	78-120	1	30
cis-1,3-Dichloropropene	< 5	5.	ug/l	90	89	80-120	1	30
trans-1,3-Dichloropropene	< 5	5.	ug/l	85	83	79-120	2	30
Ethyl ether	< 5	5.	ug/l	86	84	23-144	3	30
Ethylbenzene	< 5	5.	ug/l	100	98	79-120	2	30
2-Hexanone	< 10	10.	ug/l	122	119	65-136	2	30
Isopropylbenzene	< 5	5.	ug/l	101	100	77-120	1	30
p-Isopropyltoluene	< 5	5.	ug/l	104	101	80-120	3	30
Methyl Iodide	< 5	5.	ug/l	87	87	71-122	0	30
Methyl Tertiary Butyl Ether	< 5	5.	ug/l	99	99	76-120	0	30
4-Methyl-2-pentanone	< 10	10.	ug/l	104	106	70-121	1	30
Methylene Chloride	< 5	5.	ug/l	93	91	80-120	2	30
2-Methylnaphthalene	< 5	5.	ug/l	91	98	36-120	7	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266541
Reported: 09/27/11 at 04:09 PM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Naphthalene	< 5	5.	ug/l	99	100	62-120	1	30
n-Propylbenzene	< 5	5.	ug/l	102	100	80-120	2	30
Styrene	< 5	5.	ug/l	95	94	80-120	1	30
1,1,1,2-Tetrachloroethane	< 5	5.	ug/l	87	86	80-120	2	30
1,1,2,2-Tetrachloroethane	< 5	5.	ug/l	105	105	71-120	0	30
Tetrachloroethene	< 5	5.	ug/l	94	91	80-121	3	30
Tetrahydrofuran	< 10	10.	ug/l	109	104	64-139	6	30
Toluene	< 5	5.	ug/l	99	99	79-120	0	30
1,2,3-Trichlorobenzene	< 5	5.	ug/l	97	98	65-120	1	30
1,2,4-Trichlorobenzene	< 5	5.	ug/l	91	92	67-120	0	30
1,1,1-Trichloroethane	< 5	5.	ug/l	89	87	75-127	3	30
1,1,2-Trichloroethane	< 5	5.	ug/l	98	97	80-120	1	30
Trichloroethene	< 5	5.	ug/l	96	96	80-120	0	30
Trichlorofluoromethane	< 5	5.	ug/l	77	72	64-129	7	30
1,2,3-Trichloropropane	< 5	5.	ug/l	102	104	80-120	2	30
1,2,4-Trimethylbenzene	< 5	5.	ug/l	103	102	74-120	1	30
1,3,5-Trimethylbenzene	< 5	5.	ug/l	103	102	75-120	1	30
Vinyl Chloride	< 5	5.	ug/l	73	71	65-125	2	30
m+p-Xylene	< 5	5.	ug/l	99	97	80-120	2	30
o-Xylene	< 5	5.	ug/l	96	96	80-120	1	30
Batch number: 112630020A	Sample number(s): 6406529-6406533							
2,4-D	< 0.50	0.50	ug/l	100	104	73-157	4	30
Dalapon	< 1.3	1.3	ug/l	92	86	40-100	7	30
2,4-DB	< 1.0	1.0	ug/l	80	92	65-130	14	30
Dicamba	< 0.30	0.30	ug/l	88	92	68-135	4	30
Dinoseb	< 0.50	0.50	ug/l	58	60	32-91	4	30
2,4-DP (Dichlorprop)	< 0.50	0.50	ug/l	116	120	76-170	3	30
MCPA	< 1,000	1,000.	ug/l	84	86	65-128	2	30
MCPP	< 200	200.	ug/l	88	88	67-137	0	30
Pentachlorophenol	< 0.050	0.050	ug/l	104	104	57-131	0	30
2,4,5-T	< 0.050	0.050	ug/l	88	92	63-147	4	30
2,4,5-TP	< 0.050	0.050	ug/l	100	100	63-134	0	30
Batch number: 112585705005	Sample number(s): 6406528-6406530,6406532-6406533							
Arsenic	< 0.0200	0.0200	mg/l	105		89-115		
Iron	< 0.200	0.200	mg/l	103		90-112		
Manganese	< 0.0050	0.0050	mg/l	104		90-110		
Batch number: 11258105101B	Sample number(s): 6406528							
Nitrite Nitrogen	< 0.050	0.050	mg/l	99		90-110		
Batch number: 11258105102A	Sample number(s): 6406529-6406532							
Nitrite Nitrogen	< 0.050	0.050	mg/l	99		90-110		
Batch number: 11258105102B	Sample number(s): 6406533,6406538-6406539							
Nitrite Nitrogen	< 0.050	0.050	mg/l	99		90-110		
Batch number: 11262106101A	Sample number(s): 6406529-6406532							
Nitrate Nitrogen	< 0.10	0.10	mg/l	103		90-110		
Batch number: 11263106101B	Sample number(s): 6406528,6406533,6406538-6406539							
Nitrate Nitrogen	< 0.10	0.10	mg/l	107		90-110		
Batch number: 11265196901A	Sample number(s): 6406529-6406533,6406538-6406539							
Chloride	< 0.40	0.40	mg/l	97	96	90-110	1	20
Sulfate	< 1.0	1.0	mg/l	96	95	90-110	1	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266541
Reported: 09/27/11 at 04:09 PM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 11259020002A	Sample number(s): 6406528-6406533,6406538-6406539							
pH				100		99-101		
Batch number: 11263020201A	Sample number(s): 6406528-6406533,6406538-6406539							
Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	99		98-103		
Batch number: 11270106951A	Sample number(s): 6406528-6406533,6406538-6406539							
Ammonia-Nitrogen	< 0.15	0.15	mg/l	101		89-112		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 112585705005	Sample number(s): 6406528-6406530,6406532-6406533 UNSPK: P401775 BKG: P401775								
Arsenic	102	103	75-125	1	20	< 0.0200	< 0.0200	200* (1)	20
Iron	101	101	75-125	0	20	< 0.200	< 0.200	6 (1)	20
Manganese	100	100	75-125	0	20	0.256	0.252	2	20
Batch number: 11258105101B	Sample number(s): 6406528 UNSPK: P406169 BKG: P406169								
Nitrite Nitrogen	46*		90-110			< 0.050	< 0.050	7 (1)	20
Batch number: 11258105102A	Sample number(s): 6406529-6406532 UNSPK: P406322 BKG: P406322								
Nitrite Nitrogen	87*		90-110			< 0.050	< 0.050	0 (1)	20
Batch number: 11258105102B	Sample number(s): 6406533,6406538-6406539 UNSPK: 6406533 BKG: 6406533								
Nitrite Nitrogen	95		90-110			< 0.050	< 0.050	0 (1)	20
Batch number: 11262106101A	Sample number(s): 6406529-6406532 UNSPK: P408990 BKG: P408990								
Nitrate Nitrogen	102		90-110			12.3	12.4	1	2
Batch number: 11263106101B	Sample number(s): 6406528,6406533,6406538-6406539 UNSPK: 6406528 BKG: 6406528								
Nitrate Nitrogen	112*		90-110			11.2	13.6	19*	2
Batch number: 11265196901A	Sample number(s): 6406529-6406533,6406538-6406539 UNSPK: 6406529 BKG: 6406529								
Chloride	99		90-110			491	492	0	20
Sulfate	98		90-110			1,280	1,260	1	20
Batch number: 11259020002A	Sample number(s): 6406528-6406533,6406538-6406539 BKG: P405430								
pH						6.0	6.0	0	3
Batch number: 11263020201A	Sample number(s): 6406528-6406533,6406538-6406539 UNSPK: P406322 BKG: P406246								
Alkalinity to pH 4.5	97	98	73-121	0	5	116	116	0	5
Alkalinity to pH 8.3						< 2.0	< 2.0	0 (1)	5
Batch number: 11270106951A	Sample number(s): 6406528-6406533,6406538-6406539 UNSPK: P408214 BKG: P408214								
Ammonia-Nitrogen	84	89	28-141	6	10	0.16	0.19	18 (1)	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1266541
Reported: 09/27/11 at 04:09 PM

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260 Ext. Water Master
Batch number: Y112661AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6406529	92	101	100	97
6406531	93	102	100	96
6406532	95	101	101	96
6406533	94	101	100	96
6406534	94	101	100	97
6406535	94	101	101	97
6406536	94	99	100	96
6406537	94	102	100	96
Blank	95	99	100	97
LCS	95	101	101	99
LCSD	94	102	101	98
Limits:	80-116	77-113	80-113	78-113

Analysis Name: Herb water 8151A Master
Batch number: 112630020A

	2,4-Dichlorophenylacetic acid
6406529	53
6406530	71
6406531	79
6406532	72
6406533	62
Blank	72
LCS	83
LCSD	86
Limits:	35-144

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

015278

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Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11842 Sample #: 6406528-39 SCR#:

