



**Stantec**

**SECOND HALF 2011 SEMI-ANNUAL  
GROUNDWATER MONITORING  
AND SAMPLING REPORT**

**Bee-Jay Scales Site  
116 N 1<sup>st</sup> Street  
Sunnyside, WA 98944**

**Submitted to:**

Mr. Norm Hepner  
Department of Ecology  
Central Regional Office  
15 W Yakima Avenue, Suite 200  
Yakima, WA 98902-3452

**Prepared for:**

Chevron Environmental Management  
Company  
6101 Bollinger Canyon Road,  
San Ramon, CA 94583

Atlantic Richfield Company  
6 Centerpointe Drive, Room 161  
La Palma, CA 90623-1066

**Submitted by:**

Stantec Consulting Corporation  
2321 Club Meridian Dr., Suite E  
Okemos, MI 48864

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## 1.0 Introduction

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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 1<sup>st</sup> 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**

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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 ( $\pm 0.1$  unit)

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- Oxidation-reduction potential (ORP) ( $\pm 10$  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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
MW-3	Arsenic (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
	Arsenic, Iron, Manganese (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
MW-4	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>

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<b>Well ID</b>	<b>Analytes (Method)</b>	<b>No. of Containers</b>	<b>Sample Container(s) (Preservative)</b>
<b>MW-5</b>	Iron (EPA 6010B)*	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
<b>MW-6</b>	Arsenic (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
<b>MW-7</b>	Nitrate-N (EPA 353.2)	1	40 ml glass vial (H <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
<b>MW-8</b>	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
<b>MW-9</b>	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
<b>MW-10</b>	Arsenic (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	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 NWTTPH-Gx Mod.)	3	40 ml glass vials (HCl)
<b>MW-11</b>	Arsenic (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	TPH-Gx (ECY 97-602 NWTTPH-Gx Mod.)	3	40 ml glass vials (HCl)

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Well ID	Analytes (Method)	No. of Containers	Sample Container(s) (Preservative)
MW-12	Arsenic, Iron (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
	VOCs (EPA 8260B)	3	40 ml glass vials (HCl)
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
MW-13	Iron (EPA 6010B)	1	500 ml plastic (HNO <sub>3</sub> )
	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 <sub>2</sub> SO <sub>4</sub> )
	Nitrite-N (EPA 353.2)	1	40 ml glass vial (no preservative)
	Ammonia-N (SM20 4500 NH3 D)	1	500 ml glass (H <sub>2</sub> SO <sub>4</sub> )
	Chlorinated Herbicides (EPA 8151A)	2	1000 ml glass - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>

\* 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**

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### **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;



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- 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<sub>3</sub>. Alkalinity to pH 4.5 was detected in nine wells ranging from 218 mg/l as CaCO<sub>3</sub> (at MW-6) to 602 mg/l as CaCO<sub>3</sub> (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., <sup>15</sup>N/<sup>14</sup>N, also expressed as δ<sup>15</sup>N) values ranged from 2.7 parts per thousand deviation from the reference standard (‰) in well MW-13 to 6.7 ‰ in well MW-4. The oxygen isotope ratio (i.e., <sup>18</sup>O/<sup>16</sup>O, also expressed as δ<sup>18</sup>O) values ranged from 0.7 ‰ in well MW-9 to 10.0 ‰ in well MW-12.

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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<sub>4</sub>)-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

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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

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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  $\text{NH}_4$ -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

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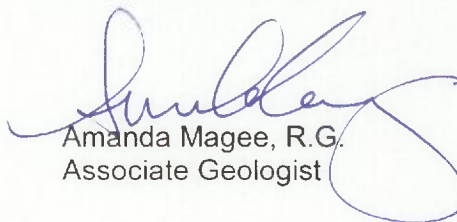
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**Prepared by:**



Marisa Patterson, P.E.  
Associate Engineer

**Peer Reviewed by:**



Amanda Magee, R.G.  
Associate Geologist

All information, conclusions, and recommendations provided by Stantec in this document regarding the Subject Property have been prepared under the supervision of and reviewed by the Licensed Professional whose signature appears below:

**Licensed Approver:**

**Name:** Amanda Magee, R.G.

**Date:** 11/8/11

**Signature:**



**Stamp:**



# Tables

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

<b>Well ID</b>	<b>Quarter/ Half<sup>1</sup></b>	<b>Date</b>	<b>TOC Elevation (feet above MSL)</b>	<b>Depth to GW (feet below TOC)</b>	<b>GW Elevation (feet above MSL)</b>
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**

<b>Well ID</b>	<b>Quarter/ Half<sup>1</sup></b>	<b>Date</b>	<b>TOC Elevation (feet above MSL)</b>	<b>Depth to GW (feet below TOC)</b>	<b>GW Elevation (feet above MSL)</b>
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 <sup>7</sup>	9/12/2011	741.93	NA	NA
	MW-6	3Q05	9/28/2005	741.73	6.71
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
	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 <sup>1</sup>	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
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 <sup>3</sup>		9/10/2008	741.09	8.61	732.48
1H09 <sup>5</sup>		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
	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 <sup>1</sup>	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 <sup>2</sup>	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 <sup>4</sup>	9/8/2008	742.20	NA	NA
	1H09 <sup>5</sup>	3/12/2009	742.20	9.76	732.44
	2H09 <sup>6</sup>	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

<sup>1</sup> Sampling frequency was reduced from quarterly to semi-annually following the 3Q08 event.

<sup>2</sup> Depth to GW during 4Q06 taken just prior to sampling, as well was covered by a drum during gauging.

<sup>3</sup> Depth to GW during 3Q08 taken just prior to sampling, as well was covered by boxes during gauging.

<sup>4</sup> Depth to GW during 3Q08 could not be measured as well could not be opened.

<sup>5</sup> Depth to GW during 1H09 taken just prior to sampling, as well was covered by boxes during gauging.

<sup>6</sup> Depth to GW during 1H09 and 2H09 taken just prior to sampling, as well could not be opened during gauging.

<sup>7</sup> 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	<b>0.0426</b>	mg/l	0.0051	0.01
MW-03	9/14/2011	Nitrate Nitrogen	<b>10</b>	mg/l	0.4	10
MW-03	9/14/2011	Nitrite Nitrogen	<b>1.2</b>	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	<b>0.041</b>	mg/l	0.001	0.00001
MW-04	9/14/2011	1,2-Dichloropropane	<b>0.047</b>	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	<b>0.81</b>	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	<b>648</b>	mg/l	20	10
MW-04	9/14/2011	Nitrite Nitrogen	<b>2.8</b>	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	<b>0.0273</b>	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	<b>149</b>	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	<b>0.02</b>	mg/l	0.001	0.00001
MW-09	9/14/2011	1,2-Dichloropropane	<b>0.02</b>	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	<b>0.53</b>	mg/l	0.048	0.007
MW-09	9/14/2011	Nitrate Nitrogen	<b>455</b>	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	<b>0.0202</b>	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	<b>0.0505</b>	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	<b>0.18</b>	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	<b>1.9</b>	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	<b>0.64</b>	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	<b>0.167</b>	mg/l	0.0051	0.01
MW-12	9/14/2011	Benzene	<b>0.023</b>	mg/l	0.0005	0.005
MW-12	9/14/2011	Chloride	491	mg/l	40	NA
MW-12	9/14/2011	Chlorobenzene	<b>0.3</b>	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	<b>2.1</b>	mg/l	0.048	0.007
MW-12	9/14/2011	Nitrate Nitrogen	<b>790</b>	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	<b>0.022</b>	mg/l	0.0019	0.007
MW-13	9/14/2011	Nitrate Nitrogen	<b>71.2</b>	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**

<b>Location ID</b>	<b>Sample ID</b>	<b><math>\delta^{15}\text{N}</math> (‰)</b>	<b><math>\delta^{18}\text{O}</math> (‰)</b>
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

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

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

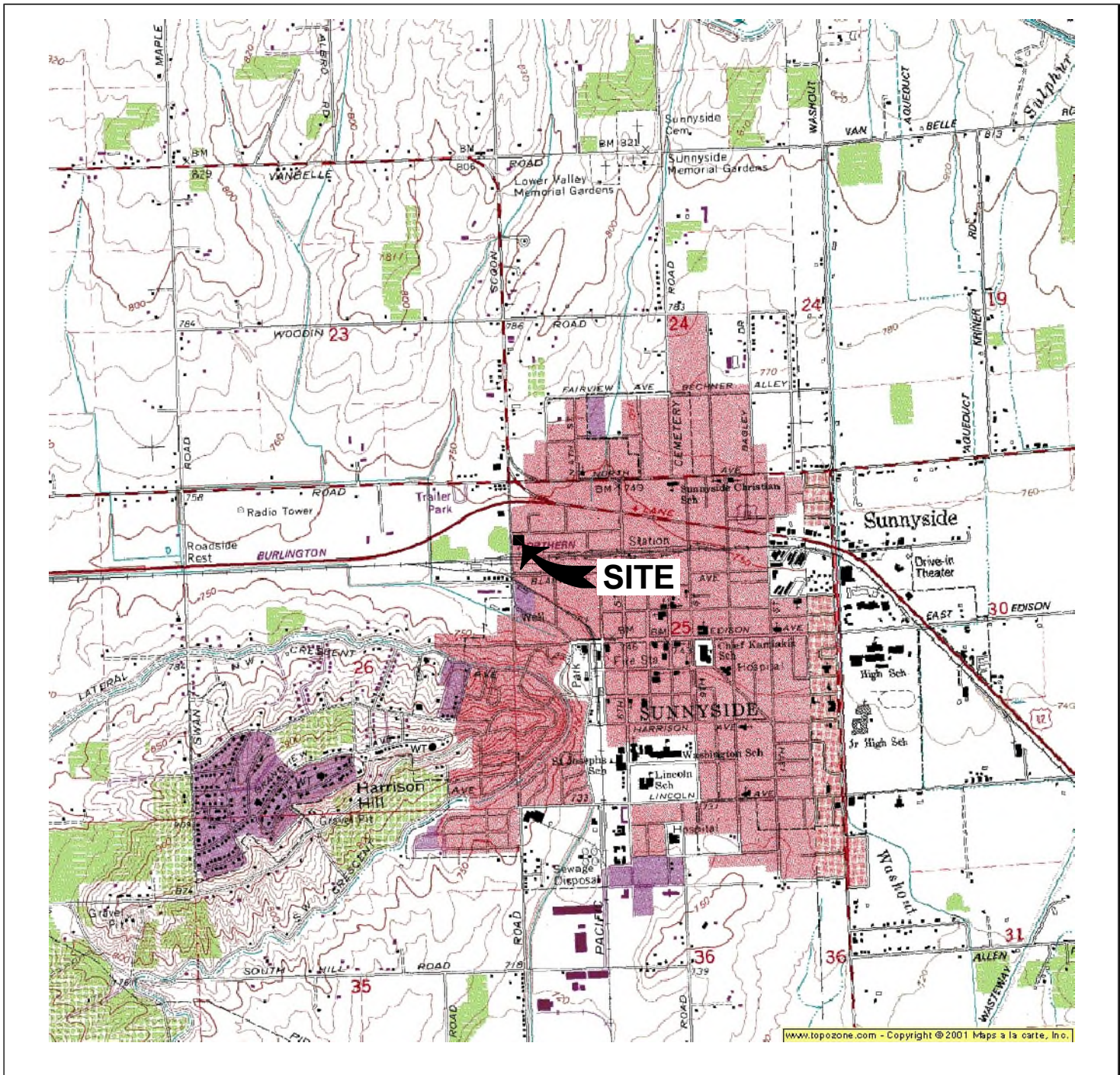
‰ = parts per thousand deviation from the reference standard

**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	
<b>AVERAGE</b>						<b>1.18%</b>

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

# Figures



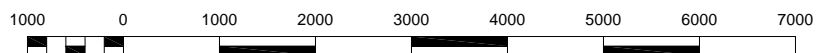
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WASHINGTON




SCALE IN MILE



SCALE IN FEET

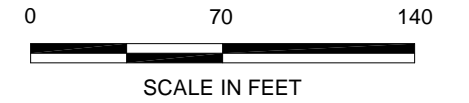
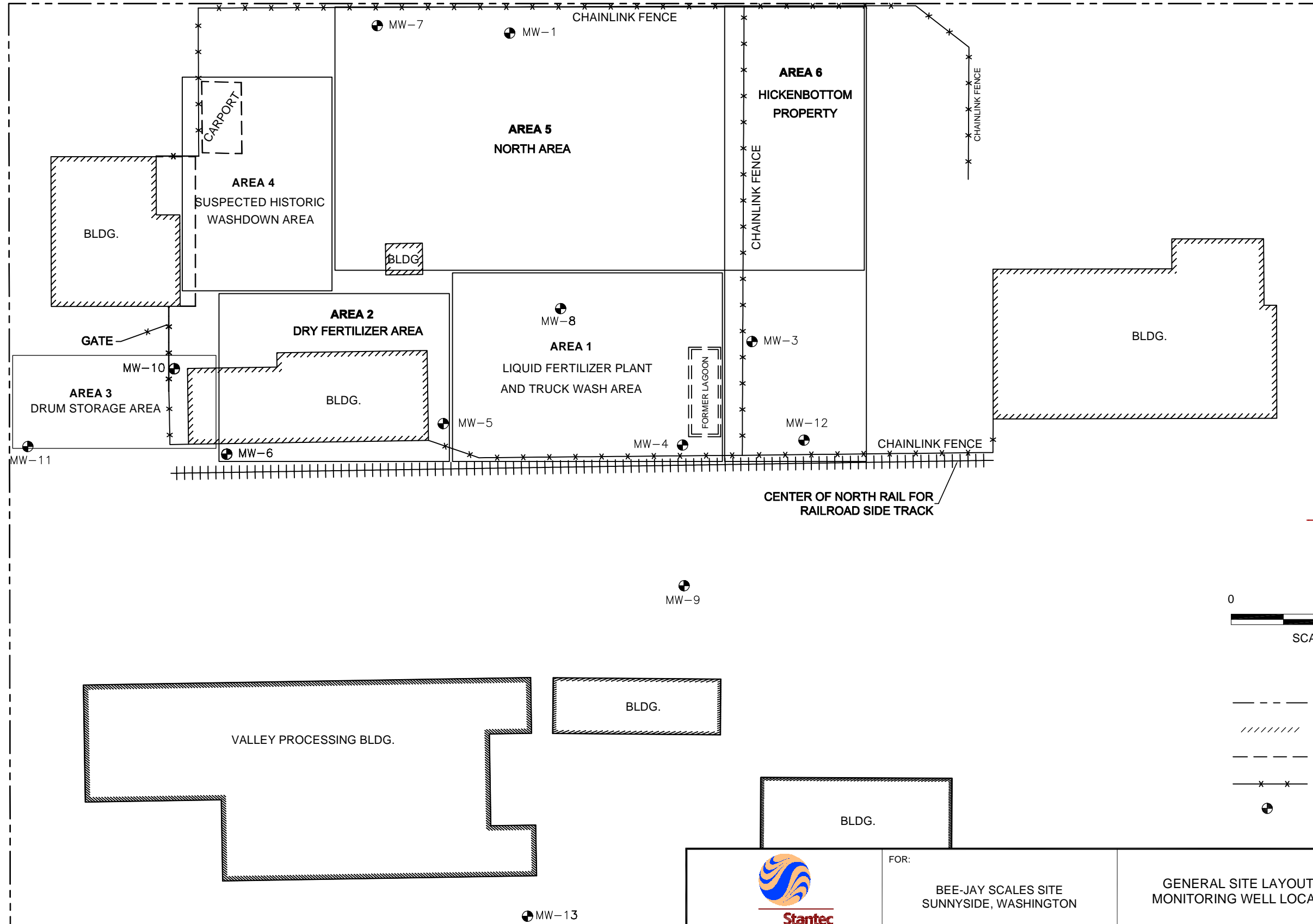
SOURCE: USGS 7.5 MINUTE QUADRANGLE; SUNNYSIDE, WASHINGTON; 1975