G# 1266541

Facility #: Bee Jay Scales
Site Address: 116 N. 1st Street
Chevron PM: Caryl Weekley Lead Consultant: Stantec
Consultant/Office: Stantec Okemos, MI
Consultant Prj. Mgr.: Marisa Patterson
Consultant Phone #: (517)-202-0459 Fax #: (517) 349-6863
Sampler: Justin Dauphinais
Service Order #: ☐ Non SAR:

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (Potable / NPDES)	Oil / Air	Total Number of Containers	Arsenic 6010B	8260 full scan VOC 8260B	Ammonia-N SM 20 4500 NH3	Alkalinity PH (SM 20 4500 H+B)	Sulfate (300.0)	Arsenic, Iron Total 6010B	Chloride Hach 8345	Alkalinity (SM 2320B)	Nitrate as N, Nitrite N (353.2)	Nitrate as Nitrate	Arsenic, Iron, Manganese	Chloride, Sulfate (300.0)
MW03-091411-0	9-14-11	0915	X			X		6	X		X	X				X	X			
MW12-091411-0	9-14-11	0955	X			X		13		X	X	X		X	X	X	X	X		X
MW13-091411-0	9-14-11	1115	X			X		10			X	X	X	X	X	X	X	X		
MW09-091411-0	9-14-11	1200	X			X		12		X	X	X	X		X	X	X	X		
MW04-091411-0	9-14-11	1245	X			X		13		X	X	X	X		X	X	X	X	X	
MW04-091411-2	9-14-11	1255	X			X		13		X	X	X	X		X	X	X	X	X	
TB-2	9-14-11	—	X			X		2		X										
TB-3	9-14-11	—	X			X		2		X										
TB-4	9-14-11	—	X			X		2		X										
TB-5	9-14-11	—	X			X		2		X										

Comments / Remarks
- 48 hour TAT on Nitrate as Nitrate on samples for MW-4, MW-9, MW-12, and MW-13. Nitrite as well.
- MW13-091411-0 analyze for Iron only, no arsenic. No chloride for MW-13

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
	9-14-11	1500			
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by: Suzette Lehman	9/15/11	0720
Temperature Upon Receipt 1.5 / 2.2 C°			Custody Seals Intact? Yes No		

Tamara J. Helsel

From: Wendy Kozma
Sent: Thursday, September 15, 2011 2:14 PM
To: SA Env Entry
Subject: ENTRY INFO 09/15 FW: Bee-Jay Scales
Importance: High
A# 11842

From: Patterson, Marisa [mailto:Marisa.Patterson@stantec.com]
Sent: Thursday, September 15, 2011 2:11 PM
To: Wendy Kozma
Subject: Bee-Jay Scales
Importance: High

Wendy,

I just spoke with Justin Dauphinais, and hopefully you received his notification that the 48-hr rush samples should have arrived today. Also, I believe there are two samples missing from COC 015278.

MW08-091311-0, collected on 9/13/11 at 1500
MW08-091311-2, collected on 9/13/11 at 1505

Both should be analyzed for:

pH (SM20 4500 H/B)
Sulfate (EPA 300.0)
Alkalinity (SM20 2320 B)
Nitrate-N (EPA 353.2)
Nitrite-N (EPA 353.2)
Ammonia-N (SM20 4500 NH3 D)

Please let me know if you have any questions. I can review Acknowledgements once they're ready to make sure all samples are listed for the correct analyses.

Thanks,
Marisa

Marisa Patterson, P.E.
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Okemos MI 48864
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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

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

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Appendix C

Isotope Analytical Laboratory Report

Dr. Yi Wang
Director of ZymaX Forensics Isotope
600 S. Andreasen Dr., Suite B
Escondido, CA 92029
Tel: 760.781.3338 ext 43
Fax: 760.781.3339
Cell: 609.721.2843
Email: yi.wang@zymaxusa.com

REPORT OF ISOTOPE ANALYSES

Report Date: October 12th, 2011

Samples From STANTEC (Marisa Patterson) for ^{15}N (‰, Air) and ^{18}O (‰, VSMOW) Ratios of Dissolved Nitrate

ZymaX Lab Number	Sample ID	$\delta^{15}N$ NO3	$\delta^{18}O$ NO3
42351-1	MW04-091411-0	6.7	1.0
42351-2	MW09-091411-0	5.2	0.7
42351-3	MW12-091411-0	3.5	10.0
42351-4	MW13-091411-0	2.7	2.1

	$\delta^{15}N$	$\delta^{18}O$
Quality Control STDs	NO3	NO3
IAEA N3 Run-1	4.4	26.0
IAEA N3 Run-2	5.0	25.3
Mean	4.7	25.6
Analytical Precision (1σ)	0.4	0.5
Expected Value of IAEA N3	4.7	25.6

ZYMAX FORENSICS ISOTOPE LABORATORY ANALYSES

Gas

^{13}C and D of C1 to C4; ^{13}C of CO_2; C-14 of Methane and CO_2; ^{34}S of H_2S; ^{15}N and ^{18}O of N_2O gas

Oil, Extract, Fraction and Kerogen

Compound-Specific ^{13}C and D of MTBE,Chlorinated Solvents,PAH,Gasoline,Oil; Bulk ^{13}C, D/H, ^{34}S, and ^{15}N

Water

D and ^{18}O; ^{34}S and ^{18}O of dissolved sulfate; ^{34}S of dissolved H_2S; ^{37}Cl, ^{13}C and D of chlorinated solvents

^{15}N and ^{18}O of dissolved Nitrate; ^{15}N of Ammonia; ^{13}C of dissolved CO_2 and Carbonate/Bicarbonate

Soil and Minerals:

^{13}C, ^{15}N, ^{34}S, D/H, ^{18}O; C-14 of carbonate or organics

Zymax 600 S Andreasen Dr. Ste. B Escondido, California 92029 tel 760.781.3338 fax 760.781.3339

CLIENT EDD ☐ LUFT EDF ☐ DW EDT ☐

ISOTOPE CHAIN of CUSTODY

report to Marisa Patterson
company Stantec
address 2321 Club meridian Drive Ste E Okemos MI, 48864

tel (517) 202-0459 fax 517.349.6863
proj BeeJay Scales
proj # 213201072
sampler Justin Dauphinais

ANALYSIS REQUESTED: 15N/14N & 18O/16O

Turnaround Time: ☐ ASAP ☐ 3 Days ☐ 1 Wk ☐ 2 Wk ☐ 3 Wk ☒ std 1Month

ZymaX use only	SAMPLE DESCRIPTION	Date Sampled	Time	Matrix	Preserve	15N/14N & 18O/16O	# of containers	Remarks
42351-1	MW04-091411-0	9-14-11	1245	W	None	X		
-2	MW09-091411-0	9-14-11	1200	W	None	X		
-3	MW12-091411-0	9-14-11	0955	W	None	X		
-4	MW13-091411-0	9-14-11	1115	W	None	X		

Bill To: Same as Above ☒ OR
Company:
Address:

Relinquished by:
Signature [signature]
Print Justin Dauphinais
Company Stantec
Date 9-14-11 Time 1500

Received by:
Signature
Print
Company
Date Time

Sample integrity upon receipt:
Samples received intact ☐
Samples received cold ☐
Custody seals ☐
Correct container types ☐

PO#:
Quote yes no

Relinquished by:
Signature
Print
Company
Date Time

Received by ZymaX:
Signature Ryan Woon
Print Ryan Woon
Company Zymax
Date 9/15/11 Time 9:51

Page ___ of ___

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Appendix D

Review of Nitrate Isotope and Concentration Data

Memo

Stantec

To:	Marisa Patterson, P.E. Okemos MI	From:	Thomas W. Butler, PG Walnut Creek, CA
File:	PN: 213201072	Date:	November 3, 2011

SUBJECT: REVIEW OF NITRATE ISOTOPE AND CONCENTRATION DATA, BEE-JAY SCALES SITE, SUNNYSIDE, WASHINGTON

Summary of Findings

- Most probable source of nitrate is through oxidation of historically discharged NH_4-based fertilizers;
- Isotopic composition of select samples can be accounted for through microbial mediated nitrification reactions;
- Other sources of nitrate may exist; however, differentiating these sources was not possible given the fairly limited dataset; and,
- Evidence for natural denitrification was also assessed; however, there was no evidence that this process was readily occurring at the site under ambient conditions. In the event denitrification is used as a corrective action strategy, artificial or induced, denitrification through application/injection of a reducing agent should be considered.