 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: <b>1-1</b>
	JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:		
	213201072.200.003	KAM	MRP	ASM	07/10/2008		




WAREHOUSE AVENUE

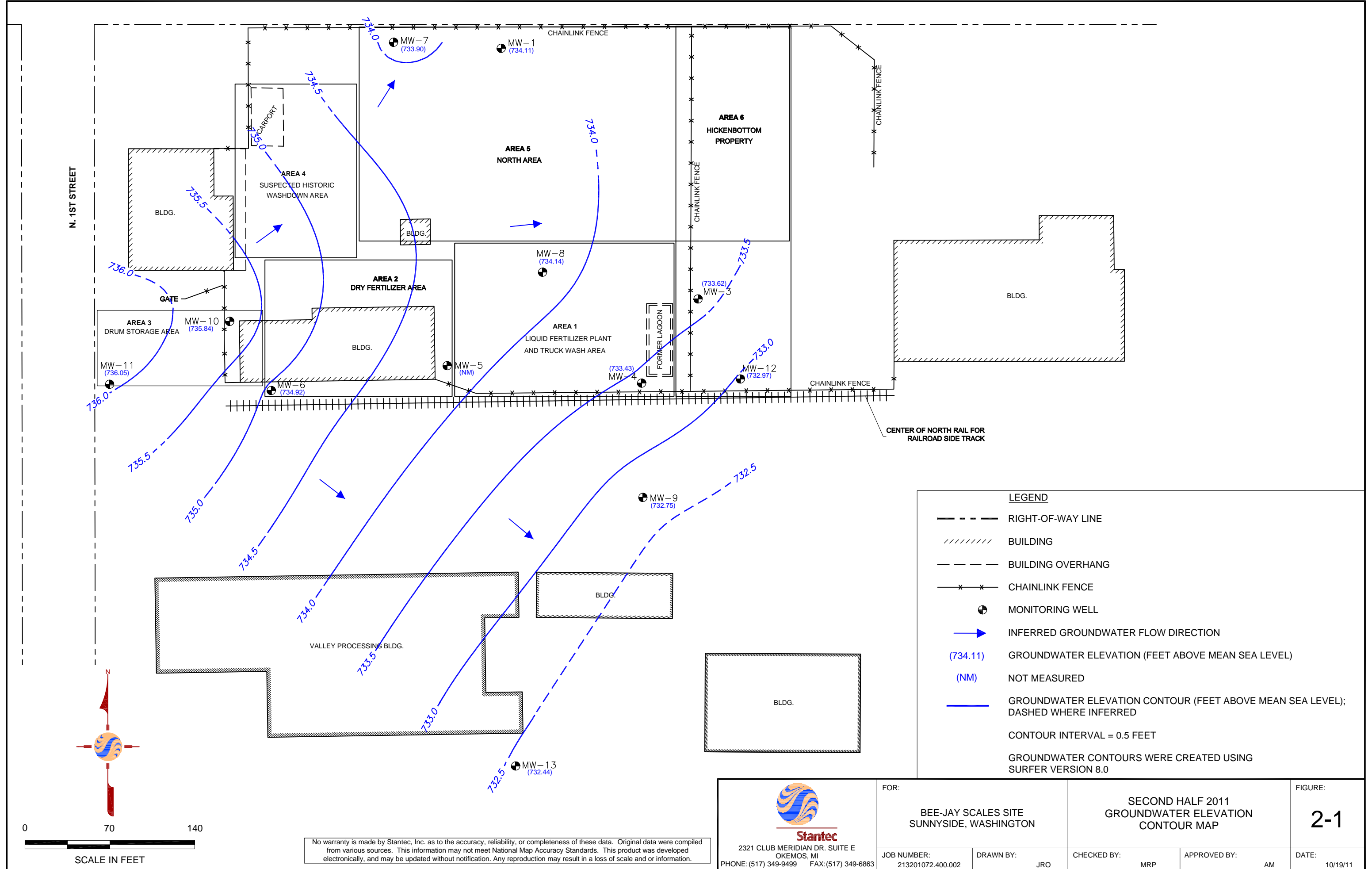
N. 1ST STREET



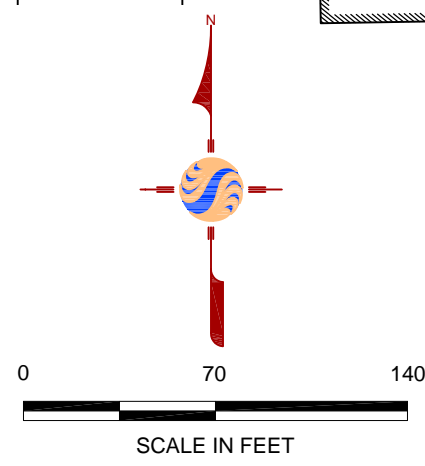
LEGEND

- RIGHT-OF-WAY LINE
- ////// BUILDING
- - - - BUILDING OVERHANG
- x-x- CHAINLINK FENCE
- ⊕ MONITORING WELL

 2321 CLUB MERIDIAN DR. SUITE E OKEMOS, MI PHONE: (517) 349-9499 FAX: (517) 349-6863	FOR: BEE-JAY SCALES SITE SUNNYSIDE, WASHINGTON		GENERAL SITE LAYOUT AND MONITORING WELL LOCATIONS		FIGURE: <b>1-2</b>
	JOB NUMBER: 213201072.200.003	DRAWN BY: KAM	CHECKED BY: MRP	APPROVED BY: ASM	DATE: 7/10/2008



LEGEND	
	RIGHT-OF-WAY LINE
	BUILDING
	BUILDING OVERHANG
	CHAINLINK FENCE
	MONITORING WELL
	INFERRED GROUNDWATER FLOW DIRECTION
	GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
	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	

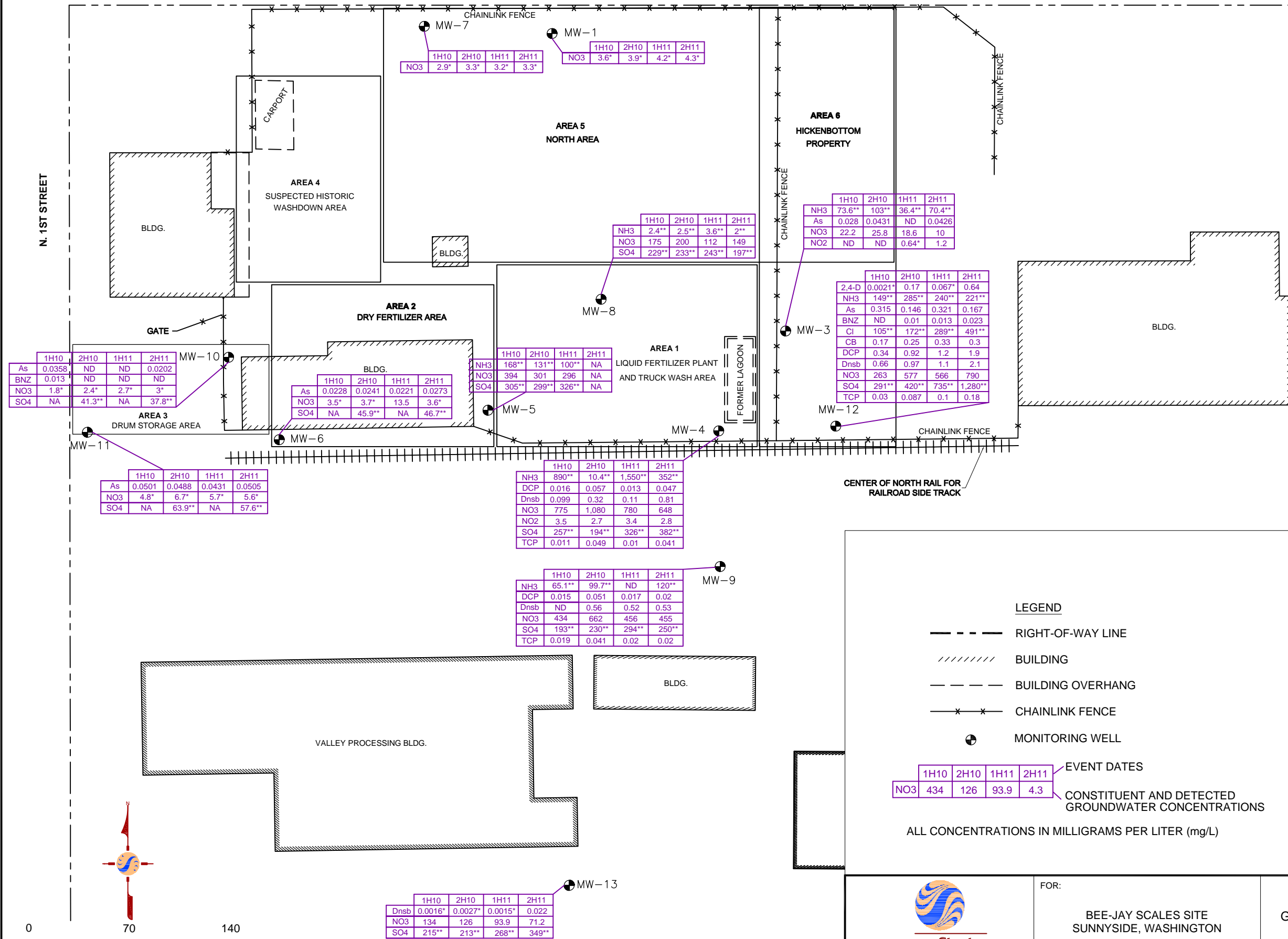


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 <b>Stantec</b> 2321 CLUB MERIDIAN DR. SUITE E OKEMOS, MI PHONE: (517) 349-9499 FAX: (517) 349-6863	FOR:		SECOND HALF 2011 GROUNDWATER ELEVATION CONTOUR MAP		FIGURE: <b>2-1</b>
	BEE-JAY SCALES SITE SUNNYSIDE, WASHINGTON		JOB NUMBER: 213201072.400.002	DRAWN BY: JRO	CHECKED BY: MRP
				DATE: 10/19/11	

WAREHOUSE AVENUE

N. 1ST STREET



NOTES

ND = NOT DETECTED  
NA = NOT ANALYZED

CLEANUP LEVELS IN PARENTHESES BELOW:

- 2,4-D: 2,4-DICHLOROPHOXYACETIC 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.

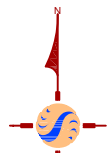
LEGEND

- RIGHT-OF-WAY LINE
- ////// BUILDING
- - - - BUILDING OVERHANG
- x - x 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)



0 70 140

SCALE IN FEET

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

FOR:  
BEE-JAY SCALES SITE  
SUNNYSIDE, WASHINGTON

SECOND HALF 2011 DETECTED  
GROUNDWATER CONCENTRATIONS  
ABOVE CLEANUP LEVELS

FIGURE:  
3-1

JOB NUMBER:  
213201072.400.002

DRAWN BY:  
JRO

CHECKED BY:  
MRP

APPROVED BY:  
AM

DATE:  
10/19/11

# **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
✓ 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
3 SKIP	MW-5			741.93		16.13
✓ 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
✓ *I 9	MW-12	9/12/2011	1525	741.82	8.85	17.65
✓ *I 10	MW-13	9/14/2011	1057	742.20	9.76	18.90
✓ *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

WASP RIVE IN TAIL LIGHT

under pallette Broken MW lid

\*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: 09-13-11 WELL NO. MW-1  
 FACILITY NAME: Bee Jay Scales TEMPERATURE: 60 °F or °C  
 FIELD PERSONNEL: J. Daughmair 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: 22.65 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

**OBSERVATIONS:**

1 Min = 15 sec x 4

Time	Cum. PV (Gal)	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	U/M
0:30	0.000	--	8.47	-267.3	7.06	58.03	566	12.02	0.08
0:45	0.063	--	1.62	-268.5	6.40	58.11	473	12.01	0.08
0:50	0.126	--	1.23	-285.8	7.24	58.09	464	12.01	0.08
0:55	0.189	--	1.15	-298.9	7.35	58.30	462	12.02	0.08
1:00	0.252	--	1.10	-300.5	7.42	58.32	442	12.02	0.08
1:05	0.315	--	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

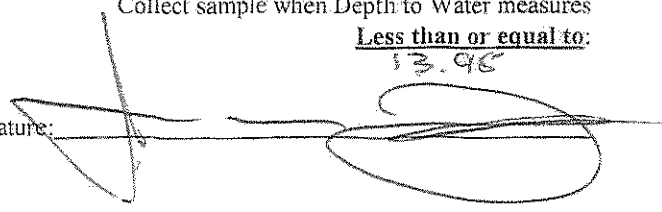
Sample Number(s)	Time	Size/Number of Container(s)	Preservative
<u>MW01-091311-0</u>	<u>0930</u>	<u>40ml / 2</u>	<u>No preservative / H<sub>2</sub>SO<sub>4</sub></u>
<u>MW01-091311-1</u>	<u>0936</u>	<u>40ml / 2</u>	<u>H<sub>2</sub>SO<sub>4</sub> / No preservative</u>

**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/in. ft.  
 4-inch hole.....0.65 gal/in. ft.  
 6.5-inch hole.....1.70 gal/in. ft.  
 8-inch hole.....2.60 gal/in. ft.  
 10-inch hole.....4.10 gal/in. 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: 

**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	=	
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water	=	
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water	=	

PURGING METHOD: LOW FLOW DURATION: 12 minutes

**OBSERVATIONS:**

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	L/m
0.016	0857	--	4.00	-180.8	8.45	57.71°F	692	6.82	0.0
0.080	0900	--	2.60	-202.10	8.47	57.97°F	686	7.14	0.1
0.090	0903	--	1.94	-221.8	8.46	58.04°F	678	7.47	0.1
0.050	0906	--	1.72	-212.2	8.46	58.29°F	678	7.65	0.1
0.090	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
<u>MW03-091411-0</u>	<u>0915</u>	<u>(2) 500 ml plastic (1) 250 ml glass (1) 50 ml plastic (2) 100 ml vials</u>	<u>HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, no preservative</u>

**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:

Signature: D. Hanson 9.64

**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

**OBSERVATIONS:**

25/1000 = 0.025

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL <u>4m</u>
0.026	1229	--	4.09	-186.2	7.98	60.28	5929	8.66 0.10
0.040	1232	--	1.23	-217.9	7.99	60.84	5948	8.70 0.10
0.040	1235	--	0.90	-229.1	8.00	61.04	5969	8.76 0.10
0.040	1238	--	0.83	-250.6	7.98	61.07	5984	8.80 0.10
0.040	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
<u>MW04-091411-0</u>	<u>1245</u>	<u>(2) 500 ml plastic (1) 250 ml plastic</u>	<u>Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, none</u>
<u>MW04-091411-2</u>	<u>1255</u>	<u>(2) 40 ml vials (1) 500 ml glass (2) 1000 ml glass (same)</u>	<u>HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HCl, (same)</u>

**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/in ft.  
 4-inch hole.....0.65 gal/in ft.  
 6.5-inch hole.....1.70 gal/in ft.  
 8-inch hole.....2.60 gal/in ft.  
 10-inch hole.....4.10 gal/in ft.