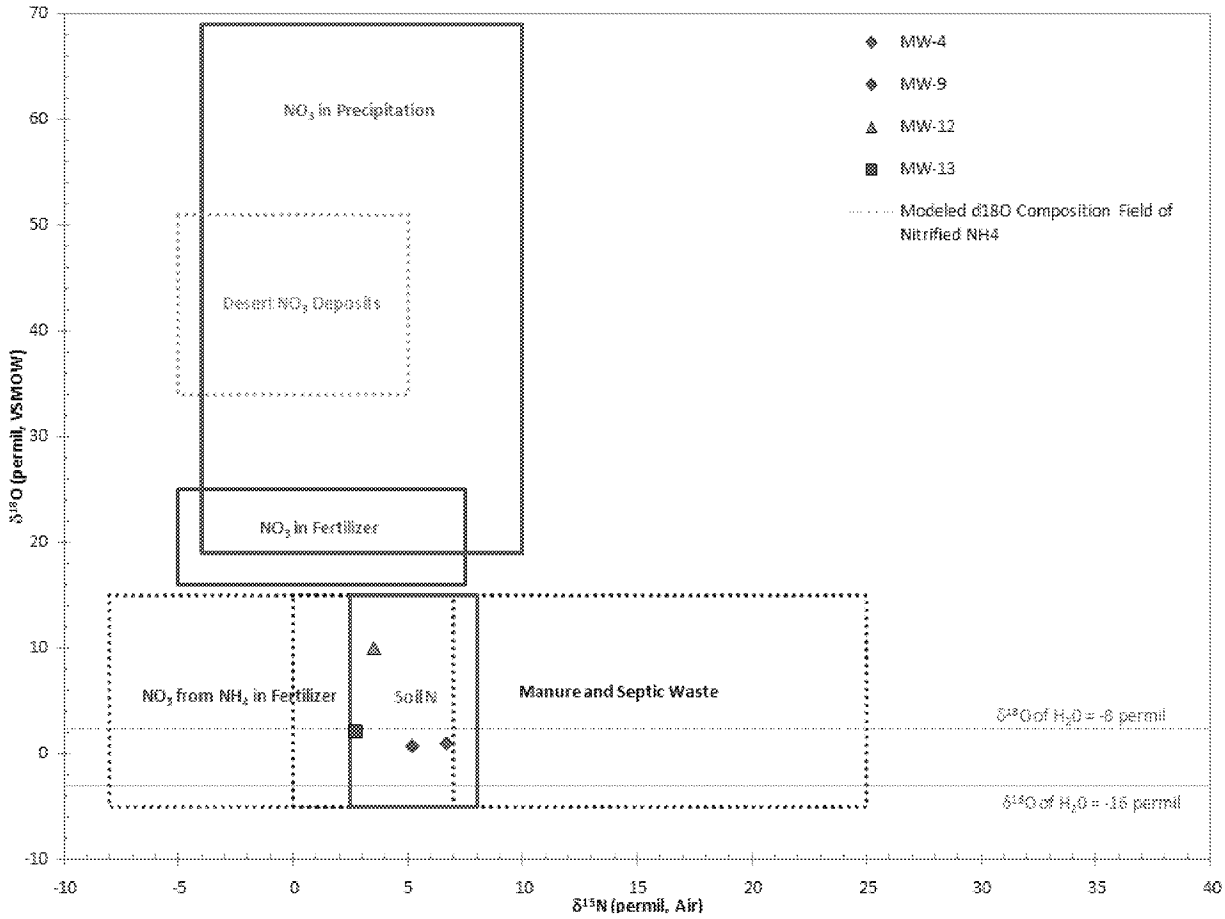
Discussion

Isotope $\delta^{18}O$ and $\delta^{15}N$ data for nitrate were reviewed to assess the potenital sources of nitrate found in shallow groundwater near the Bee-Jay Scales site in Sunnyside, Washington. The $\delta^{18}O$ and $\delta^{15}N$ values of select samples were analyzed by Zymax Laboratory and reported in the conventional delta notation with the units permil, or parts per thousand deviation from the reference standard. The reference standards for $\delta^{18}O$ and $\delta^{15}N$ were Vienna Surface Mean Ocean Water (VSMOW) and air, respectively. These isotope data were subsequently plotted in an x-y graph (Figure 1) with typical compositional fields of various nitrate sources shown for comparison, as adapted from Kendall and McDonnell (2006)[i].

Review of Figure 1 suggests an isotope composition that is consistent with nitrate derived from NH_4-based fertilizer, animal waste, or natural soil nitrogen. Given the high average concentrations of nitrate observed at the select monitoring locations (ranging from approximately 140 to 800 mg/l as N), natural soil-derived nitrogen can be largely ruled out. Similarly, although manure and septic waste cannot be entirely excluded, the very high concentration of nitrate in groundwater makes a direct animal waste source less probable. Accordingly, the more likely source of nitrate observed in groundwater is through the oxidation of NH_4-based fertilizer, reported to have historically been produced and stored on-site at the facility. This pathway was further evaluated as follows.

Figure 1

$\delta^{18}O$ vs $\delta^{15}N$ of Nitrate Including Typical Source Compositional Fields



During nitrification of NH_4-based fertilizers, the $\delta^{18}O$ of the resultant nitrate molecule has been shown to be derived from two sources, including molecular oxygen (O_2) and the water molecule itself. Given an atmospheric oxygen $\delta^{18}O$ value of about +23 permil (VSMOW) and estimates of groundwater $\delta^{18}O$ values in Washington of between -8 and -16 permil (VSMOW), the $\delta^{18}O$ of nitrate was estimated to range between approximatley -3 and +2.3 permil (VSMOW). As can be seen from Figure 1, the $\delta^{18}O$ values of nitrate for MW-4, MW-9, and MW-13 fall within this estimated range. Conversely, MW-12 plots seemingly above the expected $\delta^{18}O$ values of microbially mediated nitrification of NH_4-based fertilizers. It is important to note that where there are large differences in the oxygen or nitrogen reservoir sizes, there are not necessarily direct linkages between oxygen and nitrogen fractionation. The only common thread is that nitrification uses oxgyen from O_2 and ceases to proceed when O_2 is depleted[i].

During microbial respiration of oxygen, the $\delta^{18}O$ of the O_2 reservoir can be significantly enriched (more positive) as the oxygen reservoir is consumed by microbes. Fractionation of oxygen isotopes through the preferential consumption of the lighter ^{16}O of O_2 by microbes during nitrification could reasonably account for the somewhat more positive $\delta^{18}O$ values of nitrate observed at MW-12.

Although other sources of nitrogen could exist with similar isotopic compositions, review of these preliminary data suggest that there is no conclusive evidence of multiple, isotopically distinct, sources at the site that cannot be reasonably accounted for via variations in isotope fractionation associated with microbial nitrification processes of an NH_4-fertilizer source.

Natural on-site denitrification reactions in groundwater were also assessed through review of average nitrate concentrations and $\delta^{15}N$ values. Assessment of these data indicate that there was no direct evidence that natural denitrification is currently occurring at the select monitoring wells reviewed. Should denitrification be used as a remedial corrective action, artificial or induced, denitrification through application/injection of a reducing agent should be considered. Furthermore, if additional evidence for mixing, denitrification (natural or induced), or, other reaction pathways is required, a more comprehensive field exploration and sampling program designed to answer these questions should be developed and initiated at the site.

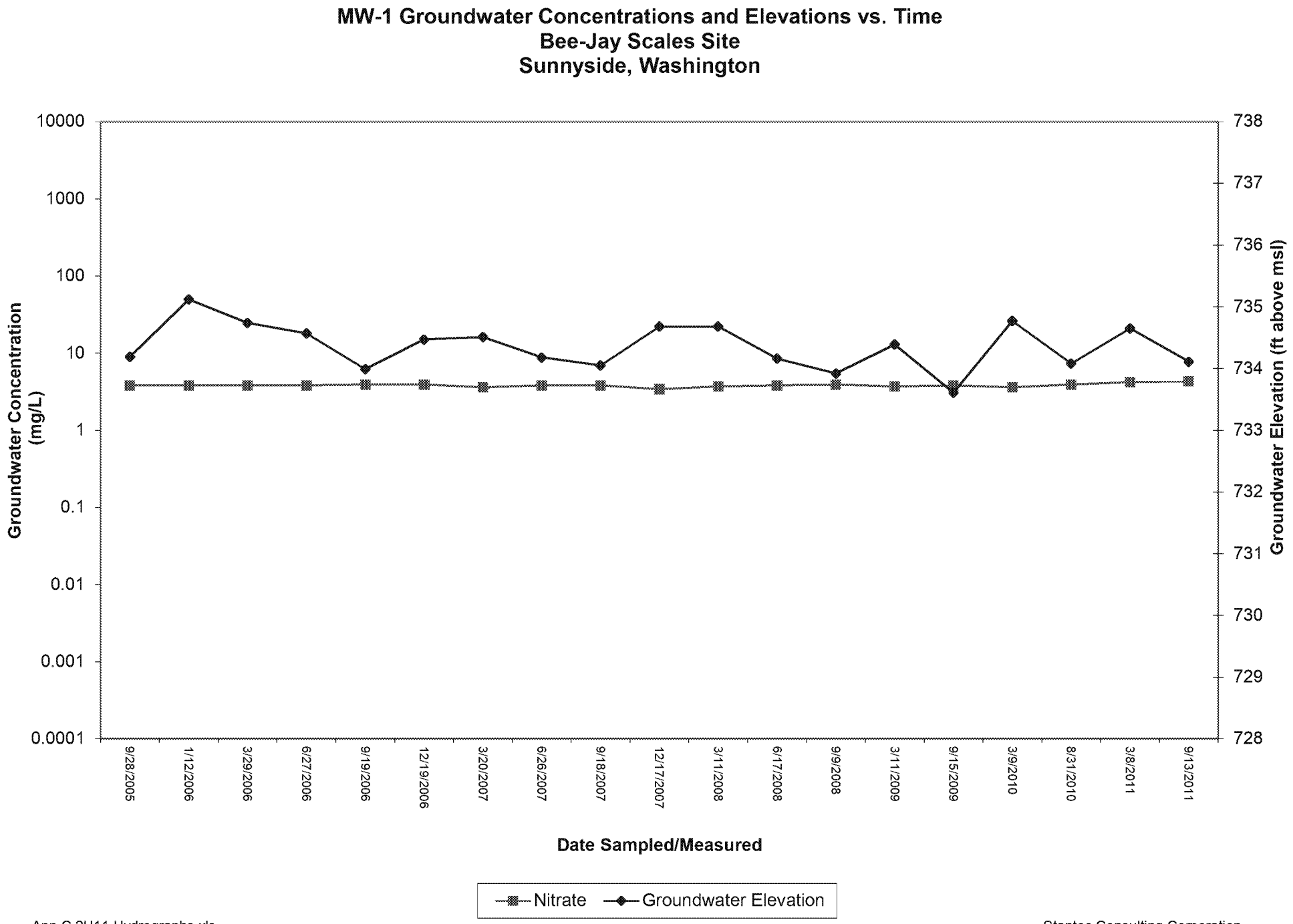
Sincerely,

Thomas W. Butler, PG, CHG, CEG (Walnut Creek, CA)
Senior Hydrogeologist/Geochemist

[i] Kendall, C and McDonnell, J.J. 2006. Isotopes Tracers in Catchment Hydrology.

Appendix E

Hydrographs



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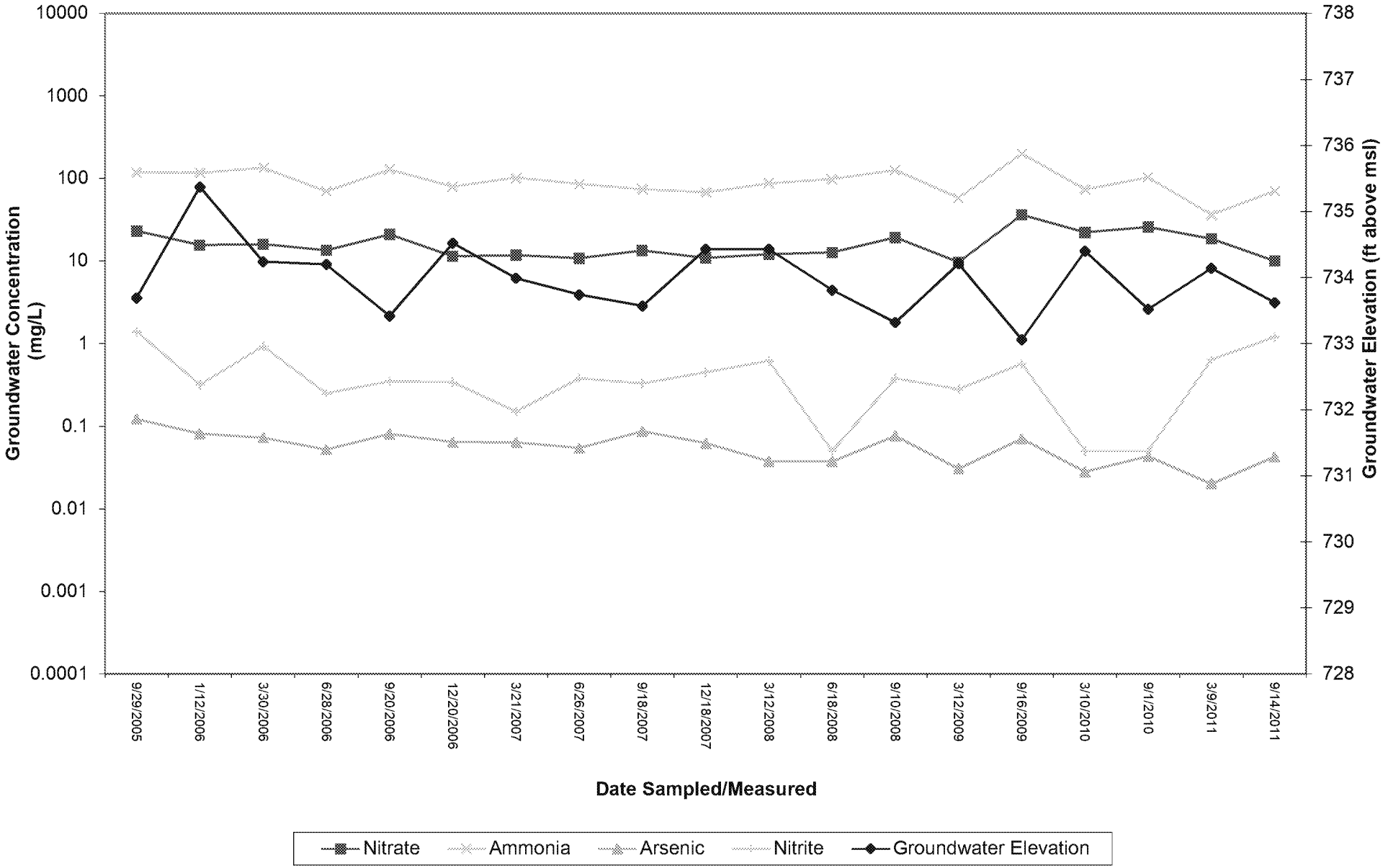
Stantec Consulting Corporation

MW-3 Groundwater Concentrations and Elevations vs. Time
Bee-Jay Scales Site
Sunnyside, Washington



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Stantec Consulting Corporation

MW-4 Groundwater Concentrations and Elevations vs. Time
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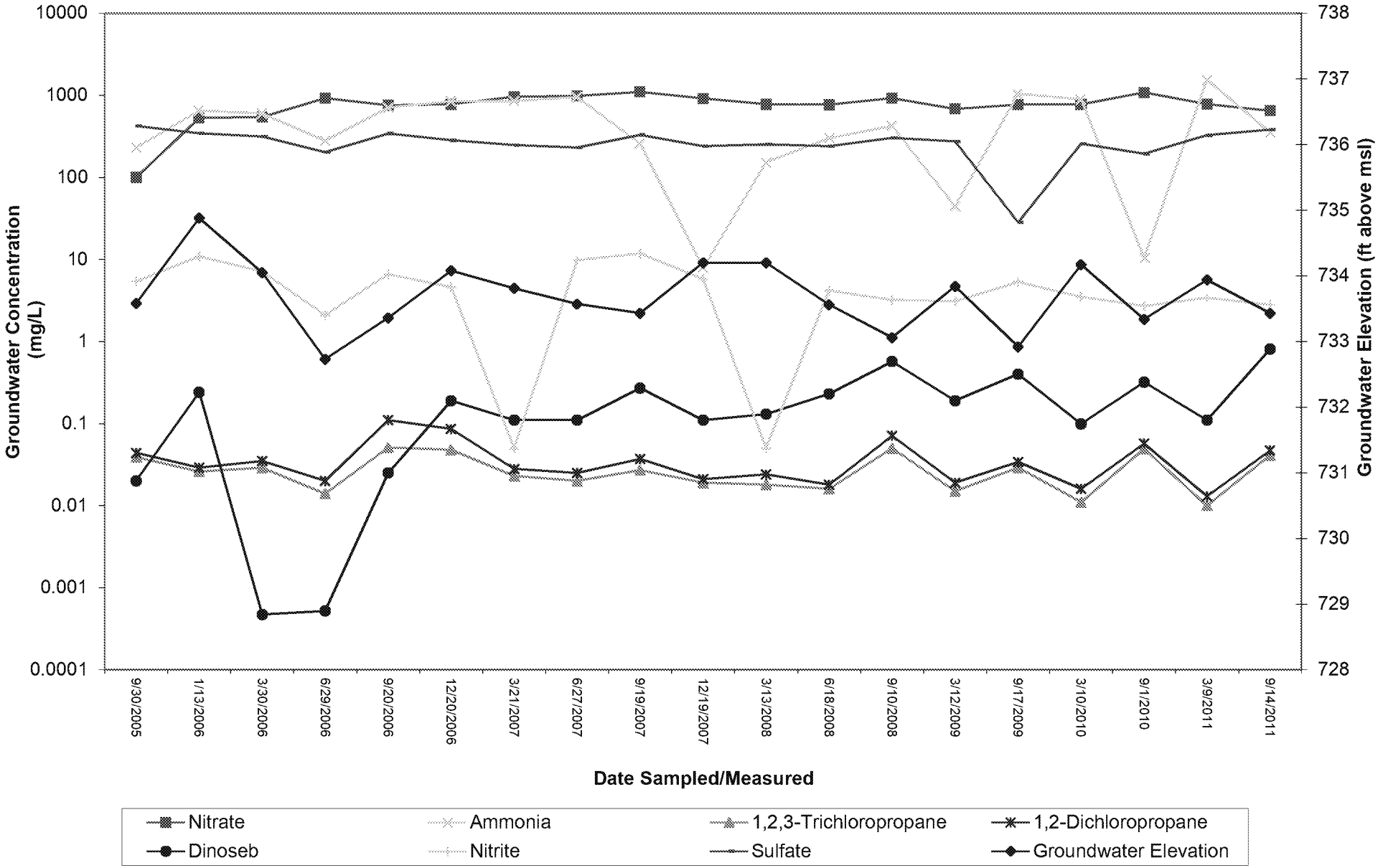
Sunnyside, Washington