**Recharge Calculation at Time of Sample Collection:**

Total Depth of Well:  
 Original Water Column: 8.55 x 0.80 = -(6.84)  
 Collect sample when Depth to Water measures Less than or equal to:

Signature: Debbie Hanson 10.16



**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	=	
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water	=	
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water	=	

PURGING METHOD: Low Flow DURATION: 12 minutes

**OBSERVATIONS:**

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

*0.025 x 4  
0.025 x 4*

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
<u>MW06-091311-0</u>	<u>1055</u>	<u>(1) 500ml plastic (2) 250 ml plastic (4) 40 ml glass vial</u>	<u>H2SO4, none, HNO3</u>

**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: Electric Hanson

**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  
 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:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>	
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water _____ = _____ PV (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:**

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL
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

*15 sec measured x 4 = 0.62 x 4 = 2.48*

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
<u>MW07-091311-0</u>	<u>1015</u>	<u>40 mL / 2</u>	<u>No preservative / H<sub>2</sub>SO<sub>4</sub></u>

**COMMENTS:** NONE Screen interval sampled to 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 or DTW

Signature: Retrieve 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  
 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:**

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL
<u>0.032</u>	<u>1444</u>	<u>--</u>	<u>2.06</u>	<u>-222.8</u>	<u>7.88</u>	<u>62.53°F</u>	<u>1688</u>	<u>7.31 0.12</u>
<u>0.095</u>	<u>1447</u>	<u>--</u>	<u>1.19</u>	<u>-252.8</u>	<u>7.83</u>	<u>61.96°F</u>	<u>1679</u>	<u>7.33 0.12</u>
<u>0.095</u>	<u>1450</u>	<u>--</u>	<u>1.11</u>	<u>-264.3</u>	<u>7.81</u>	<u>61.87°F</u>	<u>1674</u>	<u>7.33 0.12</u>
<u>0.095</u>	<u>1453</u>	<u>--</u>	<u>1.01</u>	<u>-245.1</u>	<u>7.80</u>	<u>61.51°F</u>	<u>1660</u>	<u>7.37 0.12</u>
<u>0.095</u>	<u>1456</u>	<u>--</u>	<u>0.98</u>	<u>-263.5</u>	<u>7.79</u>	<u>61.65°F</u>	<u>1661</u>	<u>7.38 0.12</u>
_____	_____	<u>--</u>	_____	_____	_____	_____	_____	_____
_____	_____	<u>--</u>	_____	_____	_____	_____	_____	_____
_____	_____	<u>--</u>	_____	_____	_____	_____	_____	_____

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
<u>MW08-091311-0</u>	<u>1500</u>	<u>(1) 500mL plastic, (1) 500mL glass</u>	<u>H2SO4, none</u>
<u>MW08-091311-2</u>	<u>1505</u>	<u>(1) 250mL plastic, (1) 40mL glass</u> <u>(1) 500mL plastic, (1) 500mL glass</u> <u>(1) 250mL plastic, (1) 40mL glass</u>	<u>H2SO4, none</u>

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

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

Signature: Debbie Hanson 9.22

**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:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>	
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water = _____ PV (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	<u>4m</u>
<u>0.032</u>	<u>1143</u>	<u>—</u>	<u>7.00</u>	<u>-200.6</u>	<u>7.32</u>	<u>62.15°F</u>	<u>4007</u>	<u>8.52</u>	<u>0.12</u>
<u>0.095</u>	<u>1146</u>	<u>—</u>	<u>2.52</u>	<u>-211.1</u>	<u>7.27</u>	<u>62.67°F</u>	<u>4027</u>	<u>8.50</u>	<u>0.12</u>
<u>0.095</u>	<u>1149</u>	<u>—</u>	<u>1.38</u>	<u>-240.4</u>	<u>7.23</u>	<u>62.94°F</u>	<u>4044</u>	<u>8.55</u>	<u>0.12</u>
<u>0.095</u>	<u>1152</u>	<u>—</u>	<u>1.22</u>	<u>-233.5</u>	<u>7.21</u>	<u>63.04°F</u>	<u>4055</u>	<u>8.56</u>	<u>0.12</u>
<u>0.095</u>	<u>1155</u>	<u>—</u>	<u>1.07</u>	<u>-234.6</u>	<u>7.19</u>	<u>63.24</u>	<u>4068</u>	<u>8.56</u>	<u>0.12</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

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
<u>MW09-091411-0</u>	<u>1200</u>	<u>(7) 40ml vials (2) 1000ml glass</u> <u>(1) 500ml glass (1) 500ml glass</u> <u>(1) 250ml plastic (1) 250ml poly</u>	<u>H2SO4, HCl, Na2S2O3,</u> <u>none</u>
_____	_____	_____	_____
_____	_____	_____	_____

**COMMENTS:**  
Need to retap or retighten 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: Debbie 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, B. 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:**

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL	
<u>0.026</u>	<u>1117</u>	<u>--</u>	<u>4.33</u>	<u>-276.6</u>	<u>8.34</u>	<u>61.15°F</u>	<u>454</u>	<u>6.71</u>	<u>0.14</u>
<u>0.04</u>	<u>1120</u>	<u>--</u>	<u>1.02</u>	<u>-291.7</u>	<u>8.33</u>	<u>61.00°F</u>	<u>451</u>	<u>6.65</u>	<u>0.10</u>
<u>0.08</u>	<u>1123</u>	<u>--</u>	<u>0.88</u>	<u>-292.8</u>	<u>8.16</u>	<u>61.06°F</u>	<u>450</u>	<u>6.65</u>	<u>0.10</u>
<u>0.08</u>	<u>1126</u>	<u>--</u>	<u>0.74</u>	<u>-304.3</u>	<u>8.31</u>	<u>60.95°F</u>	<u>447</u>	<u>6.66</u>	<u>0.10</u>
<u>0.08</u>	<u>1129</u>	<u>--</u>	<u>0.72</u>	<u>-289.00</u>	<u>8.30</u>	<u>61.03°F</u>	<u>448</u>	<u>6.66</u>	<u>0.10</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

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
<u>MW10-091311-0</u>	<u>1133</u>	<u>ten (10) 40ml glass vials (2) 500ml plastic, (1) 250ml plastic</u>	<u>HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, No preservative</u>
_____	_____	_____	_____
_____	_____	_____	_____

**COMMENTS:** NONE. Sample collected at bottom 4 feet of screen.

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

**Stantec Consulting Corporation**  
**GROUNDWATER SAMPLING FIELD DATA SHEET**

Stantec Project No.: 213201072 DATE: 9-13-11 WELL NO. MW-11  
 FACILITY NAME: Bee Jay 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 <sup>JD 9-13-11</sup>	ORP	pH <sup>2.04</sup>	Temp.	Conduct.	SWL <sup>4/4</sup>
<u>0.032</u>	<u>1212</u>	<u>--</u>	<u>5.14</u>	<u>-232.9</u>	<u>7.87</u>	<u>67.28°F</u>	<u>562</u>	<u>6.10 0.12</u>
<u>0.095</u>	<u>1215</u>	<u>--</u>	<u>2.70</u>	<u>-214.6</u>	<u>7.87</u>	<u>68.13°F</u>	<u>566</u>	<u>6.10 0.12</u>
<u>0.095</u>	<u>1218</u>	<u>--</u>	<u>2.00</u>	<u>-253.3</u>	<u>7.80</u>	<u>67.92°F</u>	<u>567</u>	<u>6.07 0.12</u>
<u>0.095</u>	<u>1221</u>	<u>--</u>	<u>1.65</u>	<u>-264.8</u>	<u>7.74</u>	<u>68.12°F</u>	<u>569</u>	<u>6.07 0.12</u>
<u>0.095</u>	<u>1224</u>	<u>--</u>	<u>1.46</u>	<u>-264.5</u>	<u>7.74</u>	<u>68.00°F</u>	<u>569</u>	<u>6.07 0.12</u>
<u>0.095</u>	<u>1227</u>	<u>--</u>	<u>1.35</u>	<u>-261.7</u>	<u>7.74</u>	<u>67.81°F</u>	<u>568</u>	<u>6.07 0.12</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

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
<u>MW11-091311-0</u>	<u>1230</u>	<u>(2) 500ml plastic, (1) 250ml (7) 40 ml vials</u>	<u>HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, No preservative</u>
_____	_____	_____	_____
_____	_____	_____	_____

**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: 12.15 x 0.80 = -(9.72)  
 Collect sample when Depth to Water measures  
Less than or equal to:  
8.48

Signature: Electric Hanson

**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:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>	
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water _____ = _____ PV (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	LM
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	6.80	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
<u>MW12-091411-0</u>	<u>0955</u>	<u>(2) 500 mL plastic (1) 500 mL glass (7) 40 mL vials (2) 100 mL glass (1) 250 mL plastic (1) 250 polyisotope</u>	<u>None, H<sub>2</sub>SO<sub>4</sub>, HCl, Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub></u>

**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: D. 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. Daughinals, 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:

	<u>3 Well Vols.</u>	<u>5 Well Vols.</u>			
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water	=	PV (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 40

**OBSERVATIONS:**

Cum. PV (Gal)	Time	Turbidity	DO	ORP	pH	Temp.	Conduct.	SWL
<u>0.026</u>	<u>1058</u>	<u>--</u>	<u>2.00</u>	<u>-243.0</u>	<u>7.68</u>	<u>62.86°F</u>	<u>1364</u>	<u>9.95 0.10</u>
<u>0.050</u>	<u>1101</u>	<u>--</u>	<u>0.80</u>	<u>-260.5</u>	<u>7.59</u>	<u>63.92°F</u>	<u>1331</u>	<u>9.93 0.10</u>
<u>0.050</u>	<u>1104</u>	<u>--</u>	<u>0.70</u>	<u>-245.8</u>	<u>7.54</u>	<u>64.85°F</u>	<u>1317</u>	<u>9.92 0.11</u>
<u>0.050</u>	<u>1107</u>	<u>--</u>	<u>0.64</u>	<u>-244.6</u>	<u>7.51</u>	<u>65.54°F</u>	<u>1302</u>	<u>9.92 0.10</u>
<u>0.050</u>	<u>1110</u>	<u>--</u>	<u>0.67</u>	<u>-256.0</u>	<u>7.50</u>	<u>65.40°F</u>	<u>1252</u>	<u>9.92 0.10</u>

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: 9.90

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
<u>MW13-091411-0</u>	<u>1115</u>	<u>(2) 500ml plastic (1) 250ml glass</u> <u>(4) 40 ml vial (2) 1000ml glass</u> <u>(1) 250ml plastic</u>	<u>no preservative</u> <u>HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub></u>

**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 of well.

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

**Recharge Calculation at Time of Sample Collection:**  
 Total Depth of Well:  
 Original Water Column: 9.14 x 0.80 = -(7.31)  
 Collect sample when Depth to Water measures  
Less than or equal to:

Signature: D. Hanson 11.59



## **Appendix B**

# **Analytical Laboratory Reports**

## 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: WAClient Sample DescriptionMW01-091311-0 Grab Water Sample  
MW01-091311-1 Grab Water Sample  
MW07-091311-0 Grab Water Sample  
MW06-091311-0 Grab Water Sample  
MW10-091311-0 Grab Water Sample  
MW11-091311-0 Grab Water Sample  
TB-1 Water SampleLancaster Labs (LLI) #6404461  
6404462  
6404463  
6404464  
6404465  
6404466  
6404467

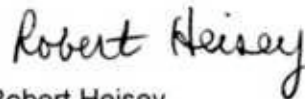
The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC      STANTEC International, Inc.  
COPY TO

Attn: Marisa Patterson

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

Respectfully Submitted,



Robert Heisey  
Senior Specialist



# 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

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

Submitted: 09/14/2011 09:05

Reported: 09/26/2011 11:25

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>Wet Chemistry</b>			<b>EPA 353.2</b>	<b>mg/l</b>	
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



# 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:** MW01-091311-1 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

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

Submitted: 09/14/2011 09:05

Reported: 09/26/2011 11:25

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>Wet Chemistry</b>			<b>EPA 353.2</b>	<b>mg/l</b>	
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



# 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:** 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

STANTEC International, Inc.

2321 Club Meridian Drive

**Submitted:** 09/14/2011 09:05

Suite E

**Reported:** 09/26/2011 11:25

Okemos MI 48864

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>Wet Chemistry</b>			<b>EPA 353.2</b>	<b>mg/l</b>	
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



# 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:** 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

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

Submitted: 09/14/2011 09:05

Reported: 09/26/2011 11:25

M06--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>Metals</b>					
		<b>SW-846 6010B</b>	<b>mg/l</b>	<b>mg/l</b>	
07035	Arsenic	7440-38-2	0.0273	0.0200	1
<b>Wet Chemistry</b>					
		<b>EPA 300.0</b>	<b>mg/l</b>	<b>mg/l</b>	
00228	Sulfate	14808-79-8	46.7	20.0	20
		<b>EPA 353.2</b>	<b>mg/l</b>	<b>mg/l</b>	
00220	Nitrate Nitrogen	14797-55-8	3.6	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
		<b>SM20 2320 B</b>	<b>mg/l as CaCO3</b>	<b>mg/l as CaCO3</b>	
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
		<b>SM20 4500 H/B</b>	<b>Std. Units</b>	<b>Std. Units</b>	
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



# Analysis Report

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

Page 1 of 3

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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/14/2011 09:05

Suite E

Reported: 09/26/2011 11:25

Okemos MI 48864

--M10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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





# 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:** 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

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

Submitted: 09/14/2011 09:05

Reported: 09/26/2011 11:25

--M10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS Volatiles SW-846 8260B ug/l</b>					
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
<b>GC Volatiles ECY 97-602 NWTPH-Gx ug/l</b>					
08273	NWTPH-Gx water C7-C12	n.a.	< 250	250	1
<b>Metals SW-846 6010B mg/l</b>					
07035	Arsenic	7440-38-2	0.0202	0.0200	1
<b>Wet Chemistry EPA 300.0 mg/l</b>					
00228	Sulfate	14808-79-8	37.8	20.0	20
<b>EPA 353.2 mg/l</b>					
00220	Nitrate Nitrogen	14797-55-8	3.0	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
<b>SM20 2320 B mg/l as CaCO3</b>					
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
<b>SM20 4500 H/B Std. Units</b>					
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



# 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: 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

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

Submitted: 09/14/2011 09:05

Reported: 09/26/2011 11:25

--M10

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution Factor
					Date	Time		
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



# 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:** 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

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

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

--M11

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

**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

STANTEC International, Inc.

Submitted: 09/14/2011 09:05

2321 Club Meridian Drive

Reported: 09/26/2011 11:25

Suite E

Okemos MI 48864

TB-1M

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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



# 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: 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

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

Submitted: 09/14/2011 09:05

Reported: 09/26/2011 11:25

TB-1M

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

## Quality Control Summary

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

Group Number: 1266152

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

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank LOQ</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
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

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank LOQ</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
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.

## Quality Control Summary

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

Group Number: 1266152

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank LOQ</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
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 NWTPH-Gx water C7-C12	Sample number(s): 6404465-6404466 < 250      250.	ug/l	100	100	75-135	0	30
Batch number: 112585705005 Arsenic	Sample number(s): 6404464-6404466 < 0.0200      0.0200	mg/l	105		89-115		
Batch number: 11257105101B Nitrite Nitrogen	Sample number(s): 6404461-6404466 < 0.050      0.050	mg/l	90		90-110		
Batch number: 11258106101B Nitrate Nitrogen	Sample number(s): 6404461-6404466 < 0.10      0.10	mg/l	102		90-110		
Batch number: 11263196903B Sulfate	Sample number(s): 6404464-6404466 < 1.0      1.0	mg/l	94		90-110		
Batch number: 11258020002A pH	Sample number(s): 6404464-6404466		100		99-101		
Batch number: 11258020201B Alkalinity to pH 4.5	Sample number(s): 6404464-6404466 < 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.
- (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

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

Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u>	<u>MS</u> <u>%REC</u>	<u>MSD</u> <u>%REC</u>	<u>MS/MSD</u> <u>Limits</u>	<u>RPD</u>	<u>BKG</u> <u>Conc</u>	<u>DUP</u> <u>Conc</u>	<u>DUP</u> <u>RPD</u>	<u>Dup RPD</u> <u>Max</u>
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

<u>Analysis Name</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>MS/MSD Limits</u>	<u>RPD RPD</u>	<u>RPD MAX</u>	<u>BKG Conc</u>	<u>DUP Conc</u>	<u>DUP RPD</u>	<u>Dup RPD Max</u>
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

<u>Analysis Name</u>	<u>MS</u> <u>%REC</u>	<u>MSD</u> <u>%REC</u>	<u>MS/MSD</u> <u>Limits</u>	<u>RPD</u> <u>RPD</u>	<u>RPD</u> <u>MAX</u>	<u>BKG</u> <u>Conc</u>	<u>DUP</u> <u>Conc</u>	<u>DUP</u> <u>RPD</u>	<u>Dup RPD</u> <u>Max</u>
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.