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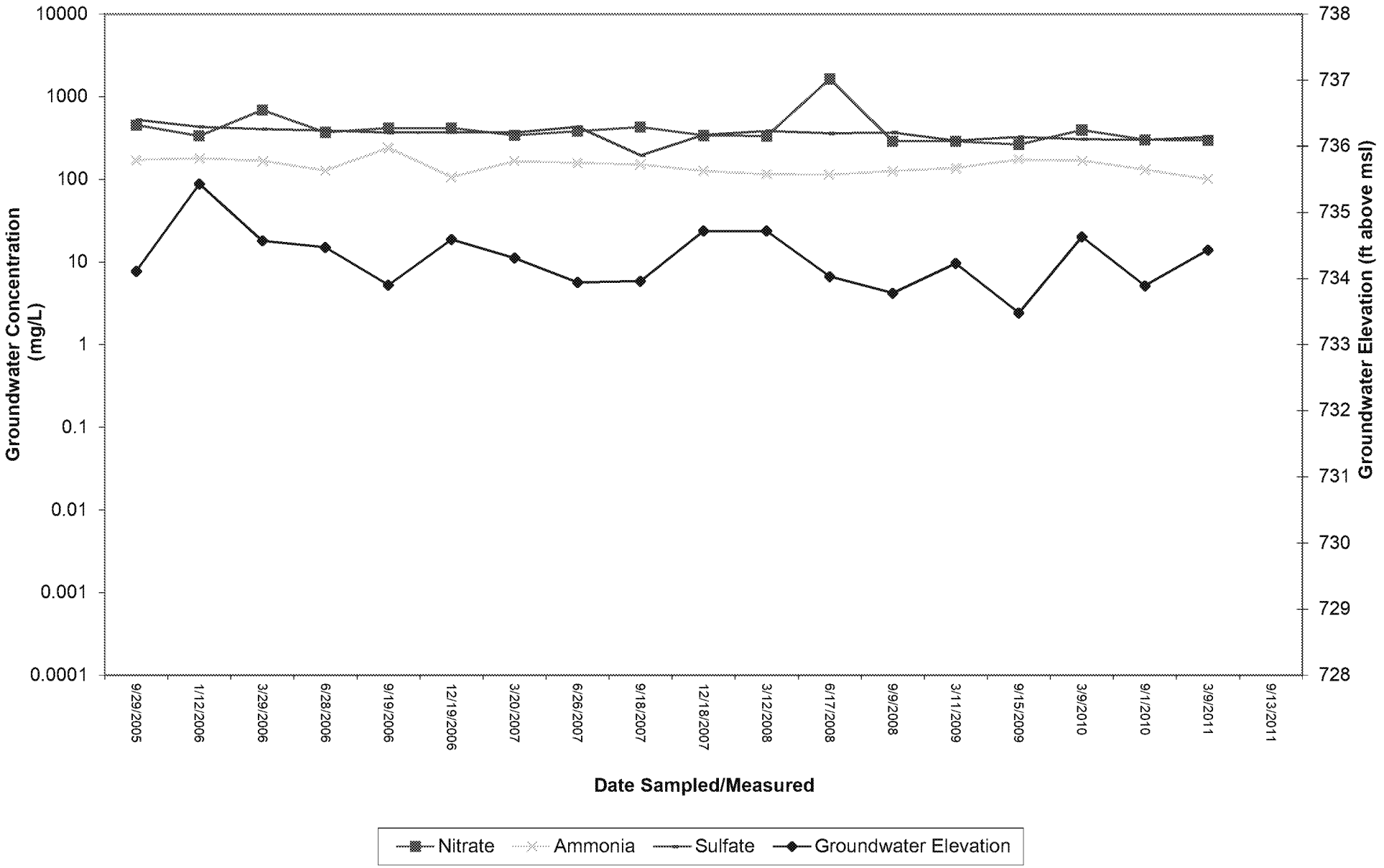
Stantec Consulting Corporation

MW-5 Groundwater Concentrations and Elevations vs. Time
Bee-Jay Scales Site
Sunnyside, Washington



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Stantec Consulting Corporation

MW-6 Groundwater Concentrations and Elevations vs. Time
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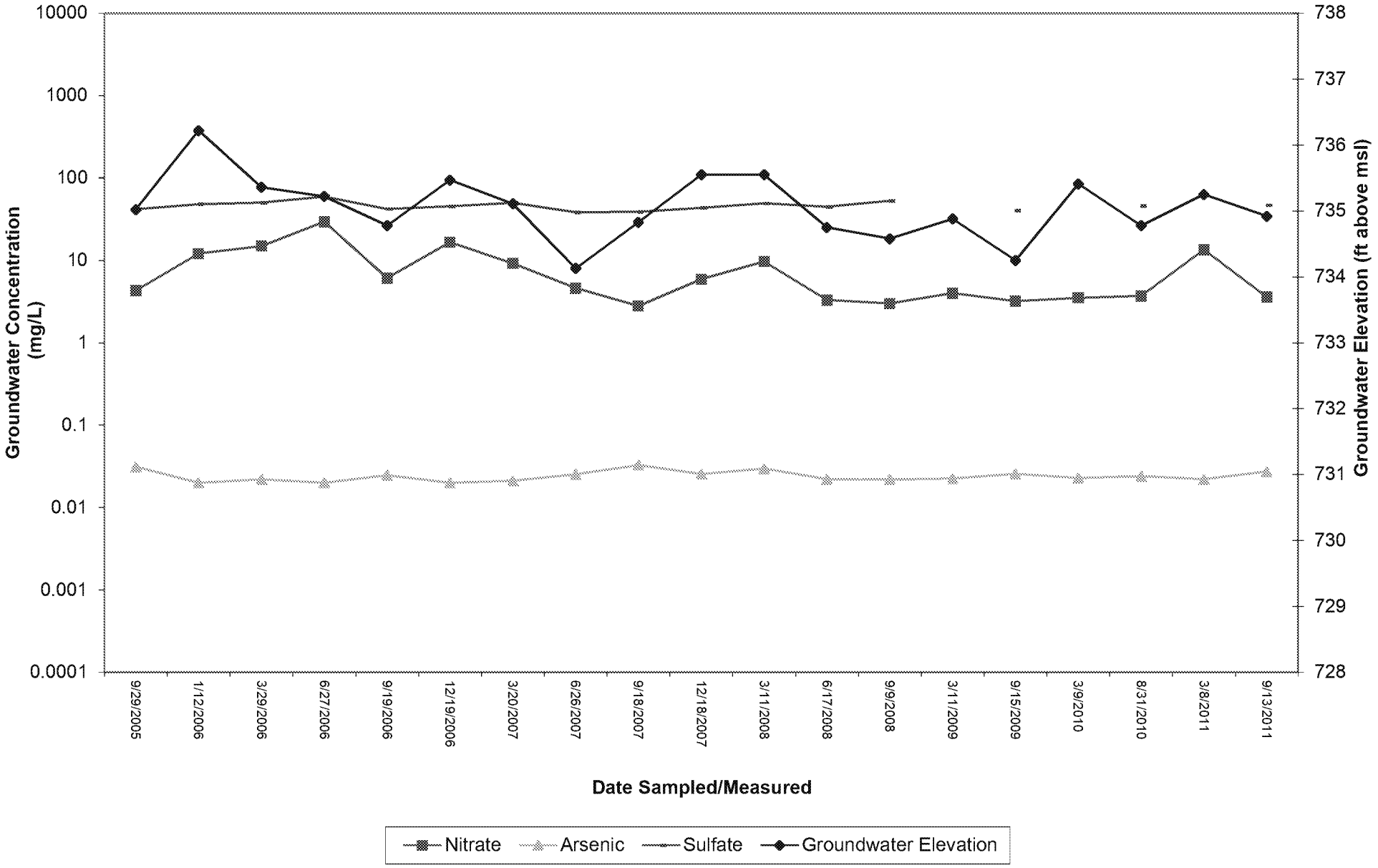
Sunnyside, Washington



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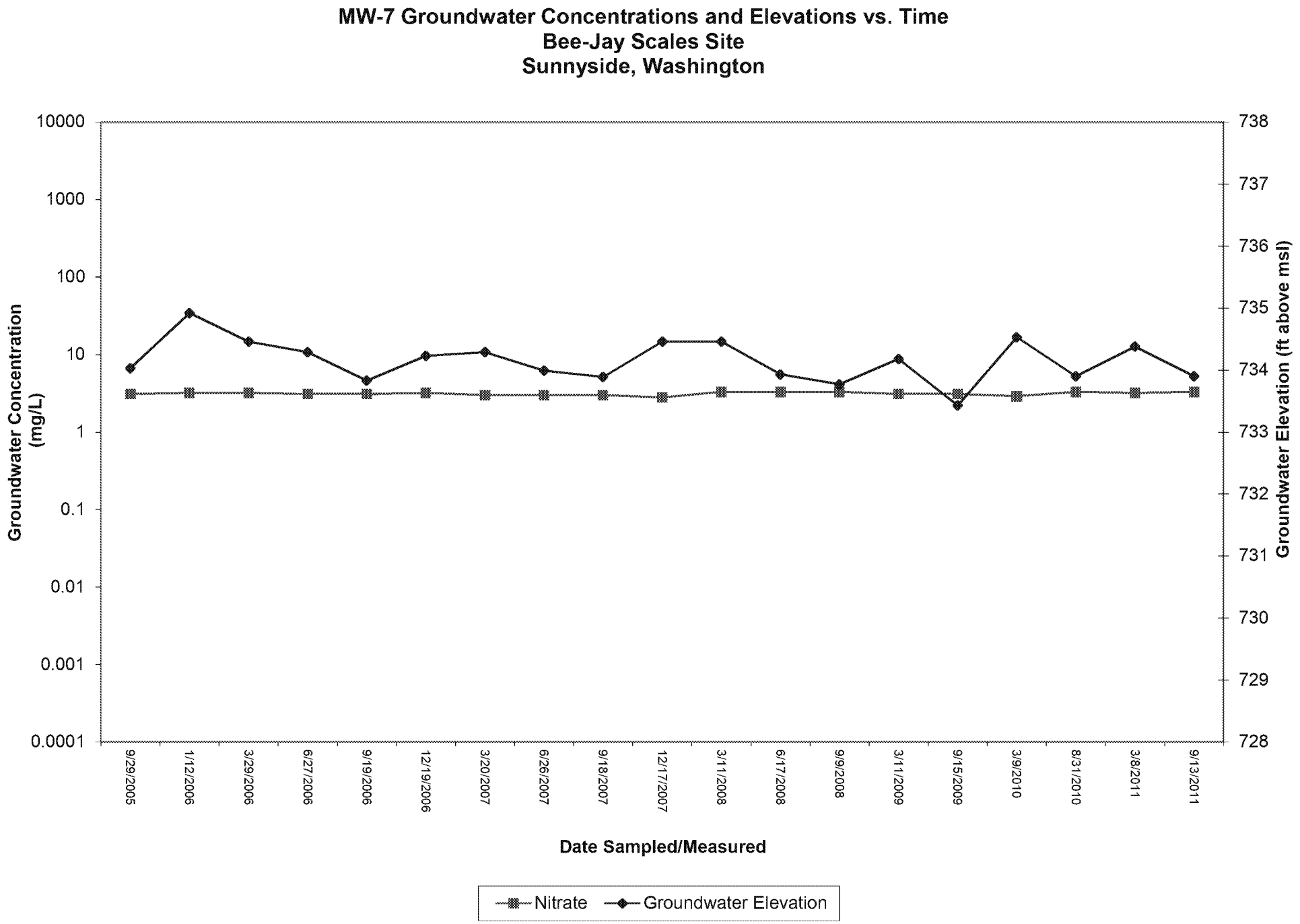
Stantec Consulting Corporation



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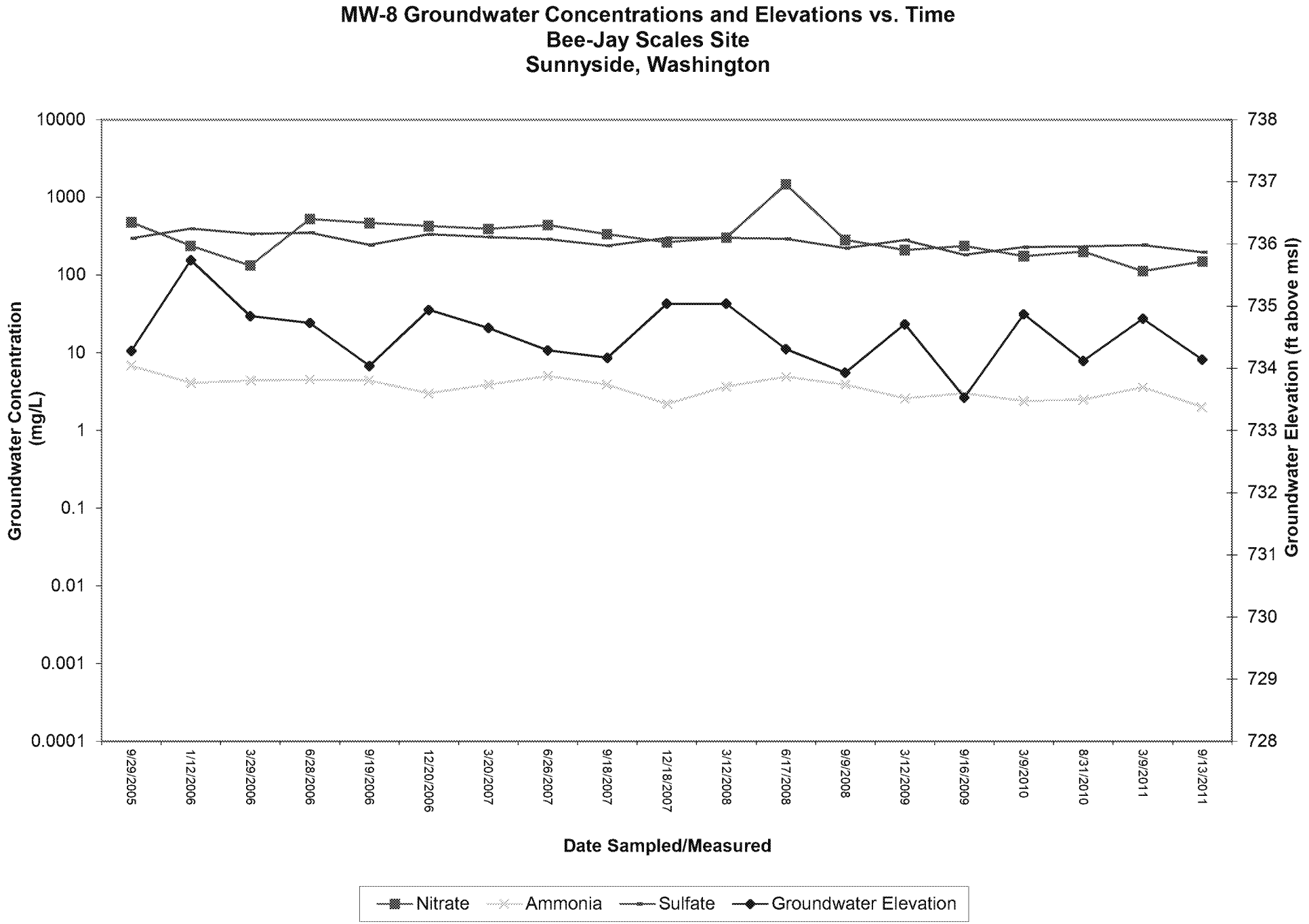