## Quality Control Summary

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

Group Number: 1266152

### 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



015276  
 Acct. #: 11842 Sample #: 6404461-67 g/r# 1266152  
 For Lancaster Laboratories use only

Facility #: <u>Bee Jay Scales</u> Site Address: <u>116 N. 1st Street</u> Chevron PM: <u>Caryl Weekley</u> Lead Consultant: <u>Stantec</u> Consultant/Office: <u>Stantec / Okemos, MI</u> Consultant Prj. Mgr.: <u>Marisa Patterson</u> Consultant Phone #: <u>(517)-202-0459</u> Fax #: <u>(517)349-6863</u> Sampler: <u>Justin Dauphinais</u> Service Order #: _____ <input type="checkbox"/> Non SAR: _____				<b>Matrix</b> Potable <input type="checkbox"/> NPDES <input type="checkbox"/> Water <input type="checkbox"/> Air <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/>		<b>Analyses Requested</b> Preservation Codes BTEX + MTBE 8021 <input type="checkbox"/> 8260 <input type="checkbox"/> Naphth <input type="checkbox"/> VOC's 8260 B Oxygenates MW/TPH G (Mod ECV 97-602) <input type="checkbox"/> TPH D <input type="checkbox"/> Extended Rng. <input type="checkbox"/> Silica Gel Cleanup <input type="checkbox"/> Lead Total <input type="checkbox"/> Diss. <input type="checkbox"/> Method <input type="checkbox"/> Alkalinity (SU) 20 <input type="checkbox"/> 230 B N/TPH HClD <input type="checkbox"/> quantification Nitrate-N, Nitrite-N (53.2) <input type="checkbox"/> S Arsenic (EPA 6010 B) <input type="checkbox"/> Z PH (SM 20 4500 MB) <input type="checkbox"/> Sulfate (300.0) <input type="checkbox"/>										<b>Preservative Codes</b> H = HCl      T = Thiosulfate N = HNO <sub>3</sub> B = NaOH S = H <sub>2</sub> SO <sub>4</sub> O = Other <input type="checkbox"/> J value reporting needed <input type="checkbox"/> Must meet lowest detection limits possible for 8260 compounds 8021 MTBE Confirmation <input type="checkbox"/> Confirm MTBE + Naphthalene <input type="checkbox"/> Confirm highest hit by 8260 <input type="checkbox"/> Confirm all hits by 8260 <input type="checkbox"/> Run ___ oxy's on highest hit <input type="checkbox"/> Run ___ oxy's on all hits												
Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers	BTEX + MTBE	8021	8260	Naphth	VOC's	Oxygenates	MW/TPH G	TPH D	Lead Total	Diss.	Method	Alkalinity	N/TPH HClD	Nitrate-N, Nitrite-N	Arsenic	PH	Sulfate	Comments / Remarks	
MW01-091311-0	9-13-11	0930	X			X			2																			
MW01-091311-1	9-13-11	0936	X			X			2																			
MW07-091311-0	9-13-11	1015	X			X			2																			
MW06-091311-0	9-13-11	1055	X			X			7																			
MW10-091311-0	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																		

Turnaround Time Requested (TAT) (please circle) (STD. TAT)      72 hour      48 hour 24 hour          4 day          5 day	Relinquished by:	Date: 9-13-11	Time: 1400	Received by:	Date:	Time:
	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
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:
	Relinquished by Commercial Carrier: UPS      FedEx      Other _____	Temperature Upon Receipt <u>1.4</u> C°		Received by:	Date: 9/14/11	Time: 0905
				Custody Seals Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

# Explanation of Symbols and Abbreviations

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

<b>RL</b>	Reporting Limit	<b>BMQL</b>	Below Minimum Quantitation Level
<b>N.D.</b>	none detected	<b>MPN</b>	Most Probable Number
<b>TNTC</b>	Too Numerous To Count	<b>CP Units</b>	cobalt-chloroplatinate units
<b>IU</b>	International Units	<b>NTU</b>	nephelometric turbidity units
<b>umhos/cm</b>	micromhos/cm	<b>ng</b>	nanogram(s)
<b>C</b>	degrees Celsius	<b>F</b>	degrees Fahrenheit
<b>meq</b>	milliequivalents	<b>lb.</b>	pound(s)
<b>g</b>	gram(s)	<b>kg</b>	kilogram(s)
<b>ug</b>	microgram(s)	<b>mg</b>	milligram(s)
<b>ml</b>	milliliter(s)	<b>l</b>	liter(s)
<b>m3</b>	cubic meter(s)	<b>ul</b>	microliter(s)
<b>&lt;</b>	less than - The number following the sign is the <u>limit of quantitation</u> , the smallest amount of analyte which can be reliably determined using this specific test.		
<b>&gt;</b>	greater than		
<b>J</b>	estimated value – The result is $\geq$ the Method Detection Limit (MDL) and $<$ the Limit of Quantitation (LOQ).		
<b>ppm</b>	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.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	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	Inorganic Qualifiers
<b>A</b> TIC is a possible aldol-condensation product	<b>B</b> Value is $<$ CRDL, but $\geq$ IDL
<b>B</b> Analyte was also detected in the blank	<b>E</b> Estimated due to interference
<b>C</b> Pesticide result confirmed by GC/MS	<b>M</b> Duplicate injection precision not met
<b>D</b> Compound quantitated on a diluted sample	<b>N</b> Spike sample not within control limits
<b>E</b> Concentration exceeds the calibration range of the instrument	<b>S</b> Method of standard additions (MSA) used for calculation
<b>N</b> Presumptive evidence of a compound (TICs only)	<b>U</b> Compound was not detected
<b>P</b> Concentration difference between primary and confirmation columns $>$ 25%	<b>W</b> Post digestion spike out of control limits
<b>U</b> Compound was not detected	<b>*</b> Duplicate analysis not within control limits
<b>X,Y,Z</b> Defined in case narrative	<b>+</b> 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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## 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

<u>Client Sample Description</u>	<u>Lancaster Labs (LLI) #</u>
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

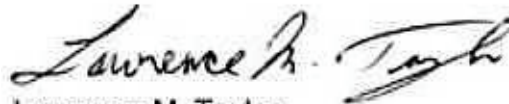
The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC      STANTEC International, Inc.  
COPY TO

Attn: Marisa Patterson

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

Respectfully Submitted,



Lawrence M. Taylor  
Senior Specialist





# Analysis Report

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

Page 1 of 1

**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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJS03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>Metals</b>					
		<b>SW-846 6010B</b>	<b>mg/l</b>	<b>mg/l</b>	
07035	Arsenic	7440-38-2	0.0426	0.0200	1
<b>Wet Chemistry</b>					
		<b>EPA 353.2</b>	<b>mg/l</b>	<b>mg/l</b>	
00220	Nitrate Nitrogen	14797-55-8	10.0	1.0	10
00219	Nitrite Nitrogen	14797-65-0	1.2	0.10	2
		<b>SM20 2320 B</b>	<b>mg/l as CaCO3</b>	<b>mg/l as CaCO3</b>	
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
		<b>SM20 4500 H/B</b>	<b>Std. Units</b>	<b>Std. Units</b>	
00200	pH	n.a.	8.3	0.010	1
		<b>SM20 4500 NH3 D</b>	<b>mg/l</b>	<b>mg/l</b>	
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



# Analysis Report

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Page 1 of 3

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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS Volatiles SW-846 8260B ug/l</b>					
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
<b>Herbicides SW-846 8151A ug/l</b>					
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.					
<b>Metals SW-846 6010B mg/l</b>					
07035	Arsenic	7440-38-2	0.167	0.0200	1
01754	Iron	7439-89-6	< 0.200	0.200	1
<b>Wet Chemistry EPA 300.0 mg/l</b>					
00224	Chloride	16887-00-6	491	80.0	200
00228	Sulfate	14808-79-8	1,280	200	200
<b>EPA 353.2 mg/l</b>					
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.					
<b>SM20 2320 B mg/l as CaCO3</b>					
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
<b>SM20 4500 H/B Std. Units</b>					
00200	pH	n.a.	7.0	0.010	1

**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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJS12

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



# 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

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

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

BJS13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>Herbicides</b>					
		<b>SW-846 8151A</b>	<b>ug/l</b>	<b>ug/l</b>	
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
<b>Metals</b>					
		<b>SW-846 6010B</b>	<b>mg/l</b>	<b>mg/l</b>	
01754	Iron	7439-89-6	< 0.200	0.200	1
<b>Wet Chemistry</b>					
		<b>EPA 300.0</b>	<b>mg/l</b>	<b>mg/l</b>	
00228	Sulfate	14808-79-8	349	100	100
		<b>EPA 353.2</b>	<b>mg/l</b>	<b>mg/l</b>	
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
		<b>SM20 2320 B</b>	<b>mg/l as CaCO3</b>	<b>mg/l as CaCO3</b>	
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
		<b>SM20 4500 H/B</b>	<b>Std. Units</b>	<b>Std. Units</b>	
00200	pH	n.a.	7.4	0.010	1
		<b>SM20 4500 NH3 D</b>	<b>mg/l</b>	<b>mg/l</b>	
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

**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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS13

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution Factor
					Date	Time		
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



# 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: 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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS Volatiles SW-846 8260B ug/l ug/l</b>					
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
<b>Herbicides SW-846 8151A ug/l ug/l</b>					
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.					
<b>Wet Chemistry EPA 300.0 mg/l mg/l</b>					
00228	Sulfate	14808-79-8	250	100	100
<b>EPA 353.2 mg/l mg/l</b>					
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.					
<b>SM20 2320 B mg/l as CaCO3 mg/l as CaCO3</b>					
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
<b>SM20 4500 H/B Std. Units Std. Units</b>					
00200	pH	n.a.	7.2	0.010	1
<b>SM20 4500 NH3 D mg/l mg/l</b>					
10695	Ammonia-Nitrogen	7664-41-7	120	1.5	10





# 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: 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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS09

### 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		Analyst	Dilution Factor
					Date	Time		
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

**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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS Volatiles SW-846 8260B ug/l ug/l</b>					
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
<b>Herbicides SW-846 8151A ug/l ug/l</b>					
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.					
<b>Metals SW-846 6010B mg/l mg/l</b>					
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
<b>Wet Chemistry EPA 300.0 mg/l mg/l</b>					
00228	Sulfate	14808-79-8	382	100	100
<b>EPA 353.2 mg/l mg/l</b>					
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
<b>SM20 2320 B mg/l as CaCO3 mg/l as CaCO3</b>					
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
<b>SM20 4500 H/B Std. Units Std. Units</b>					
00200	pH	n.a.	7.7	0.010	1



# 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:** 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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJS04

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

**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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJS42

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

2321 Club Meridian Drive

Submitted: 09/15/2011 09:20

Suite E

Reported: 09/27/2011 16:09

Okemos MI 48864

BJS42

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS Volatiles SW-846 8260B ug/l</b>					
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
<b>Herbicides SW-846 8151A ug/l</b>					
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
<b>Metals SW-846 6010B mg/l</b>					
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
<b>Wet Chemistry EPA 300.0 mg/l</b>					
00228	Sulfate	14808-79-8	< 5.0	5.0	5
<b>EPA 353.2 mg/l</b>					
00220	Nitrate Nitrogen	14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
<b>SM20 2320 B mg/l as CaCO3</b>					
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
<b>SM20 4500 H/B Std. Units</b>					
00200	pH	n.a.	6.1	0.010	1
<b>SM20 4500 NH3 D mg/l</b>					
10695	Ammonia-Nitrogen	7664-41-7	< 0.15	0.15	1



# 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: 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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJS42

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

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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJST2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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



**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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJST2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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



# 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: 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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJST3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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



# 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: 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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJST3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJST4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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



# 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: 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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJST4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJST5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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

**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

STANTEC International, Inc.

Submitted: 09/15/2011 09:20

2321 Club Meridian Drive

Reported: 09/27/2011 16:09

Suite E

Okemos MI 48864

BJST5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
<b>GC/MS</b>	<b>Volatiles</b>	<b>SW-846 8260B</b>	<b>ug/l</b>	<b>ug/l</b>	
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



# 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: 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

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

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

BJS08

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





# Analysis Report

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

Page 1 of 1

**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

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

Submitted: 09/15/2011 09:20

Reported: 09/27/2011 16:09

BJS82

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

## Quality Control Summary

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

Group Number: 1266541

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

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank LOQ</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
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.

## Quality Control Summary

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

Group Number: 1266541

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank LOQ</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
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.  
 Reported: 09/27/11 at 04:09 PM

Group Number: 1266541

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

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

\*- 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.  
Reported: 09/27/11 at 04:09 PM

Group Number: 1266541

### 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



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

C# 1266541

Facility #: <u>Bee Jay Scales</u> Site Address: <u>116 N. 1st Street</u> Chevron PM: <u>Caryl Weekley</u> Lead Consultant: <u>Stantec</u> Consultant/Office: <u>Stantec Okemos, MI</u> Consultant Prj. Mgr.: <u>Marisa Patterson</u> Consultant Phone #: <u>(517)-202-0459</u> Fax #: <u>(517) 349-6863</u> Sampler: <u>Justin Daughnats</u> Service Order #: _____ <input type="checkbox"/> Non SAR: _____				Matrix <input type="checkbox"/> Potable <input type="checkbox"/> NPDES <input type="checkbox"/> Soil <input type="checkbox"/> Water <input type="checkbox"/> Oil <input type="checkbox"/> Air		Analyses Requested Preservation Codes # <u>2</u> Arsenic <u>601B</u> VOCs <u>826B</u> Ammonia-N <u>500B</u> PH <u>500B</u> Sulfate <u>500B</u> Nitrate-N <u>500B</u> Nitrate as Nitrate <u>500B</u> Arsenic, Iron, Manganese Chloride, Sulfate <u>3000</u>										Preservative Codes H = HCl    T = Thiosulfate N = HNO <sub>3</sub> B = NaOH S = H <sub>2</sub> SO <sub>4</sub> O = Other <input type="checkbox"/> J value reporting needed <input type="checkbox"/> Must meet lowest detection limits possible for 8260 compounds 8021 MTBE Confirmation <input type="checkbox"/> Confirm MTBE + Naphthalene <input type="checkbox"/> Confirm highest hit by 8260 <input type="checkbox"/> Confirm all hits by 8260 <input type="checkbox"/> Run ___ oxy's on highest hit <input type="checkbox"/> Run ___ oxy's on all hits							
Sample Identification		Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers										Comments / Remarks			
<u>MW03-091411-0</u>		<u>9-14-11</u>	<u>0915</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>6</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	@-48 hour TAT on Nitrate as Nitrate or samples for MW-4, MW-9, MW-12, and MW-13. Nitrate as well.	
<u>MW12-091411-0</u>		<u>9-14-11</u>	<u>0955</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>13</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	@MW13-091411-0 analyzed for Iron only, NO arsenic. No chloride for MW13	
<u>MW13-091411-0</u>		<u>9-14-11</u>	<u>1115</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>10</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW09-091411-0</u>		<u>9-14-11</u>	<u>1200</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>12</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW04-091411-0</u>		<u>9-14-11</u>	<u>1245</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>13</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>MW04-091411-2</u>		<u>9-14-11</u>	<u>1255</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>13</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>TB-2</u>		<u>9-14-11</u>	<u>---</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>TB-3</u>		<u>9-14-11</u>	<u>---</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>TB-4</u>		<u>9-14-11</u>	<u>---</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>TB-5</u>		<u>9-14-11</u>	<u>---</u>	<u>X</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>9</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		

Turnaround Time Requested (TAT) (please circle) <input checked="" type="radio"/> STD. TAT    72 hour    48 hour 24 hour    4 day    5 day				Relinquished by: <u>[Signature]</u> Date: <u>9-14-11</u> Time: <u>1500</u>		Received by: _____    Date: _____    Time: _____	
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: _____	
Relinquished by Commercial Carrier: UPS    FedEx    Other _____				Relinquished by: _____    Date: _____    Time: _____		Received by: <u>[Signature]</u> Date: <u>9/15/11</u> Time: <u>0920</u>	
Temperature Upon Receipt <u>1.5/3.2</u> C°				Custody Seals Intact? <input checked="" type="radio"/> Yes <input type="radio"/> 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.**  
Associate Engineer  
Stantec  
2321 Club Meridian Drive Suite E  
Okemos MI 48864  
Ph: (517) 349-9499 Ext. 275  
Fx: (517) 349-6863  
Cell: (517) 202-0459  
marisa.patterson@stantec.com  
**stantec.com**

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 Please consider the environment before printing this email.