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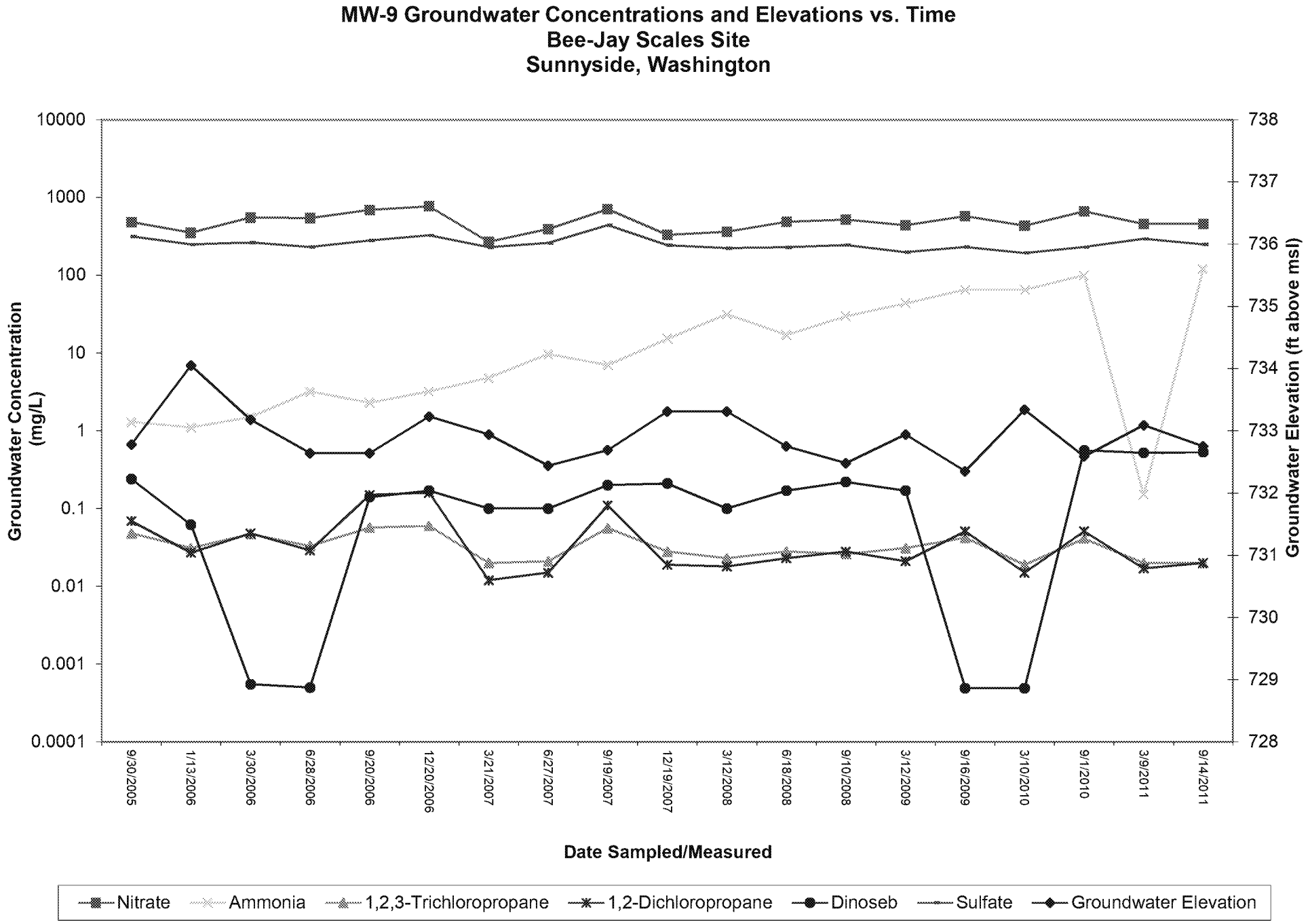

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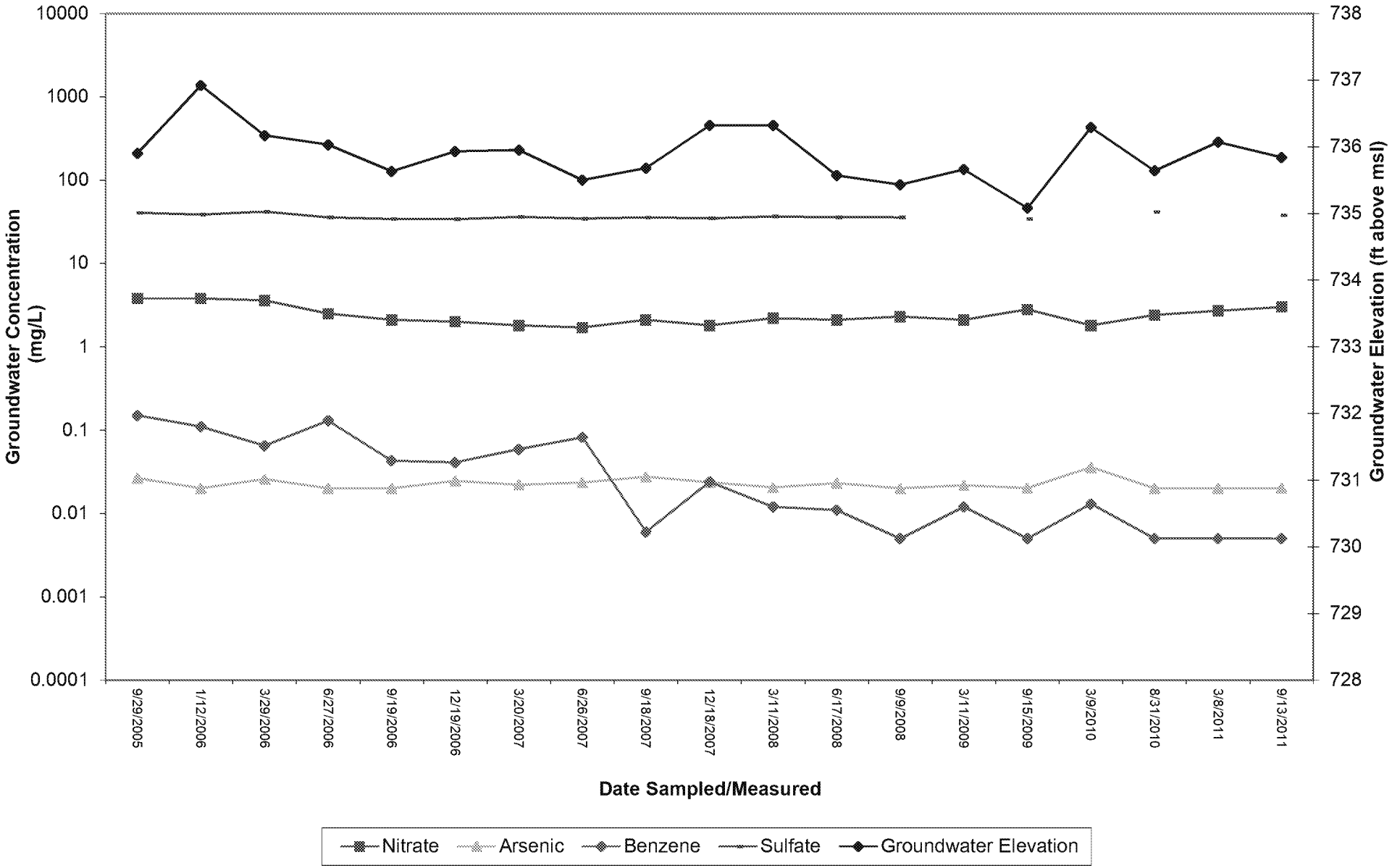
Stantec Consulting Corporation

MW-10 Groundwater Concentrations and Elevations vs. Time
Bee-Jay Scales Site
Sunnyside, Washington



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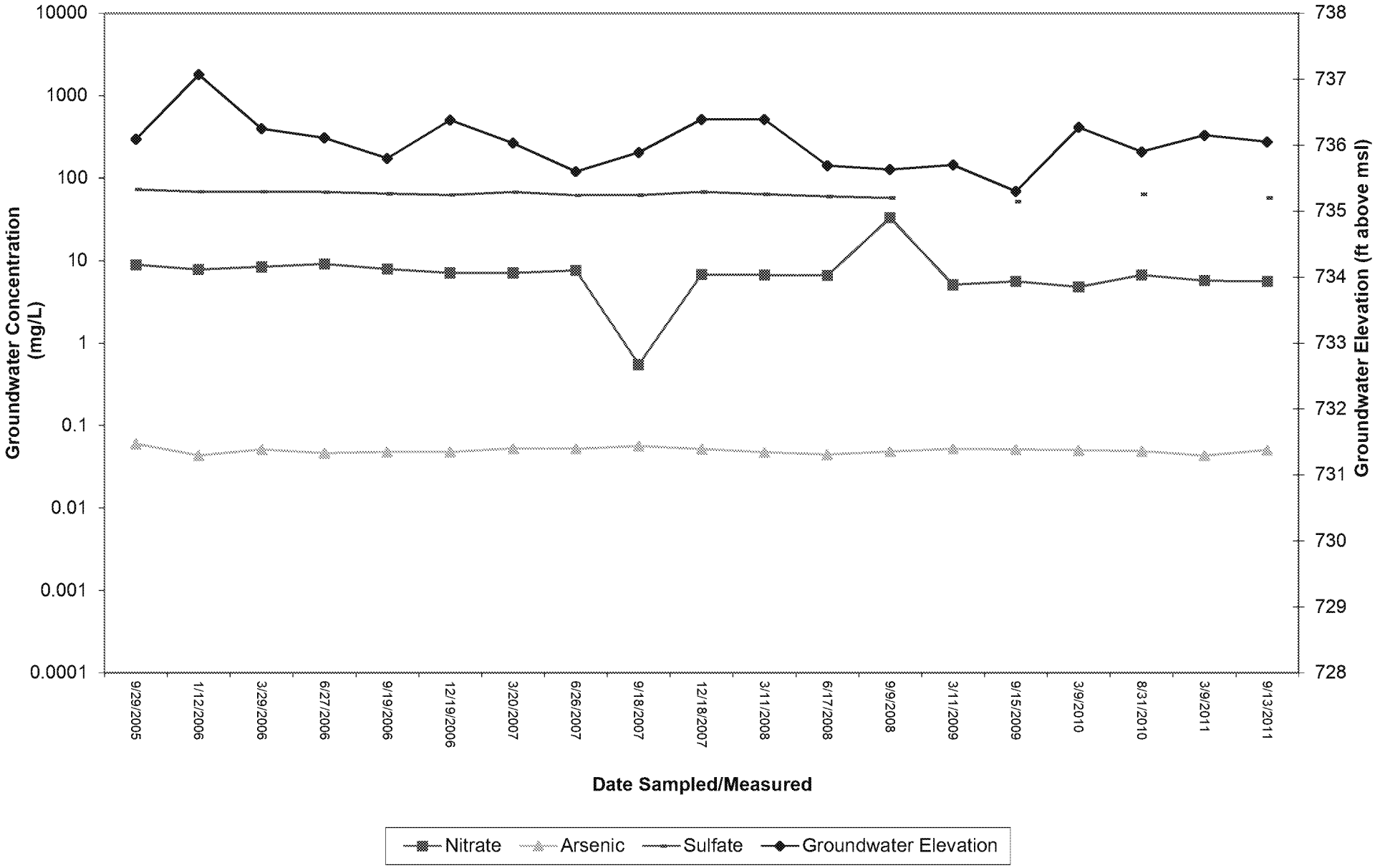
Stantec Consulting Corporation