9/15/2011

# Explanation of Symbols and Abbreviations

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

<b>RL</b>	Reporting Limit	<b>BMQL</b>	Below Minimum Quantitation Level
<b>N.D.</b>	none detected	<b>MPN</b>	Most Probable Number
<b>TNTC</b>	Too Numerous To Count	<b>CP Units</b>	cobalt-chloroplatinate units
<b>IU</b>	International Units	<b>NTU</b>	nephelometric turbidity units
<b>umhos/cm</b>	micromhos/cm	<b>ng</b>	nanogram(s)
<b>C</b>	degrees Celsius	<b>F</b>	degrees Fahrenheit
<b>meq</b>	milliequivalents	<b>lb.</b>	pound(s)
<b>g</b>	gram(s)	<b>kg</b>	kilogram(s)
<b>ug</b>	microgram(s)	<b>mg</b>	milligram(s)
<b>ml</b>	milliliter(s)	<b>l</b>	liter(s)
<b>m3</b>	cubic meter(s)	<b>ul</b>	microliter(s)
<b>&lt;</b>	less than - The number following the sign is the <u>limit of quantitation</u> , the smallest amount of analyte which can be reliably determined using this specific test.		
<b>&gt;</b>	greater than		
<b>J</b>	estimated value – The result is $\geq$ the Method Detection Limit (MDL) and $<$ the Limit of Quantitation (LOQ).		
<b>ppm</b>	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.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	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	Inorganic Qualifiers
<b>A</b> TIC is a possible aldol-condensation product	<b>B</b> Value is $<$ CRDL, but $\geq$ IDL
<b>B</b> Analyte was also detected in the blank	<b>E</b> Estimated due to interference
<b>C</b> Pesticide result confirmed by GC/MS	<b>M</b> Duplicate injection precision not met
<b>D</b> Compound quantitated on a diluted sample	<b>N</b> Spike sample not within control limits
<b>E</b> Concentration exceeds the calibration range of the instrument	<b>S</b> Method of standard additions (MSA) used for calculation
<b>N</b> Presumptive evidence of a compound (TICs only)	<b>U</b> Compound was not detected
<b>P</b> Concentration difference between primary and confirmation columns $>$ 25%	<b>W</b> Post digestion spike out of control limits
<b>U</b> Compound was not detected	<b>*</b> Duplicate analysis not within control limits
<b>X,Y,Z</b> Defined in case narrative	<b>+</b> 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  $^{15}\text{N}$  (‰, Air) and  $^{18}\text{O}$  (‰, VSMOW) Ratios of Dissolved Nitrate

ZymaX Lab Number	Sample ID	$\delta^{15}\text{N}$	$\delta^{18}\text{O}$
		NO3	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

	$\delta^{15}\text{N}$	$\delta^{18}\text{O}$
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 ( $1\sigma$ )	0.4	0.5
Expected Value of IAEA N3	4.7	25.6

### ZYMAX FORENSICS ISOTOPE LABORATORY ANALYSES

- Gas**  
 $^{13}\text{C}$  and D of C1 to C4;  $^{13}\text{C}$  of  $\text{CO}_2$ ; C-14 of Methane and  $\text{CO}_2$ ;  $^{34}\text{S}$  of  $\text{H}_2\text{S}$ ;  $^{15}\text{N}$  and  $^{18}\text{O}$  of  $\text{N}_2\text{O}$  gas
- Oil, Extract, Fraction and Kerogen**  
 Compound-Specific  $^{13}\text{C}$  and D of MTBE, Chlorinated Solvents, PAH, Gasoline, Oil; Bulk  $^{13}\text{C}$ , D/H,  $^{34}\text{S}$ , and  $^{15}\text{N}$
- Water**  
 D and  $^{18}\text{O}$ ;  $^{34}\text{S}$  and  $^{18}\text{O}$  of dissolved sulfate;  $^{34}\text{S}$  of dissolved  $\text{H}_2\text{S}$ ;  $^{37}\text{Cl}$ ,  $^{13}\text{C}$  and D of chlorinated solvents  
 $^{15}\text{N}$  and  $^{18}\text{O}$  of dissolved Nitrate;  $^{15}\text{N}$  of Ammonia;  $^{13}\text{C}$  of dissolved  $\text{CO}_2$  and Carbonate/Bicarbonate
- Soil and Minerals:**  
 $^{13}\text{C}$ ,  $^{15}\text{N}$ ,  $^{34}\text{S}$ , D/H,  $^{18}\text{O}$ ; C-14 of carbonate or organics



600 S Andreason 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 <b>Marisa Pattenson</b>	tel <b>(517) 202-0459</b>	fax <b>517.349.6863</b>	ANALYSIS REQUESTED										Turnaround Time				
company <b>Stantec</b>	proj <b>BeeJay Scales</b>																<input type="checkbox"/> ASAP <input type="checkbox"/> 3 Days <input type="checkbox"/> 1 Wk <input type="checkbox"/> 2 Wk <input type="checkbox"/> 3 Wk <input checked="" type="checkbox"/> std 1Month
address <b>2321 Club Meridian Drive Ste E Okemos MI, 48864</b>	proj # <b>213201072</b>	sampler <b>Justin Dauphinais</b>															# of containers
ZymaX use only	SAMPLE DESCRIPTION	Date Sampled	Time	Matrix	Preserve											Remarks	
	<b>42351-1 MW04-091411-0</b>	<b>9-14-11</b>	<b>1245</b>	<b>W</b>	<b>None</b>	<b>X</b>											
	<b>-2 MW09-091411-0</b>	<b>9-14-11</b>	<b>1200</b>	<b>W</b>	<b>None</b>	<b>X</b>											
	<b>-3 MW12-091411-0</b>	<b>9-14-11</b>	<b>0955</b>	<b>W</b>	<b>None</b>	<b>X</b>											
	<b>-4 MW13-091411-0</b>	<b>9-14-11</b>	<b>1115</b>	<b>W</b>	<b>None</b>	<b>X</b>											

Bill To: Same as Above <input checked="" type="checkbox"/> OR Company: Address:	Relinquished by: Signature <u>[Signature]</u> Print <b>Justin Dauphinais</b> Company <b>Stantec</b> Date <b>9-14-11</b> Time <b>1500</b>	Received by: Signature _____ Print _____ Company _____ Date _____ Time _____
Sample integrity upon receipt: Samples received intact <input type="checkbox"/> Samples received cold <input type="checkbox"/> Custody seals <input type="checkbox"/> Correct container types <input type="checkbox"/> PO# : _____ Quote yes no	Relinquished by: Signature _____ Print _____ Company _____ Date _____ Time _____	Received by ZymaX: Signature <u>[Signature]</u> Print <b>Ryan Woon</b> Company <b>ZymaX</b> Date <b>9/15/11</b> Time <b>9:51</b>

## **Appendix D**

# **Review of Nitrate Isotope and Concentration Data**



## Memo

**Stantec**

---

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

---

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

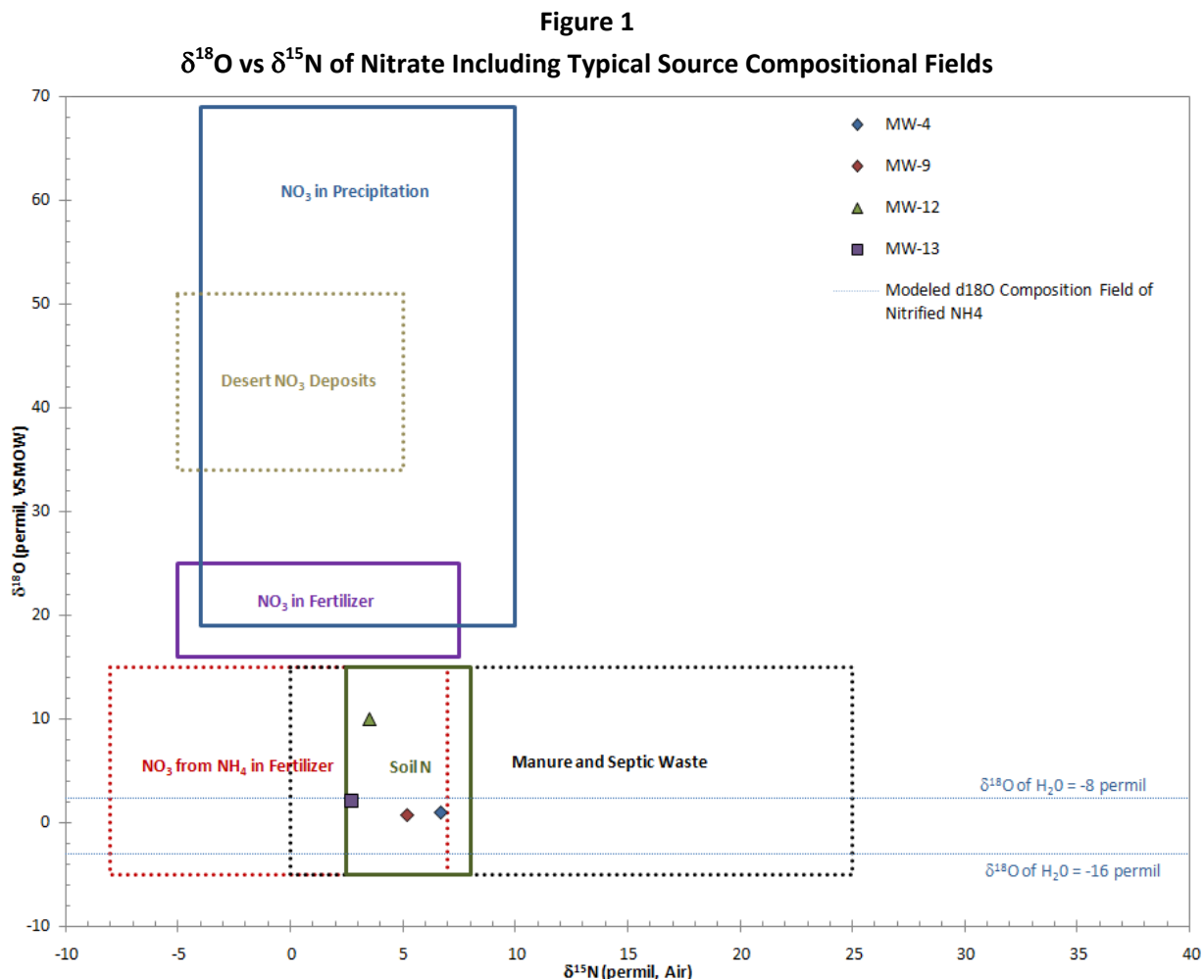
### **Summary of Findings**

- Most probable source of nitrate is through oxidation of historically discharged NH<sub>4</sub>-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  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  data for nitrate were reviewed to assess the potential sources of nitrate found in shallow groundwater near the Bee-Jay Scales site in Sunnyside, Washington. The  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  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  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  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)<sup>i</sup>.

Review of Figure 1 suggests an isotope composition that is consistent with nitrate derived from NH<sub>4</sub>-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<sub>4</sub>-based fertilizer, reported to have historically been produced and stored on-site at the facility. This pathway was further evaluated as follows.



During nitrification of  $\text{NH}_4$ -based fertilizers, the  $\delta^{18}\text{O}$  of the resultant nitrate molecule has been shown to be derived from two sources, including molecular oxygen ( $\text{O}_2$ ) and the water molecule itself. Given an atmospheric oxygen  $\delta^{18}\text{O}$  value of about +23 permil (VSMOW) and estimates of groundwater  $\delta^{18}\text{O}$  values in Washington of between -8 and -16 permil (VSMOW), the  $\delta^{18}\text{O}$  of nitrate was estimated to range between approximately -3 and +2.3 permil (VSMOW). As can be seen from Figure 1, the  $\delta^{18}\text{O}$  values of nitrate for MW-4, MW-9, and MW-13 fall within this estimated range. Conversely, MW-12 plots seemingly above the expected  $\delta^{18}\text{O}$  values of microbially mediated nitrification of  $\text{NH}_4$ -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 oxygen from  $\text{O}_2$  and ceases to proceed when  $\text{O}_2$  is depleted<sup>1</sup>.

During microbial respiration of oxygen, the  $\delta^{18}\text{O}$  of the  $\text{O}_2$  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  $^{16}\text{O}$  of  $\text{O}_2$  by microbes during nitrification could reasonably account for the somewhat more positive  $\delta^{18}\text{O}$  values of nitrate observed at MW-12.

November 3, 2011

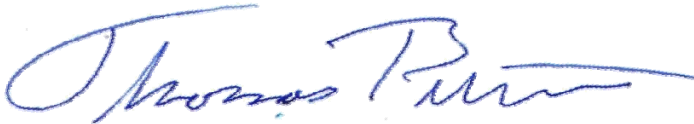
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Although other sources of nitrogen could exist with similar isotopic compositions, review of these preliminary data suggest that there is no conclusive evidence of multiple, isotopically distinct, sources at the site that cannot be reasonably accounted for via variations in isotope fractionation associated with microbial nitrification processes of an  $\text{NH}_4$ -fertilizer source.

Natural on-site denitrification reactions in groundwater were also assessed through review of average nitrate concentrations and  $\delta^{15}\text{N}$  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,

A handwritten signature in blue ink, appearing to read "Thomas Butler", with a stylized flourish at the end.

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

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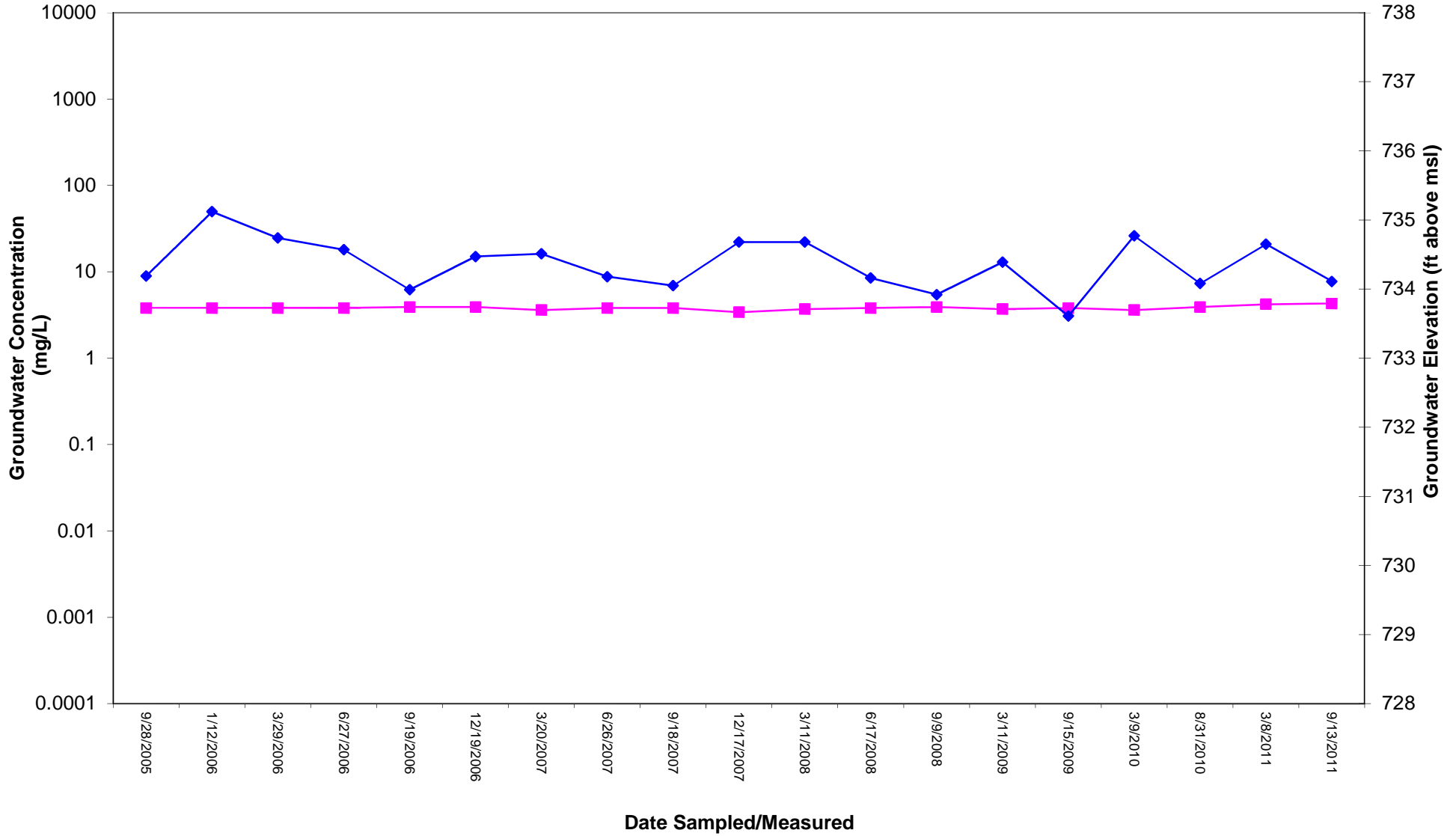
<sup>i</sup> Kendall, C and McDonnell, J.J. 2006. Isotopes Tracers in Catchment Hydrology.

# **Appendix E**

## **Hydrographs**

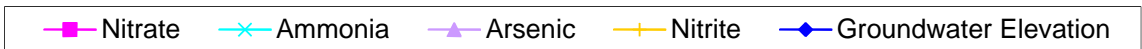
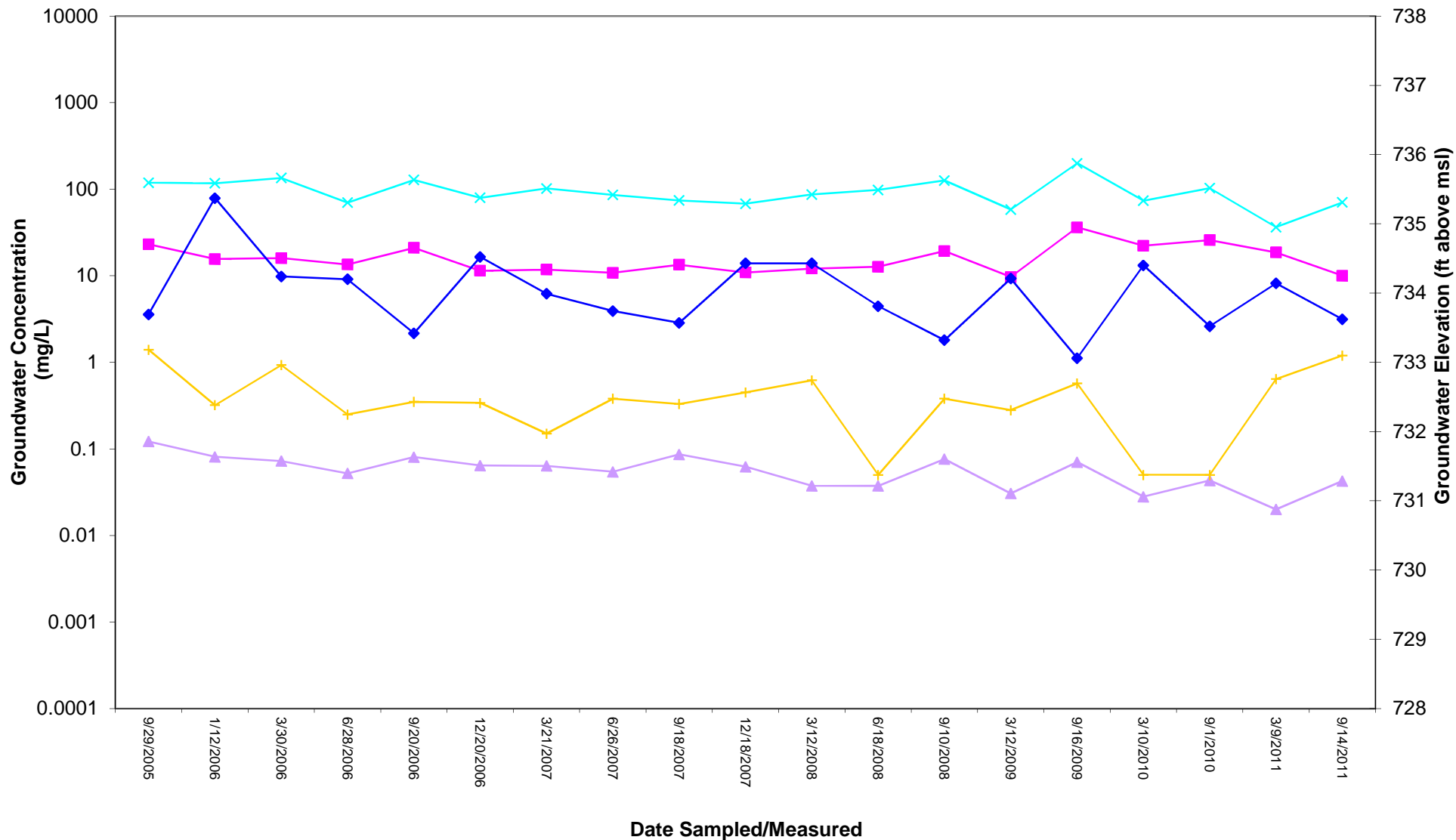


**MW-1 Groundwater Concentrations and Elevations vs. Time  
Bee-Jay Scales Site  
Sunnyside, Washington**

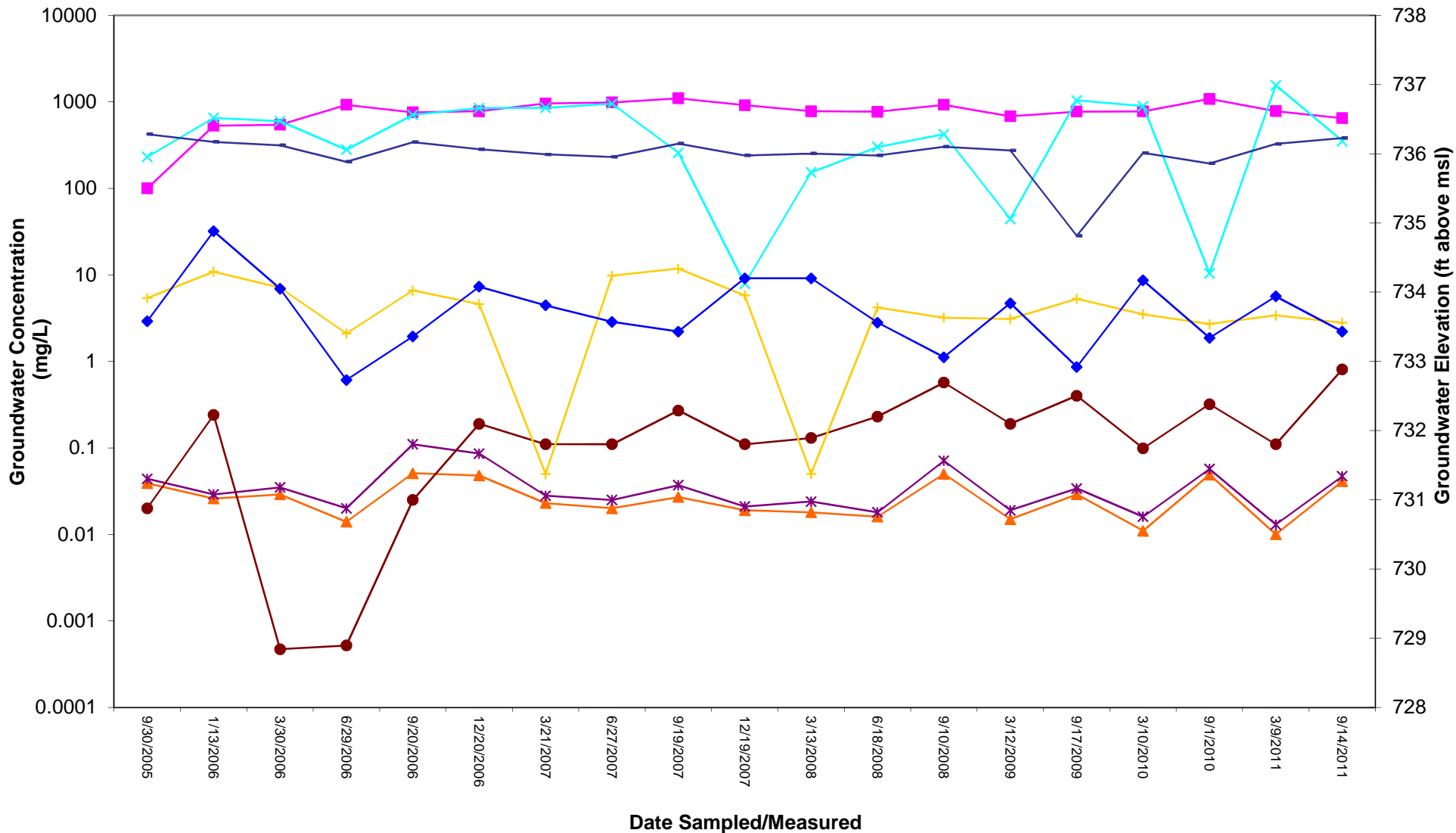


■ Nitrate     ◆ Groundwater Elevation

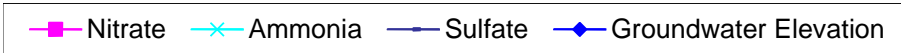
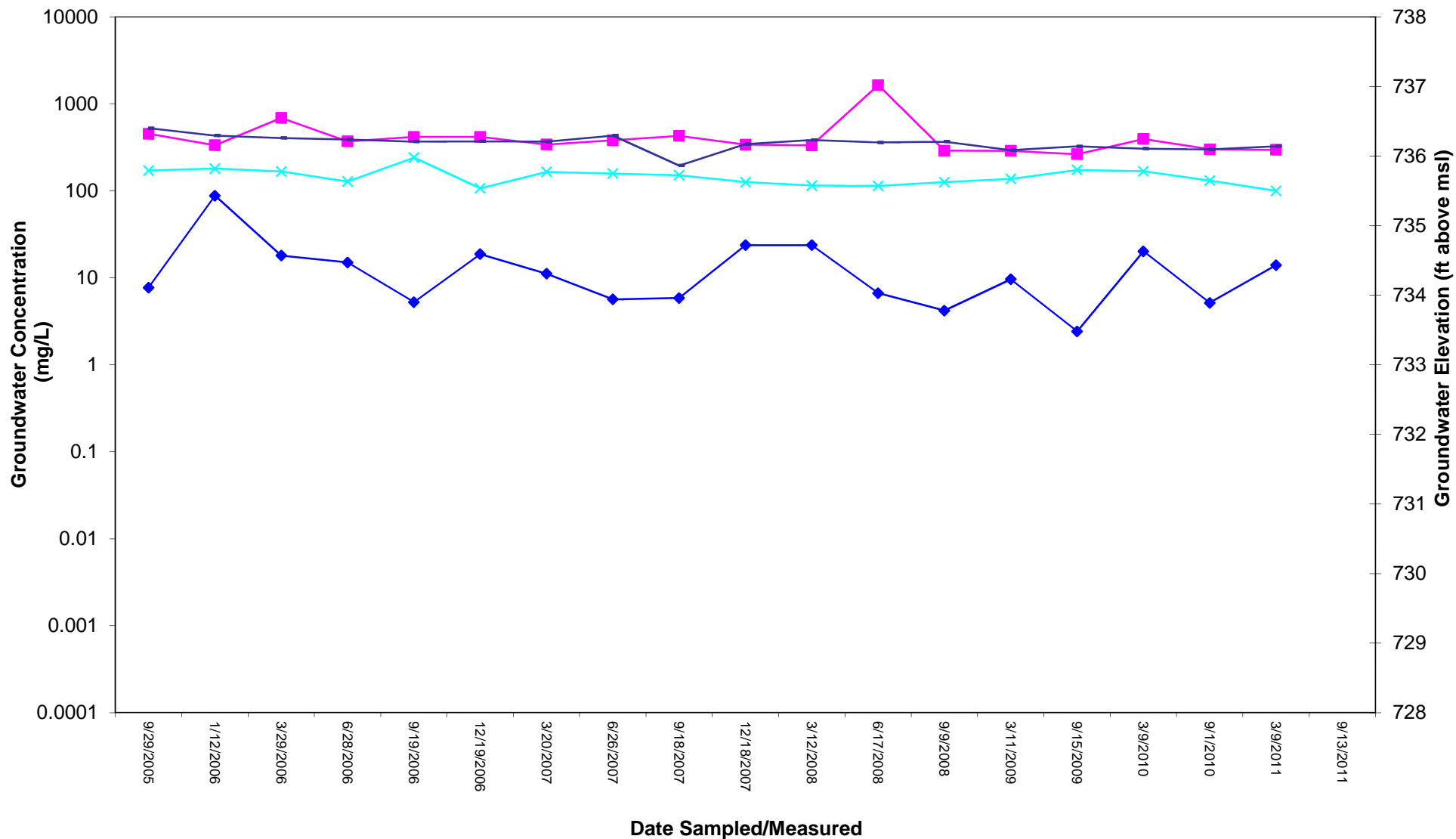
### MW-3 Groundwater Concentrations and Elevations vs. Time Bee-Jay Scales Site Sunnyside, Washington