MW-11 Groundwater Concentrations and Elevations vs. Time
Bee-Jay Scales Site
Sunnyside, Washington



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Stantec Consulting Corporation

MW-12 Groundwater Concentrations and Elevations vs. Time
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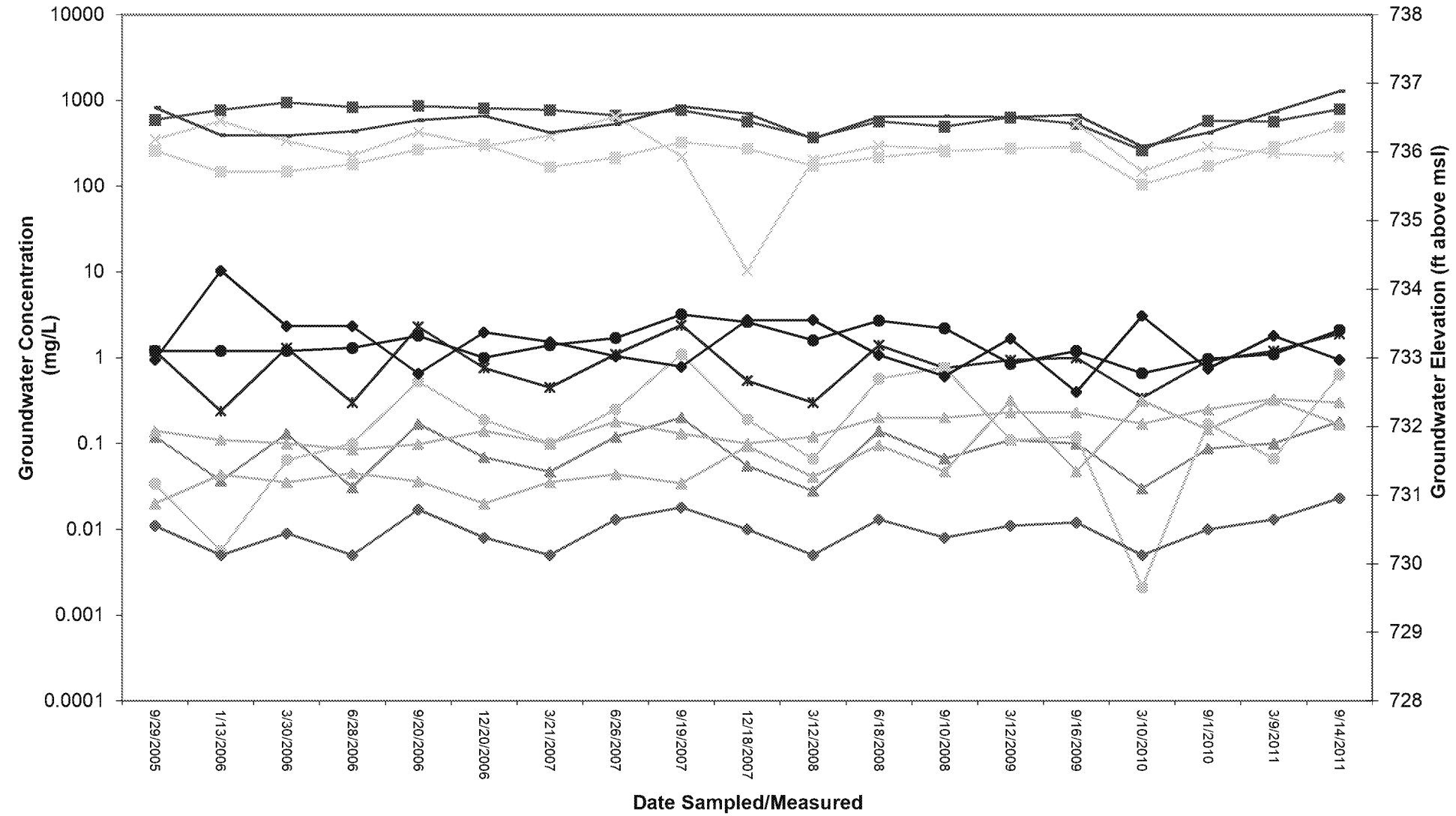
Sunnyside, Washington



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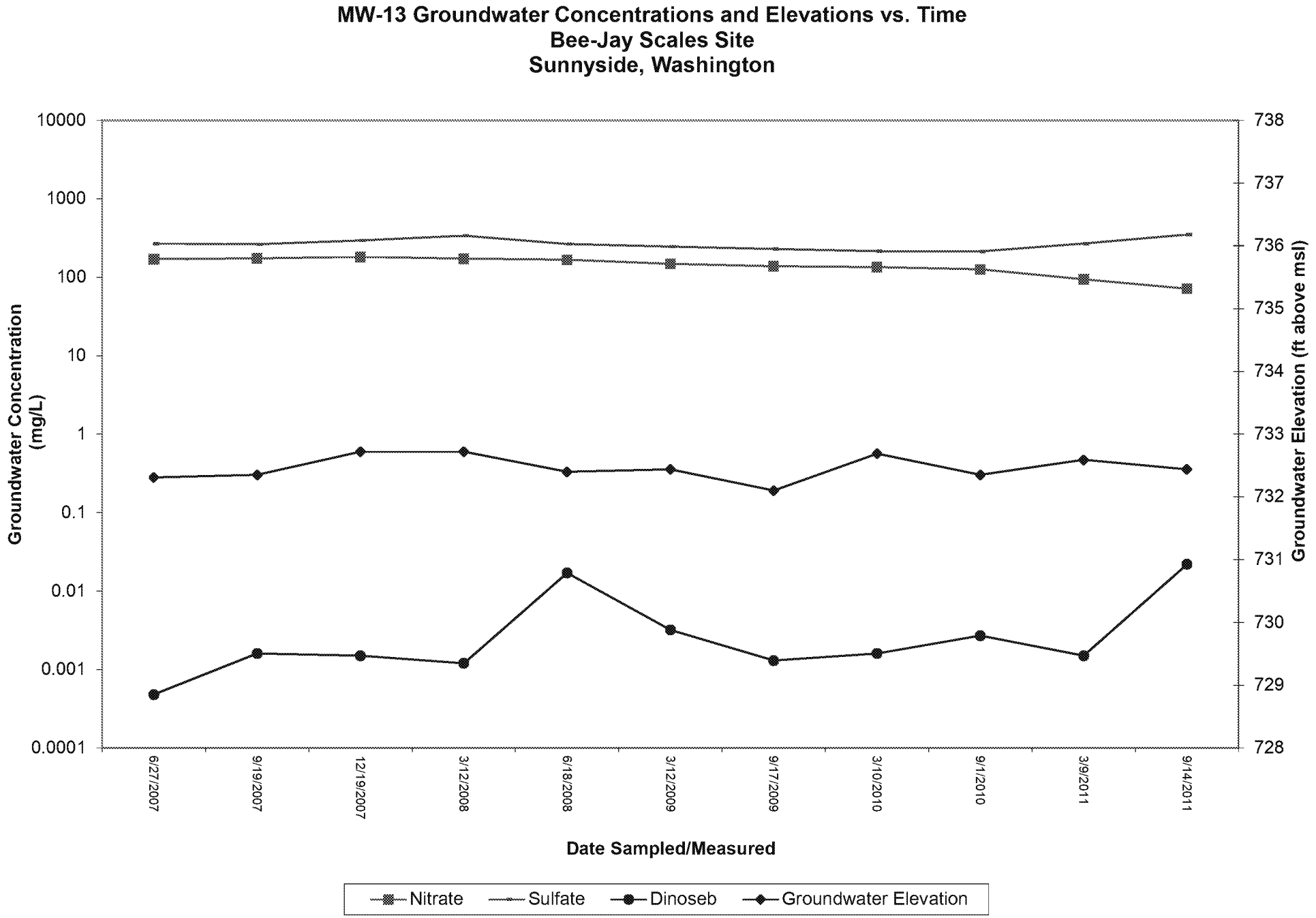

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