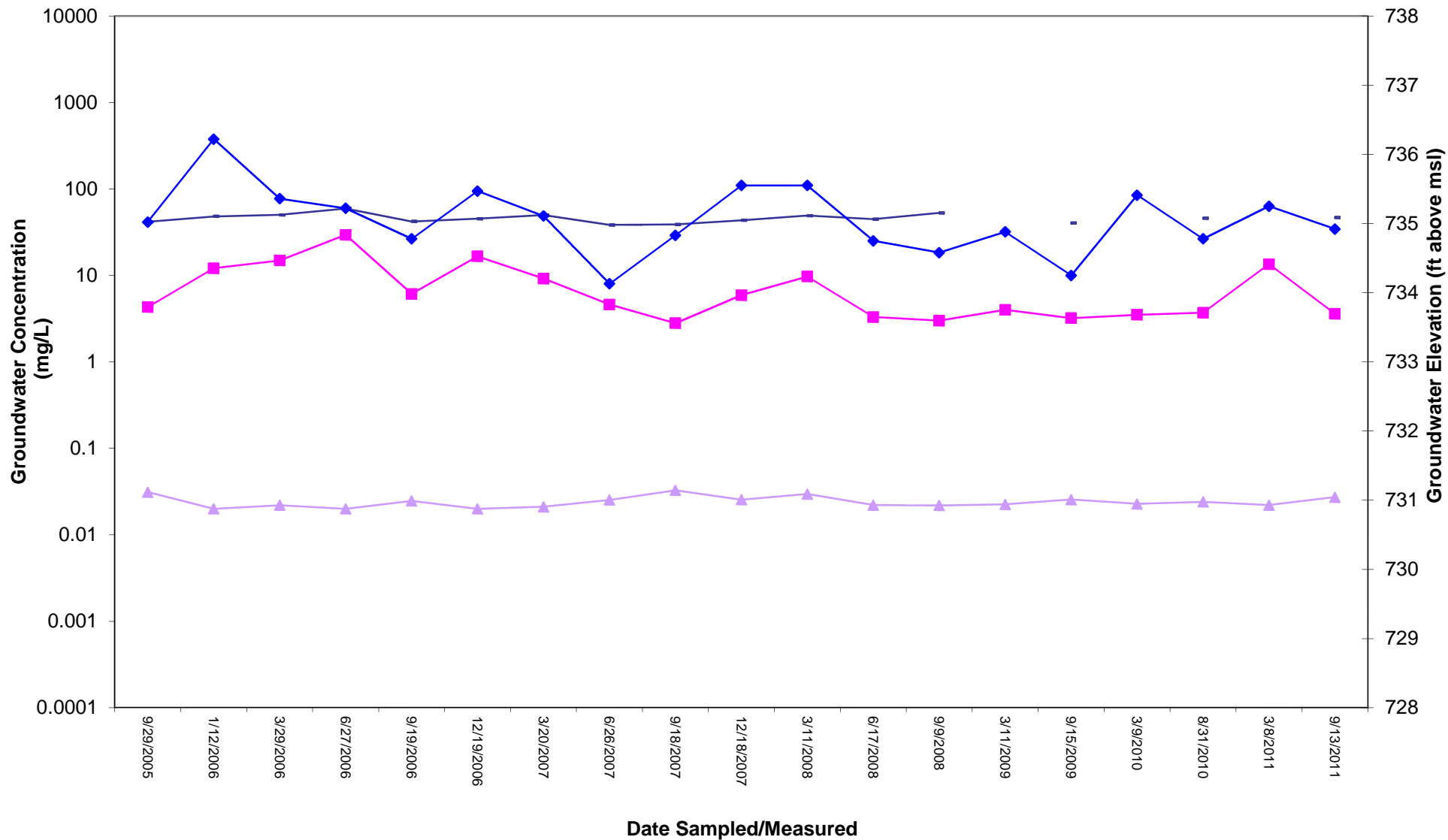
### MW-4 Groundwater Concentrations and Elevations vs. Time Bee-Jay Scales Site Sunnyside, Washington



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

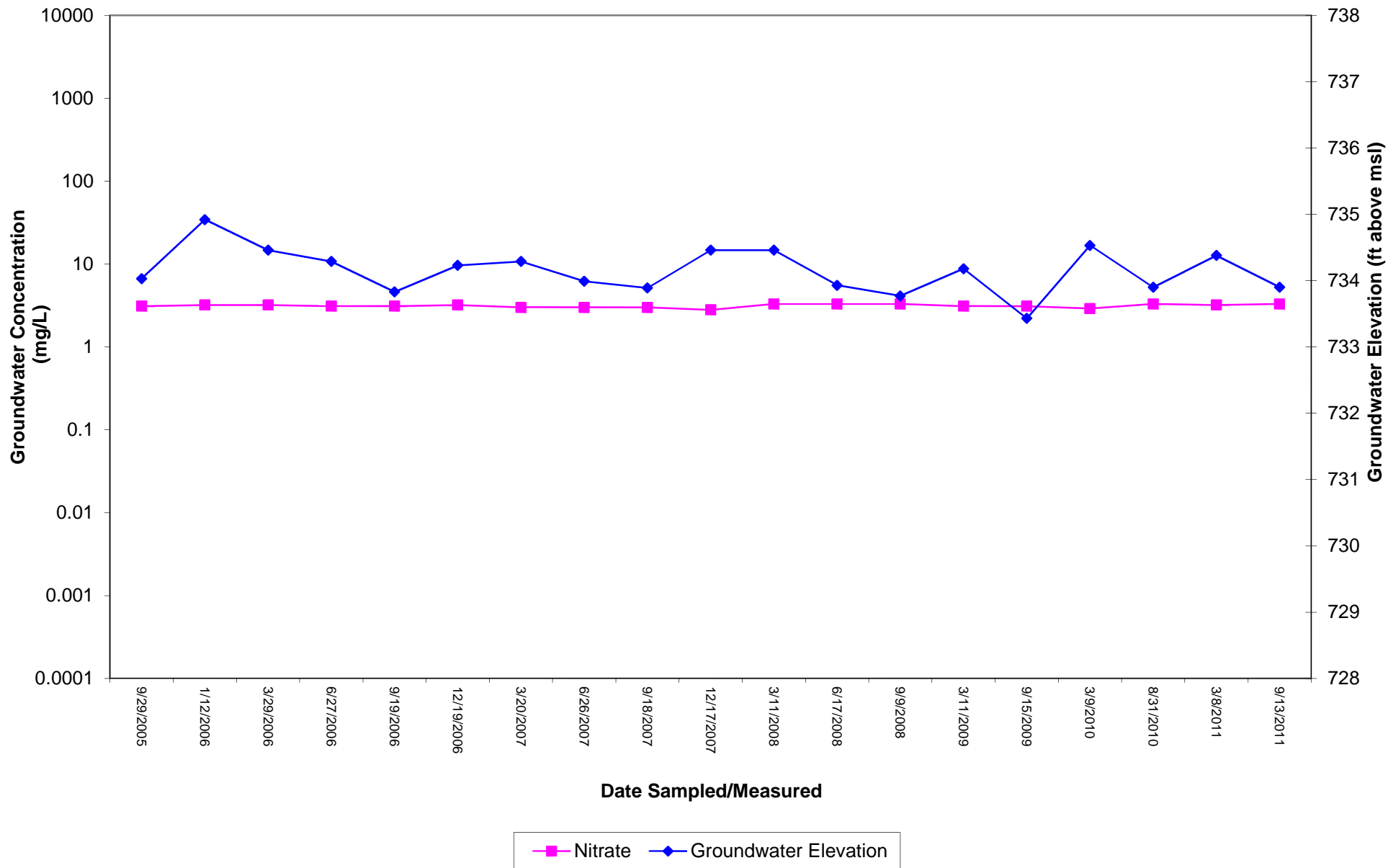


### MW-6 Groundwater Concentrations and Elevations vs. Time Bee-Jay Scales Site Sunnyside, Washington

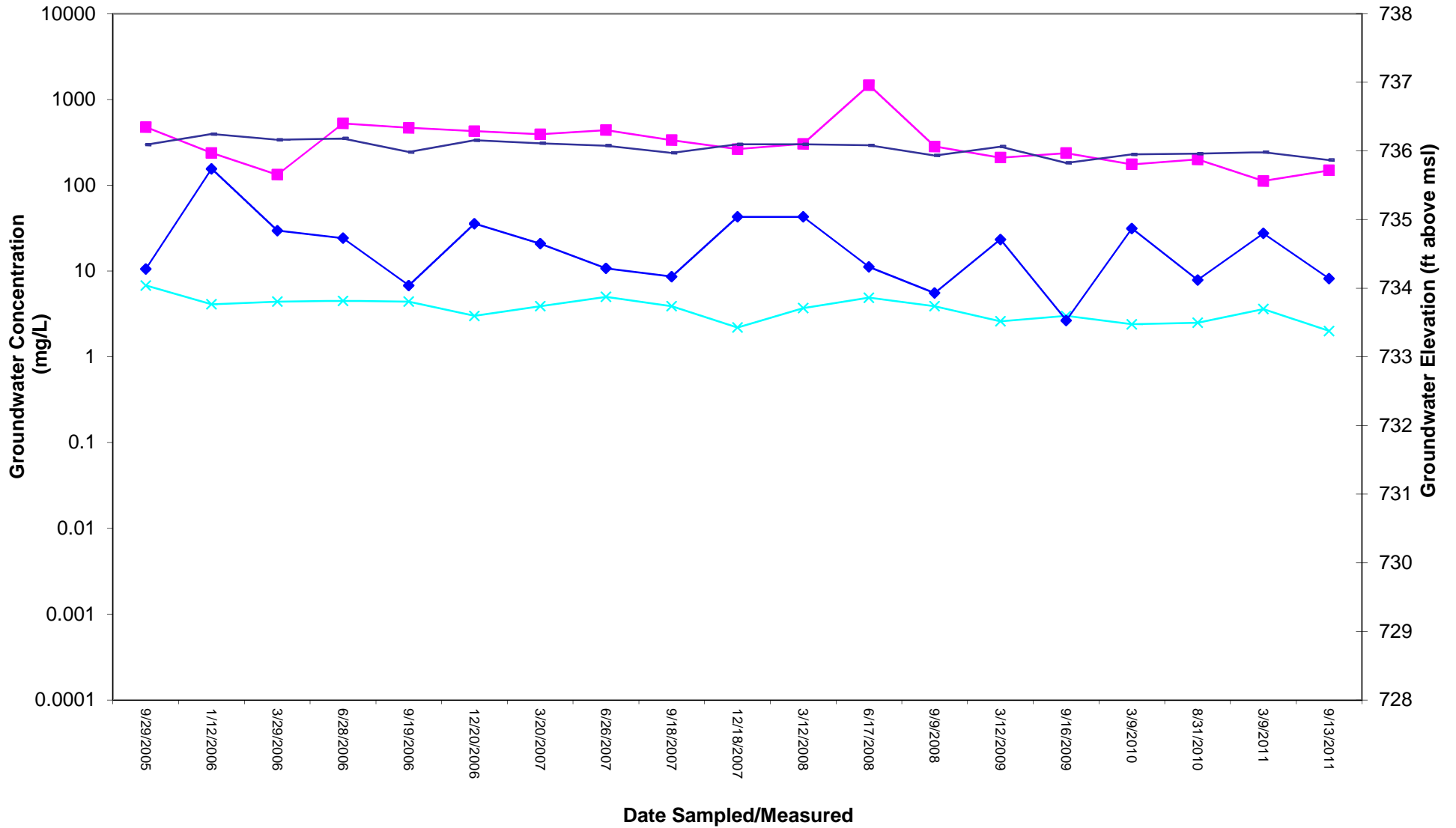


■ Nitrate   
 ▲ Arsenic   
 ● Sulfate   
 ◆ Groundwater Elevation

### MW-7 Groundwater Concentrations and Elevations vs. Time Bee-Jay Scales Site Sunnyside, Washington

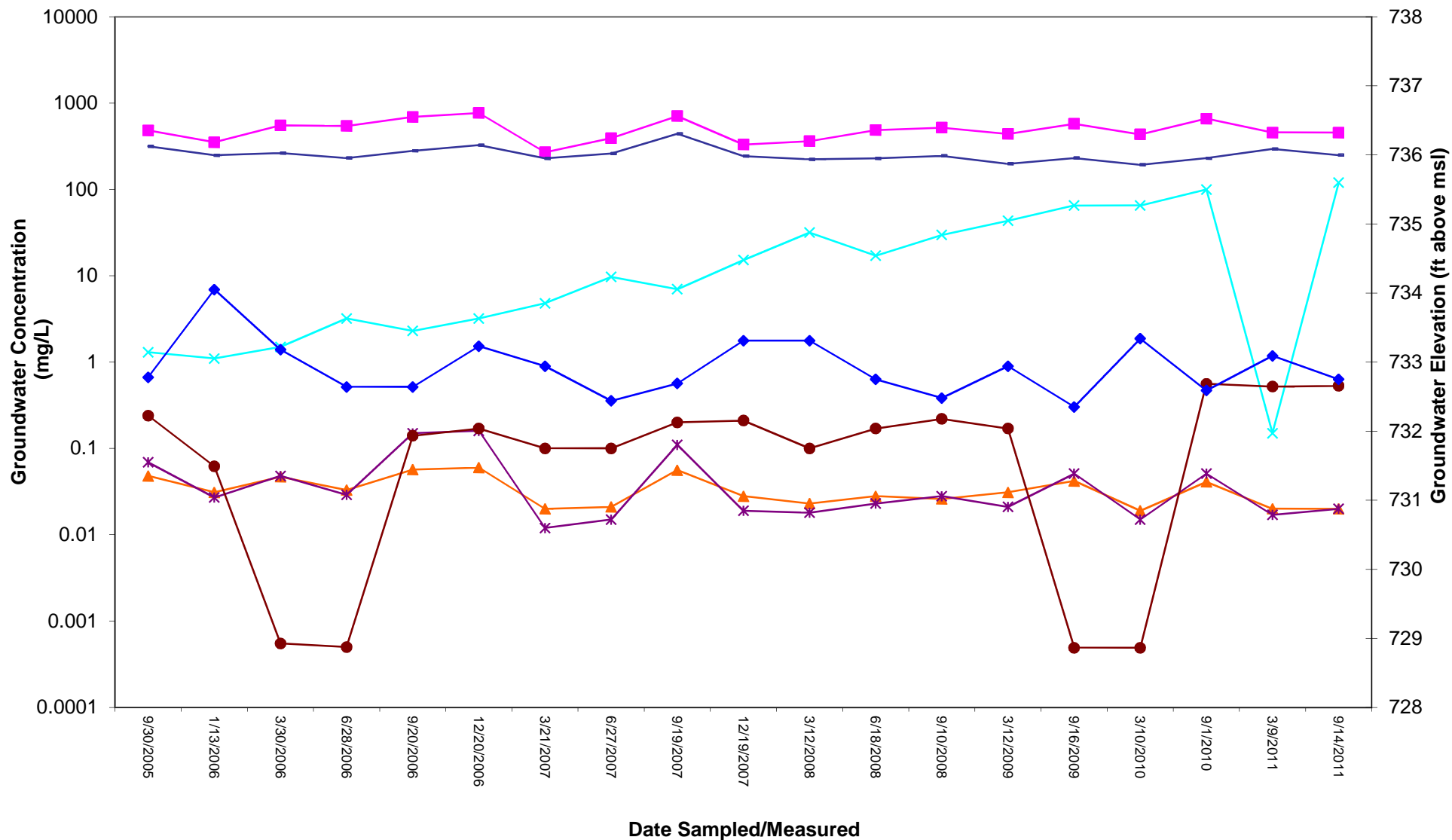


**MW-8 Groundwater Concentrations and Elevations vs. Time  
Bee-Jay Scales Site  
Sunnyside, Washington**



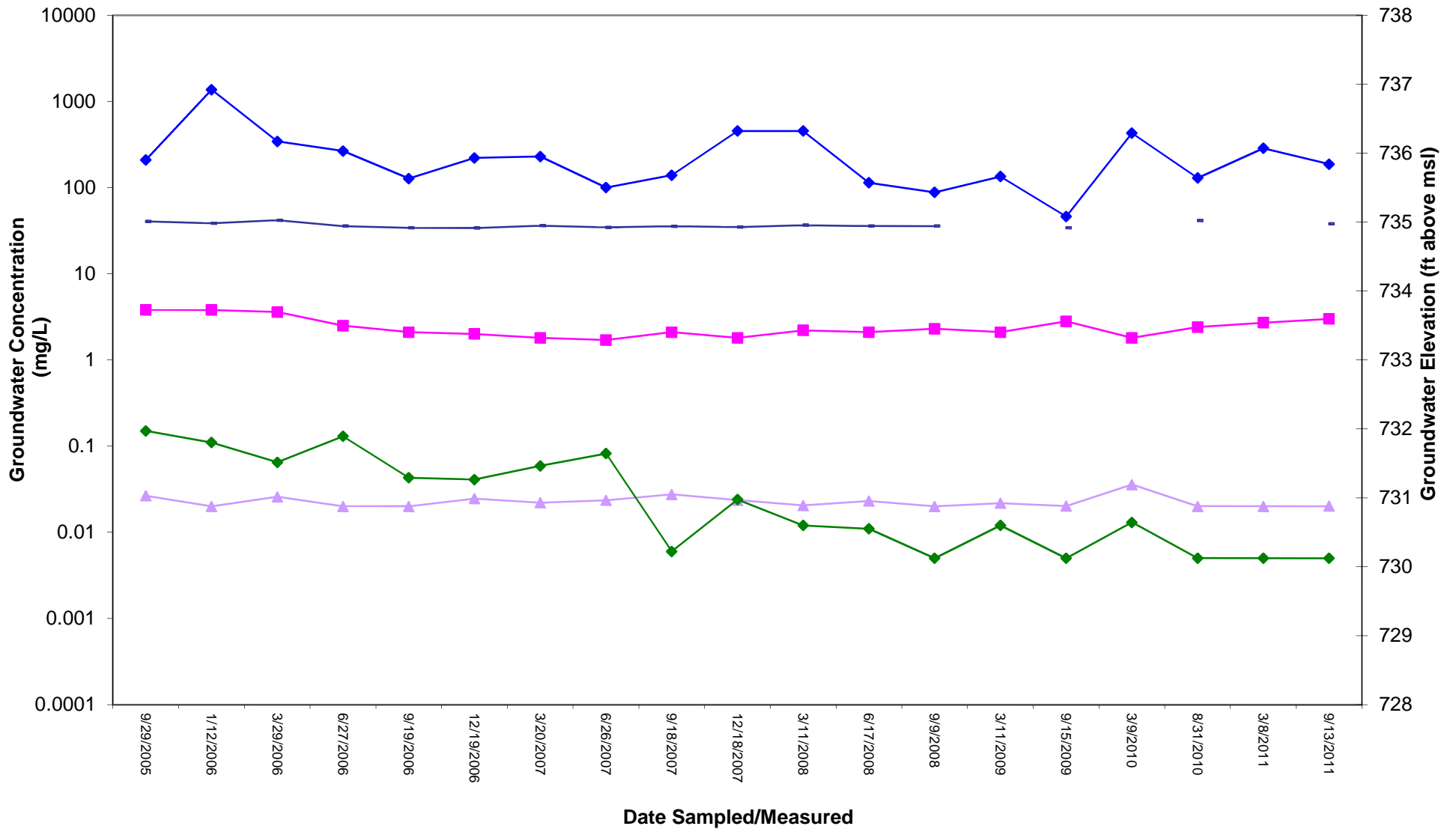
■ Nitrate   
 ✕ Ammonia   
 — Sulfate   
 ◆ Groundwater Elevation

### MW-9 Groundwater Concentrations and Elevations vs. Time Bee-Jay Scales Site Sunnyside, Washington



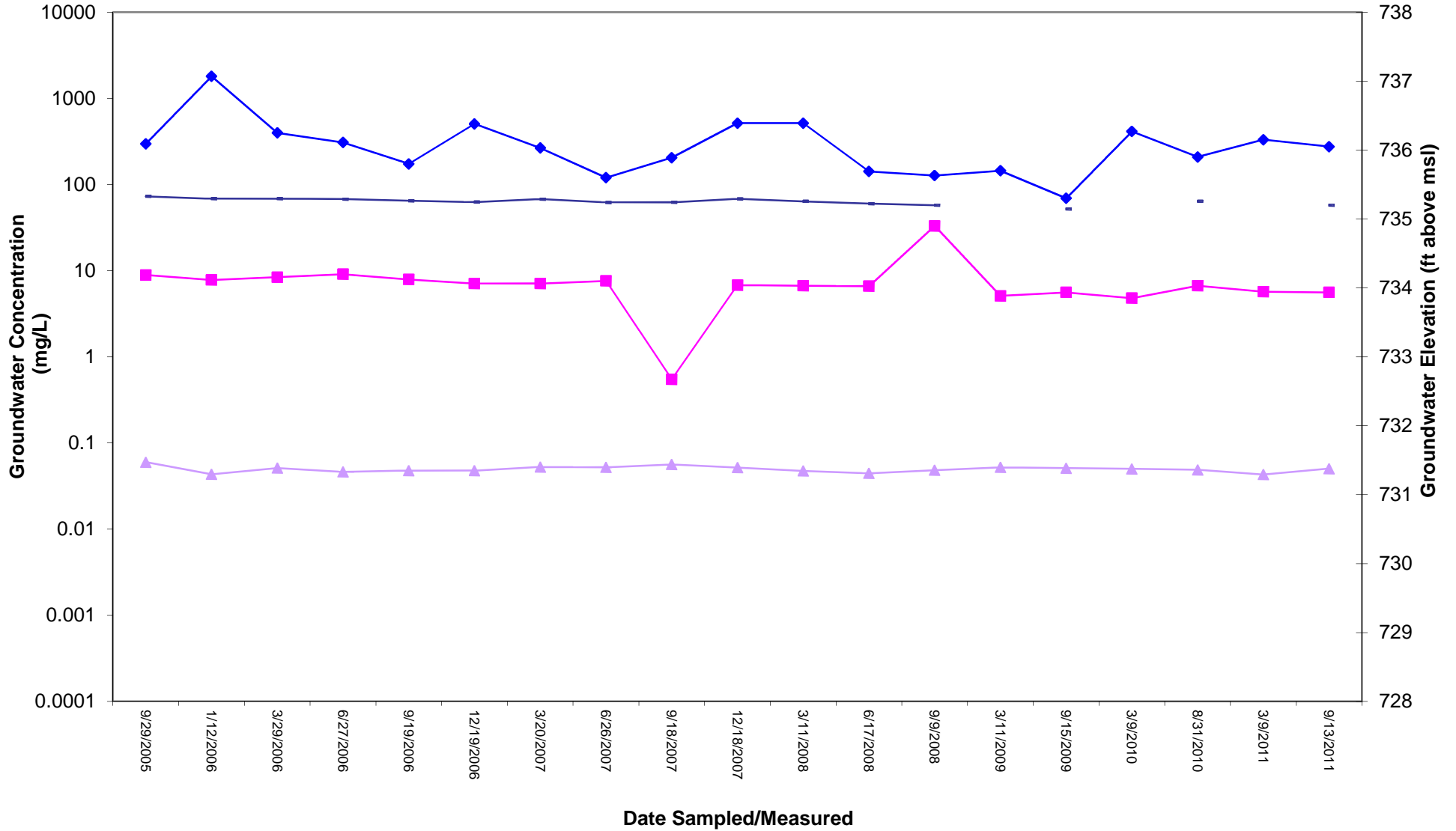


**MW-10 Groundwater Concentrations and Elevations vs. Time  
Bee-Jay Scales Site  
Sunnyside, Washington**



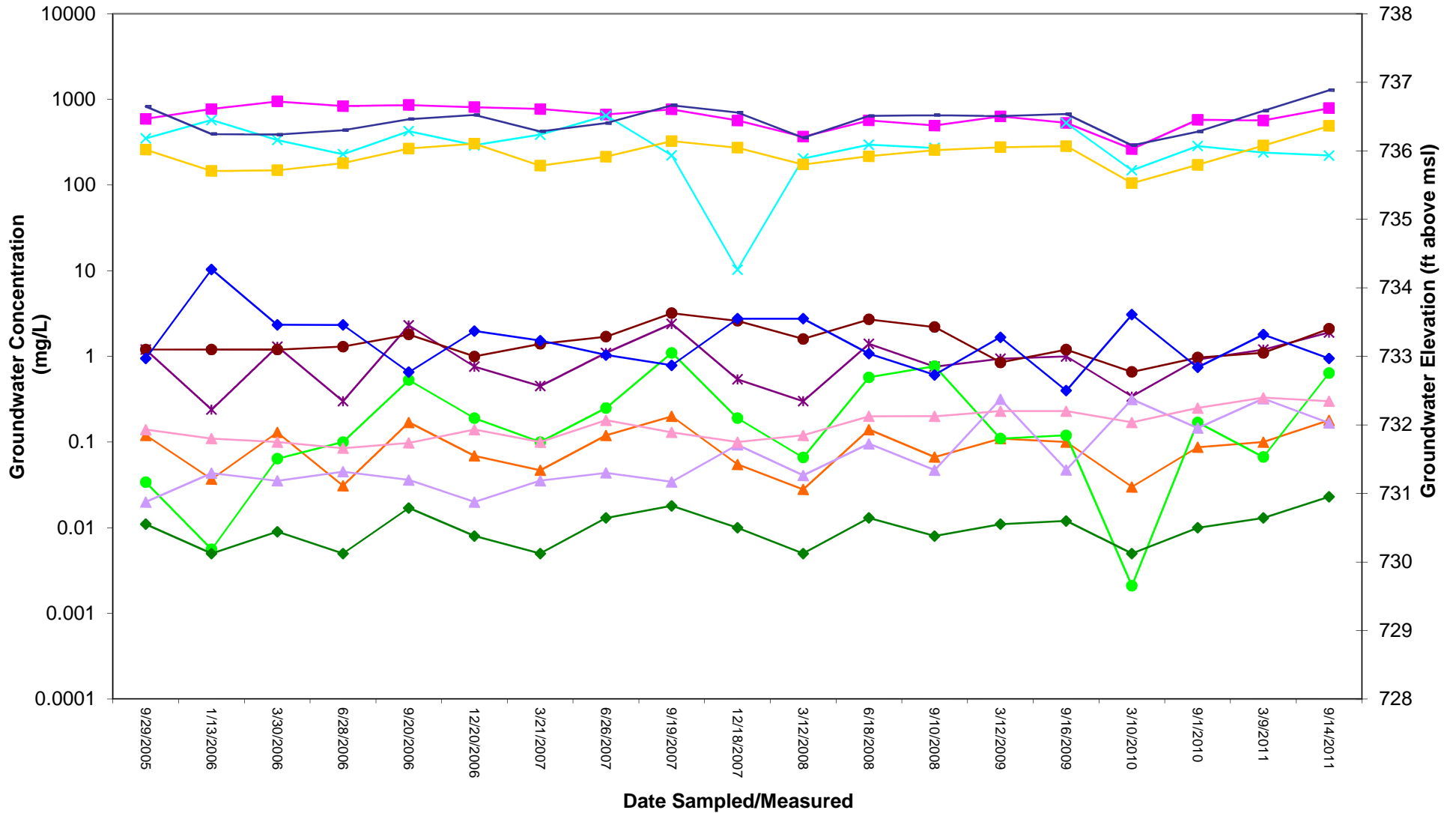
■ Nitrate   
 ▲ Arsenic   
 ◆ Benzene   
 — Sulfate   
 ◆ Groundwater Elevation

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

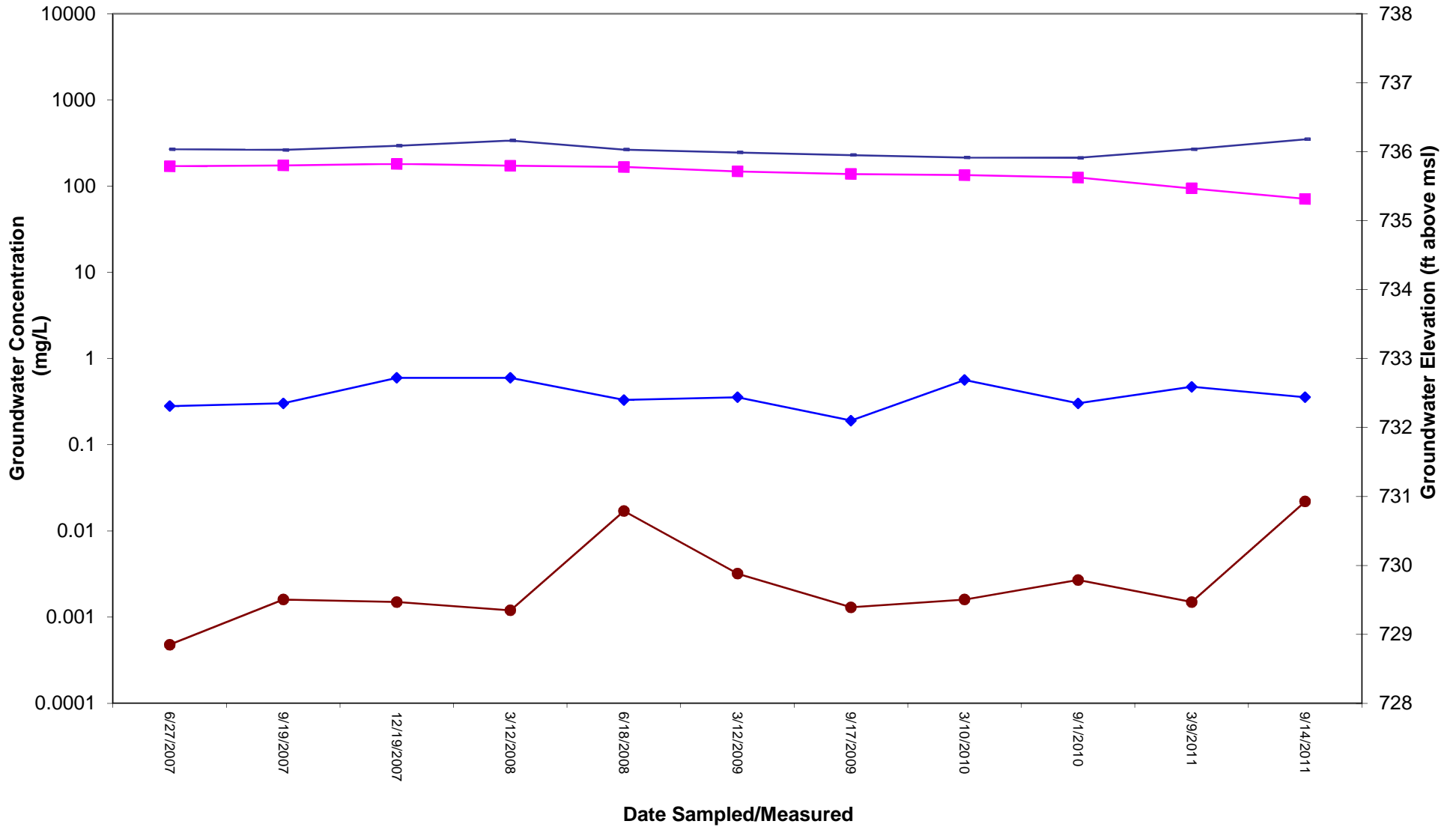


■ Nitrate   
 ▲ Arsenic   
 — Sulfate   
 ◆ Groundwater Elevation

## MW-12 Groundwater Concentrations and Elevations vs. Time Bee-Jay Scales Site Sunnyside, Washington



**MW-13 Groundwater Concentrations and Elevations vs. Time  
Bee-Jay Scales Site  
Sunnyside, Washington**



■ Nitrate   
 —◆— Sulfate   
 —●— Dinoseb   
 —◆— Groundwater Elevation